

International Convention of Forensic Medicine & Science, Langkawi 2023: Towards Quality and Accountability in Forensic Practice, co-organised by Ministry of Health, Malaysia, Malaysian Society of Forensic Medicine and Science and Hospital Sultanah Bahiyah, Kedah and held on 25th – 27th July 2023. Abstracts of keynote lecture, lectures and paper (oral and poster) presented are as follows:

Keynote Lecture: Accountability in forensic pathology practice

Zahari Noor

Retired Head of Service of Forensic Medicine, Ministry of Health, Malaysia.

Forensic pathology is a medical specialty that involves the investigation of deaths and injuries that occur under suspicious, unusual, or unexplained circumstances. Forensic pathologists play a critical role in the criminal justice system by conducting autopsies, interpreting medical evidence, and providing expert testimony in court. However, their work also comes with great responsibility, as their findings can have significant consequences for individuals, families, and society.

TALK

Cognitive bias in interpretation of case based on history

Ong Beng Beng.

Queensland Health Forensic & Scientific Services, Brisbane, Australia.

Cognitive bias is a pattern of deviation in judgement causing illogical inference of a case. There are two major types of cognitive bias in forensic pathology; the first is confirmation bias where a hypothesis is based on confirming evidence neglecting other potentially conflicting evidence. The second category is contextual bias where the opinion is influenced by background information. The practitioners in the field of cognitive bias have stated that only essential circumstances should be provided to avoid cognitive bias. The history is a requirement in the practice of forensic pathology. Performing a post-mortem examination without this information will result in aimless procedures and non-essential investigations. In order to filter 'essential information', it will require a skilled gatekeeper which will be expensive, time-consuming and impractical in a busy forensic pathology department. Consequently, cognitive bias will be prevalent in the practice of forensic pathology and cannot be avoided. It is imperative therefore to reduce occurrence of cognitive bias. The first is to acknowledge the source of information used for interpretation. Discussion should be made on how the interpretation is made and if possible, based on evidence-based literature. Other alternatives should be discussed. Data hiding or linear sequential unmasking used in forensic science is not considered to be ideal. Instead, a robust peer review system is recommended.

The 'other' risk assessment in forensic autopsy

Mohd Suhani Mohd Noor.

Department of Forensic Medicine, Hospital Sultanah Bahiyah, Malaysia.

Quality assurance encompasses managing risks which involve risk assessment. Whilst all forensic pathologists should be familiar with pre-autopsy risk assessment for biological hazards, there is another form of 'hazard' that might be overlooked or underappreciated early in the investigation or the pre-autopsy phase; the hazard of failing to identify, anticipate and appreciate apparent or potential issues or concerns that can arise because of some features or peculiarities in the circumstances of certain deaths. Sudden or unnatural deaths of celebrities or public figures, police-related or unnatural custodial deaths, mass fatalities and clustered deaths will naturally become high-profile cases. Nevertheless, fatalities such as iatrogenic deaths, institutional deaths, and even natural custodial deaths can have the inherent risk of being controversial and becoming high-profile cases, especially in this age of social media. This talk will highlight the need for pre-autopsy risk assessment of apparent or potential issues or concerns that can arise in what is initially considered by the forensic pathologist as a 'routine' or low-profile case. This risk assessment enables the pathologist to strategise the approach needed for the autopsy, which might entail a more thorough pre-autopsy review of the medical records and literature, pre-autopsy imaging, special autopsy techniques and specific samplings for laboratory and toxicological procedures. Failure to assess and address these issues or concerns in a seemingly innocuous sudden or unnatural death can potentially generate controversy, even to the extent of bringing disrepute to not just the individual pathologist but to the entire forensic pathology service.

Current trends in forensic neuropathology

Wong Kum Thong

Department of Pathology, University of Malaya, Malaysia.

Neuropathology as a pathology specialty has made tremendous advancements in diagnosing and understanding the underlying pathogenesis of numerous neurological disorders, and this has impacted the practice of forensic neuropathology to some extent. Perhaps of particular interest would be the improvement of diagnostic techniques that may be useful in autopsy diagnosis and interpretation, including immune histochemistry, in situ hybridisation and the many molecular techniques based on and derived from the polymerase chain reaction. This lecture will discuss some of these current diagnostic advances.

An Italian approach to cardiovascular pathology

Shatishraj Jothee

Department of Forensic Pathology, University Malaya Medical Centre, Malaysia.

The Advanced Masters in Cardiovascular Pathology is a year-long course offered by the University of Padua in Northern Italy for pathologists, doctors of legal medicine and researchers who are interested in learning more about cardiovascular pathology from a multidisciplinary approach. Whilst sudden death and autopsy pathology is covered, the course also touches upon endomyocardial biopsies, heart transplantation, surgical pathology, congenital heart disease, molecular pathology, cardiovascular imaging and others, to name a few. Structured classes are organised throughout the year, including anatomical and pathological demonstrations, grossing and autopsy. The course is supervised by the renowned Professor Cristina Basso, an esteemed academician and researcher in cardiac pathology with more than 80000 citations to her name. Other renowned academicians include Professor Gaetano Thiene and Professor Annalisa Angelini. In this talk, I would like to share my experiences in applying for and joining the course in Padova, including the challenges I faced throughout my stay in Italy. The talk aims to inspire and guide fellow Malaysian forensic pathologists who may be interested in venturing into cardiac pathology. In addition, I would discuss the cases I have seen during my training.

Quality Control in the pathology laboratory

Kamisah Karim

Department of Pathology, Hospital Kuala Lumpur, Malaysia.

Quality Control, known as QC, focuses on identifying defects or errors. QC ensures that the approaches, techniques, methods and processes are followed correctly. QC activities monitor and verify that the product or reports meet the defined quality standards. The aim of QC in laboratory testing is to ensure that the results generated by the test are correct, complete, and confidently delivered in a minimum amount of time. The operational processes need to be established and implemented to provide optimal quality. Quality Assurance (QA) and QC are both part of Quality Management. QC aims at detecting & correcting the issues, while QA seeks to prevent the issues. Errors in the laboratory can occur in three experimental stages, i.e. Pre-analytical, Analytical and Post analytical. Analytic errors are separated into random errors and systematic errors. The terms used in QC comprise Accuracy, Precision, Mean, Standard Deviation, Median and Centile. Many tools are used for QC, such as Procedure Manuals, Maintenance Schedules, Calibrations, Quality Assurance Programs and Training. QC is relatively young in histopathology laboratories compared to other laboratory medicine disciplines, and the assessment and implementation are more difficult due to the inherent quality patterns.

Failure of medicolegal death investigation: the Goudge inquiry in Ontario, Canada

Christopher Milroy

Department of Pathology and Laboratory Medicine, University of Ottawa, Canada.

In the 1980s to around 2000, deaths in childhood in Ontario were investigated by a paediatric pathologist called Charles Smith. This included conducting homicides. Concerns began to be expressed about his practice. Because of the concerns, the Chief coroner had a panel of international forensic pathologists review the work of Smith. They found errors in 20 of 45 cases. Because of public concern a judicial inquiry was called and a Court of Appeal judge, Justice Goudge, reviewed the systemic failings and made recommendations to improve the delivery of forensic pathology in Ontario. Justice Goudge found that Smith had no training and was not qualified as a forensic pathologist, that he was biased in his work, that there was a lack of peer review and that the coroner system had protected Smith and did not have enough knowledge to realise the errors being made were egregious. Goudge recommended the establishment of a Forensic Pathology Service, now the Ontario Forensic Pathology Service (OFPS), separate from the coroner system, but to work in parallel with it. He recommended strengthening of the regional forensic pathology units with multiple forensic pathologists capable of performing homicide autopsies and able to review other practitioner's work. The OFPS has appointed qualified people, established robust peer review and quality assurance along with expert committees in complex cases including child homicides. There is significant oversight of all forensic pathologists in Ontario. The Goudge Inquiry has played a fundamental role in improving forensic pathology in Ontario.

Deaths associated with restraint

Noel Woodford
Victorian Institute of Forensic Medicine, Melbourne, Australia.

Deaths occurring in the setting of restraint can be some of the most challenging for the forensic pathologist. There is often a complex interplay of factors including the nature, length and intensity of resistance/struggle, the mode of restraint, and the presence of drugs and natural disease. Because the use of restraint is often undertaken by law enforcement personnel and/or in public settings, these cases can be high profile and politically sensitive. This presentation will review the system of medicolegal death investigation in Victoria, Australia before providing an overview of varying types of behavioural disturbance, restraint modalities, putative mechanisms of death, and the pathological approach to investigation of such cases. A case of cardio-respiratory arrest occurring in a public place in the setting of restraint will be discussed as an exemplar of the challenges involved.

Quality assurance in forensic pathology

Ong Beng Beng
Queensland Health Forensic & Scientific Services, Brisbane, Australia.

In the past, the reputation of a forensic pathology department relied on its personnel. This is considered inadequate by today's standard. Implementation of a good quality assurance programme to achieve accreditation is considered necessary to enhance the reputation of a forensic department. First and foremost, the quality of the post-mortem examination and report can be achieved by individual pathologists. These include thorough preparation prior to post-mortem examination by reviewing scene, medical history and relevant material. Consultation with colleagues should be encouraged during all the stages of post-mortem examination. The forensic pathologist is also expected to keep in touch with current literature and other means of professional development. It is however, the forensic pathology department or organisation that plays the major role in implementing a quality assurance programme. Among possible ways are group discussion of cases on a regular basis and participating in quality assurance exercises by various pathology organizations. Another way is to consider performing an audit of past post-mortem reports. Among important method is to run a peer review programme. Peer review of cases can be partial or complete. Complete peer review should be encouraged. The requirements should be individually tailored for individual organizations. Cases can be selected from agreed types of cases. Review should be performed on a set of criteria. Most importantly, there should be planned strategic steps in case of disagreements between the pathologist and peer reviewer. Having a peer review process will increase the quality of post-mortem examination, report and ultimately deliverance of justice, enhances the reputation of a department and fulfills a requirement of accreditation bodies. It is also considered a sound method to reduce cognitive bias.

The forensic pathologist as an expert witness in homicide cases: a defense lawyer perspective

Burhanudeen Abdul Wahid
Messr Burhan & Co, Alor Star, Kedah, Malaysia.

The talk will address the role of an expert witness and the expectation of Courts vis-a-vis the opinion tendered, the challenges faced by an expert witness in giving expert opinion taking into consideration the purpose of the opinion tendered by him/her and the related issues arising from the above-mentioned expectation and challenges.

Towards modern forensic practice

Ong Beng Beng
Queensland Health Forensic & Scientific Services, Brisbane, Australia.

The practice of forensic pathology has not changed much in the past until the last two decades with the introduction of post-mortem CT scanning and other imaging modalities. While it did not meet the expectations of fully replacing traditional post-mortem examination, it has revolutionised the practice of forensic pathology and changed the approach to routine post-mortem examination. In Queensland and in other parts of Australia, it is further supplemented by excellent collection of history and medical history, ability to view images of scene when required and introduction of rapid toxicology analysis. All this information is potentially available for the forensic pathologist before the commencement of the post-mortem examination. This enables the pathologist to plan the post-mortem examination. Instead of the traditional 'full' post-mortem examination, the examination can now be targeted to specific region of the body. This approach is for selected routine cases only, and a more comprehensive examination is still required for certain categories of cases including sudden infant deaths and those with suspicious nature. This practice will require a change in the mind-set of the pathologist and requires amendment to existing legislation relevant to investigation of deaths in individual provinces, state or country. The major advantages of such a practice are reduction of workload of the forensic pathologist and perhaps alleviating the persistent worldwide shortage of this specialty worldwide. It would also assist and reduce the grieving process of the next-of-kin. It is plausible in the future with further modernisation using the next generation imaging modalities and supplemented by

other techniques including genetic testing, the practice of forensic pathology will evolve further with likely minimisation of internal post-mortem examination.

Molecular autopsy in sudden deaths

Roziana Ariffin

Pantai Premier Pathology, Kuala Lumpur, Malaysia.

Molecular autopsy is the process and molecular techniques used in investigating sudden death through genetic analysis. This is useful in cases of sudden unexplained deaths where traditional autopsy is negative or only shows non-diagnostic features. About 30% of sudden cardiac deaths (SCD) in young people are not explained after a full conventional autopsy, and are classified as sudden unexplained deaths. In young subjects, SCD is usually a fatal complication of cardiomyopathies, such as hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), and arrhythmogenic cardiomyopathy (ACM), or channelopathies, i.e., disorders affecting ion channels such as long QT syndrome (LQTS), short QT syndrome (SQTS), Brugada syndrome (BrS), and catecholaminergic polymorphic ventricular tachycardia (CPVT). In older individuals, coronary artery disease represents the main cause of SCD, followed by cardiomyopathies, myocarditis, and valve diseases. The use of a panel of genetic markers for long QT syndrome, catecholaminergic polymorphic ventricular tachycardia and cardiac channel myopathies significantly increased the molecular diagnostic yield of sudden cardiac death. The goal of molecular autopsy is to aid medicolegal inquiries and to guide cascade genetic screening of the victim's relatives when necessary. While molecular genetic laboratories used to rely on Sanger sequencing for single gene testing, this accurate technique can be laborious and has a low through put and can only be applied for detection of small panels of genes. On the other hand, next-generation sequencing (NGS) technologies have allowed targeted gene panel, exome/genome wide examination leading to increase detection of pathogenic variants and the discovery of newer genotype-phenotype associations. Having said that, NGS has its challenges that need to be addressed in molecular autopsy, especially regarding the clinical interpretation of the large number of variants of unknown significance detected. The lecture will highlight our experience in Pantai Premier Pathology & Sunway Medical Centre in terms of Whole Exome Sequencing & targeted gene panel testing for sudden death.

Medicolegal system in Indonesia: Past and present. The task of developing a just system through balancing right and duties

Ade Firmansyah Sugiharto

Fakultas Kedokteran Universitas Indonesia, Jakarta, Indonesia.

Medicolegal systems differ among countries according to national legal system. Every system mainly performs by law-enforcement agencies that are mostly government officers, including forensic doctor. In Indonesia, forensic specialists have tasks to examine pathology and clinical forensic medicine cases and work not only in mortuary also in the emergency room, attend crime scene and giving expert testimony in court. With only around 300 forensic specialists nationally, some cases are examined not only by forensic specialists but also general practitioners who are deemed competent through board exam. In 2022, the Ministry of Health issued regulation number 38 which acknowledge holistic approach of medicolegal practice in criminal justice system, including: medical aspect of crime scene investigation, forensic pathology, clinical forensic medicine, expert testimony, in the face of ever evolving challenges in forensic cases. The regulation also gives a clear definition to forensic medicine practice as, medical practice for judicial purpose. Previously, the medicolegal system was regulated by Indonesian Penal Code and Code of Criminal Procedure. Those two regulations regulate the role of law-enforcement agencies, but not forensic specialists and also the forensic facilities. The Ministry of Health regulation number 38/2022 provide more protection for every citizen, including forensic services and basic medical services needed for any health problems that may occur. This provision on basic medical services showed respect on the right to health. This regulation also gives duties to provincial government to provide forensic medical service facilities and allocate sufficient budget. This system is hoped to give a bright future for establishing an equitable distribution of forensic services throughout Indonesia.

Liability of expert witness and expert witness immunity

Raja Eileen Soraya Raja Aman

Raja, Darryl & Loh, Kuala Lumpur, Malaysia.

Expert witnesses play an essential role in civil and criminal court proceedings. Doctors often shy away from being an expert for many reasons, one of them being the fear of the legal repercussions. This session will deal with the role of an expert witness, what the law demands from an expert and whether they are protected by legal immunity.

Controversies in paediatric forensic pathology

Marta Cohen
Sheffield Children Hospital, Sheffield, United Kingdom

There are few controversial issues commonly associated with paediatric forensic pathology practice. In this lecture, two of these issues will be highlighted. The first one relates to fracture evaluation at autopsy of an entity named classical metaphyseal lesion (CML). This lesion has been frequently labelled as one of signs of inflicted injury in children. The association of this 'lesion' with metabolic bone disease will be discussed. The second contentious issue is about the specificity of shaken baby syndrome (SBS) with the triad of subdural haemorrhage, retinal haemorrhage and encephalopathy. This lecture will explore various potential causes of triad in particular the subdural haemorrhage and will further highlight similarities of SBS with other type of sudden unexpected death during infancy.

LUNCH TALK SESSION**Establishment of bsl-3 autopsy facilities: Pathway for successful bsl-3 certification**

Tiruselvam, Maureen Ellis
Biogard Asia (M) Sdn Bhd, Kuala Lumpur, Malaysia.

With the recent news about COVID-19, Ebola, MERS-CoV, extremely drug-resistant TB, and other emerging and re-emerging diseases, the worldwide need for high-containment autopsy facilities is at an all-time high. These high containment facilities are highly complex buildings that serve as a barrier between the dangerous pathogens handled in the laboratory and the surrounding environment. The sophisticated Air-Conditioning and Mechanical Ventilation (ACMV) systems with single-pass air, N+1 redundancies, dedicated electrical connections with backup generators, and enhanced security measures make these buildings costly and expensive. Most performance guidance documents are written in developed countries, while the greatest need is sometimes in remote and underserved areas. This dichotomy has brought the need for a methodology to build, certify and operate BSL-3 High Containment Facilities that are sustainable by the facility owners. Adoption of the Design and Certification Guidelines that are Performance Based, as compared to Perceptive Based, provides benefit to the owner on the Construction Cost as well as the Operation Cost. This presentation describes the major steps involved in the BSL-3 Facility Certification, Risk Assessment, Certification Process and the components that need to be prepared by both the Client and Construction Team. The key to the success of this kind of project is a strong understanding of the method, scope, document preparation, on-site assessment, certification visit and final reporting, which involves all stakeholders of the facilities.

ABSTRACTS FOR ORAL PRESENTATION**Buried alive: A case of traumatic asphyxia due to submersion in grain**

Farah Lyna Darwin Egyptoman Darwin, Nuradila Mislan, Tan Ran Zhi
Department of Forensic Medicine, Hospital Sungai Buloh, Ministry of Health Malaysia.

Introduction: Occupational safety and health (OSH) in the agriculture industry have always identified potential risks and hazards for work-related accidents, especially in the area of grain handling and storage. Despite strategies implemented by the National Institute for Occupational Safety and Health (NIOSH), an increasing trend of work-related fatal accidents in the agriculture sector have been reported in Selangor, Sarawak and Johor since 2012. The mechanism of death is usually due to mechanical injuries, grain entrapment or engulfment and rarely lethal asphyxiation. *Case:* We report a case of a 49-year-old gentleman with no known medical illness, who had years of experience working as a supervisor at a rice mill factory. He was found buried alive when he was accidentally engulfed by tonnes of flowing grains unloaded from a grain transport vehicle (GTV) at work. The autopsy revealed that the body was covered inconsiderable amount of grains and also present within the oral cavity, larynx, oesophagus and airways down to the main bronchi. Agonal congestion was generalised with periorbital petechiae haemorrhages seen at both eyelids. Multiple abrasions and bruises were observed. Critical stenosis of the coronary arteries was also seen. Microscopically, the coronary artery showed significant luminal occlusion by atheromatous plaque without replacement fibrosis of the cardiac myocytes. A scene visit was conducted prior to autopsy to investigate the circumstances leading to death. *Discussion:* This case highlights a rare event of traumatic asphyxia due to submersion in grain as a potential safety hazard within the agricultural industry.

Ventricular outpouching: sudden death report of two cases

Aneesa Azhar¹, Nor'amirah Ahmad¹, Nadiawati Abdul Razak², Khairul Anuar Zainun¹

¹Department of Forensic Medicine, Serdang Hospital, Ministry of Health, Malaysia; ²Forensic Unit, Faculty of Medicine and Defence Health, National Defence University of Malaysia

Introduction: Ischaemic heart disease (IHD) represents a group of related entities resulting from myocardial ischaemia. Ventricular aneurysm is a known sequelae of IHD which involves full-thickness infarct with fibrous tissue replacement that is unable to take part in the contraction. Ventricular aneurysm herniates outward during systole which leads to an expansion of a dyskinetic area and subsequently forms a thin, circumscribed, and non-contractile out pouching. **Case:** We herein report two cases of sudden natural death associated with ventricular out pouching. The first case was a 49-year-old man who was allegedly found dead at home. The post-mortem examination revealed myocardial and endocardial fibrosis of the left ventricle with associated ventricular aneurysm and intra-ventricular thrombosis. These cond case involved a 56-year-old man, known to have hypertension, and was witnessed collapsing in front of a shop. The cause of death was attributed to myocardial infarction due to coronary artery thrombosis. Ventricular aneurysm and organising thrombus were concurrently present at the apex of the heart. **Discussion:** Ventricular out pouching due to wall aneurysm can cause mechanical complications and lead to death. On the other hand, patients may succumb to death due to primary pathology such as coronary atherosclerosis despite the presence of significant size of ventricular aneurysm of the heart. The reported two cases highlighted a spectrum of contribution towards death when this pathology is detected at autopsy.

From meningitis to breast carcinoma

Kunasilan Subramaniam¹, Jacinta Toimin², Hilma Hazmi³

¹Forensic Medicine Department, Hospital Kuala Lumpur; ²Forensic Medicine Department Hospital Miri; ³Pathology Department Hospital Miri

Introduction: Patients can present with multiple symptoms but most of the time they are linked to a single diagnosis and forensic pathologists are asked to explain the symptoms apart from establishing the cause of death, especially during clinical audits. **Case:** A 44-year-old female presented at 31 weeks of gestation with headache associated with right eye ptosis for 1 week. Her blood pressure (BP) was elevated during admission and the doctors decided to deliver the child for severe pre-eclampsia. Also, she developed hoarseness of voice and difficulty tolerating solid foods. Imaging suggests of posterior cranial fossa meningitis and pulmonary tuberculosis. Lumbar puncture done on day 10 and the patient collapsed after the procedure. She succumbed 25 days after admission and the cause of death was given as cerebral vasculitis. The cerebrospinal fluid cytology showed malignant cell which came back after her demise. Post-mortem findings revealed masses in the left breast, thyroid, and right adrenal. The cervical, right supraclavicular perihilar and para caval lymph nodes were enlarged. The kidneys and the liver showed evidence of polycystic changes. Histology examination showed invasive carcinoma in the left breast with metastasis in the lungs, thyroid, adrenal, meninges and lymph nodes. **Discussion:** Her symptoms were attributed to the metastasis and the lumbar procedure worsened her condition, which led to her death. This is an atypical presentation of breast carcinoma. In this case, the post-mortem not only established the cause of death but was also able to explain the symptoms in this case, especially for the purpose of clinical audit.

Thoughts of death and suicide in early adolescence

Asyraff Md Najib¹, Sharimini Nair P. Nagarajan², Nadiawati Abdul Razak³, Emizam Mohamadon², Khairul Anuar Zainun², Faridah Mohd Nor¹

¹Forensic Unit, Department of Pathology, Faculty of Medicine, National University of Malaysia, Bangi, Selangor, Malaysia; ²Department of Forensic Medicine, Hospital Sultan Idris Shah, Serdang, Selangor, Malaysia; ³Forensic Unit, Faculty of Medicine and Defence Health, National Defence University of Malaysia, Kuala Lumpur, Malaysia

Introduction: Suicidal death is not uncommonly seen in forensic pathology practice. Numerous studies linked suicidal behaviour with mental disorders and chronic disability as an adaption to stress. However, these circumstances may not be apparent in the adolescent age group. Here, we discussed two such cases, while highlighting the difficulties in determining suicide as a manner of death. **Case:** A 14-year-old Chinese teenager with no known mental illness, was brought in dead to the mortuary. He was found dead after throwing himself over the apartment balcony following a furious disagreement with his mother. There were no antecedent association of suicidal ideation, suicidal attempt, recent behavioural changes or any chronic stress factors. He was described as an introvert and outgoing with a normal teenage life. Autopsy findings concluded his death as multiple injuries due to fall from height. The second case involved a 14-year-old Malay boy, who was allegedly discovered in partial suspension in the toilet of his home. Preliminary investigation showed that the circumstances of death were not typical of suicide, and his family described him as a cheerful person. Death was ascertained as neck compression due to hanging. **Conclusion:** Both cases represented the conundrum in ascertaining suicide during early adolescence. A detailed history, thorough autopsy and scene investigation are pivotal to ensure comprehensive investigation of a case with relevant circumstantial evidence to determine the cause and manner of death.

Awkward fall from height: a case report

Abdul Hadi Damanhuri¹, Nor'amirah Ahmad¹, Khairul Anuar Zainun¹, Faridah Mohd Nor², Mohd Swarhib Hj Shafee²
¹Hospital Sultan Idris Shah, Serdang, Selangor, Malaysia; ²Hospital Canselor Tuanku Mukhriz, National University of Malaysia

Introduction: Fall from height has been a common occurrence in high-rise building construction especially in urban areas, where mishaps could happen due to improper safety measures. Apart from the fatal injuries, forensic pathologists are often asked about the mechanism by which the deceased fell. Sometimes, the deduction may be difficult since the injuries that he sustained are unexplained by the position in which the body was found. The process of determining the mechanism of injuries in a case of fall from height will be discussed. *Case:* The body of a 41-year-old male was found in a prone position after allegedly falling through a polycarbonate roof of a (how many feet height) old factory. At autopsy, the external examination revealed contusion on the vertex and compound fractures of the distal phalanges of bilateral big toes and left 2nd toe. There were subgaleal haematoma and comminuted fractures across the parieto-occipital regions, generalised subarachnoid haemorrhage and cerebral cortical contusions. There were also cervical vertebrae C4-C5 subluxation, and crushed vertebral body fractures of C5 and C6. Nevertheless, the spinal cord was intact. *Discussion:* Apart from the injuries on his toes, the injuries that he sustained to the head and neck could not be explained if he fell into a prone position. This case highlighted the importance of further assessment of the pattern of injuries in determining their mechanism, which includes scene visits, reenactments, and examination of video recordings that would be clarified in the presentation.

The café (and non-café) coronary in nursing homes: forensic diagnosis and legal implications

Wan Zafirah Zamaliana Alias, Mohd Suhani Mohd Noor
 Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: 'Café coronary' is a sudden unexpected death during meals due to airway occlusion by food without signs of respiratory distress or asphyxia. Current literature reveals that the spectrum of victims comprises the underlying risk factors such as extremes of age, neurological conditions, and psychiatric illnesses. Most involve nursing home residents, and fatal choking incidents in such settings are preventable with adequate care. Nevertheless, forensic pathologists should recognise the distinction between actual choking and agonal gastric aspiration. We report two cases of fatal choking on food (one case qualified as café coronary) involving nursing home residents. *Case:* 1st case: An ADL-dependent 32-year-old male with underlying epilepsy and pulmonary complications of tuberculosis collapsed without any signs of respiratory distress during breakfast. The forensic autopsy revealed a complete occlusion of the left main bronchus by a food bolus. 2nd case: A 58-year-old male with a recent history of cervical spine injury collapsed an hour after a sudden onset of breathlessness. Despite the denial of being fed before his collapse, the forensic autopsy revealed a large food bolus occluding his laryngopharynx, and his major coronaries were critically stenosed. *Discussion:* The forensic pathology diagnosis of fatal choking on food will be discussed, emphasising the distinction between choking and agonal gastric aspiration as well as the significance of antecedent risk factors for choking. An accurate diagnosis of choking is invaluable in assisting police investigation and civil litigation in nursing home neglect, and formulation of measures to prevent choking in nursing homes.

Drone as an adjunct to scene investigations

Nur Adlina Afiqah Saadon, Jessie Hiu
 Department of Forensic Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah

Introduction: Scene investigation is a multifaceted exercise that includes obtaining trace evidence, recording the scene, and reconstructing the incident. Some scenes, such as riverbanks, cliff edges, and high-rise buildings, may be inaccessible or unsafe, making proper examination difficult. Drones, also known as unmanned aerial vehicles (UAVs), are multidimensional devices with designs that vary in size, shape, operating flight altitude, and flying range. We aim to introduce drones as a tool to assist in scene investigation. *Case:* The geography of Sabah is a mix of mountainous regions, beaches, and tropical rainforests. We discussed two cases in which drones were used. The first case involved partially skeletonised remains found in a hill gorge. The area was steep and surrounded by rocks and trees. A drone was utilised to do aerial mapping and to locate the deceased's missing motorcycle. In the second case, a worker fell from an 80-foot height while welding a beam at a construction site. Scene visit was performed to identify any problem with the safety equipment or breach of any safety procedure by the deceased. The area had many steel pillars requiring cranes and safety harness to examine the scene properly. A drone was utilised to take images for examining the safety ropes along the pillars to look for defects or damage. *Discussion:* Drone can be used as a tool to improve the effectiveness of scene investigation, particularly in difficult or inaccessible places or when there is a safety issue for personnel. Pros and cons of using drone will be discussed during the presentation.

A misdiagnosis compounded by taco

Muhammad Sakti Abdullah, Mohd Suhani Mohd Noor
Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: Necrotising fasciitis (NF) is a life-threatening skin and soft-tissue infection (SSTI) with high mortality that involves subcutaneous tissue and muscle fascia. A misdiagnosis of NF can occur when there is lack of suspicion even after adequate investigation which leads to various consequences. Transfusion Associated Circulatory Overload (TACO) is a complication of blood transfusion when the recipient is unable to compensate for the volume of the transfused blood products. **Case:** A 69 years old man with underlying hypertension and dyslipidemia involved in a vehicular crash and sustained close left tibial plateau fracture with a degloving wound over left foot. He was seen by the Orthopaedic team and planned for elective external fixation. A day prior to surgery, they noticed bluish discoloration and bullae formation up to left thigh and reduced peripheral pulses. CT angiogram found complete thrombosis of infrarenal abdominal aorta. Prior to surgery he was transfused 1 pint packed cell and 4 units of Fresh Frozen Plasma. Post-transfusion the patient collapsed and succumbed to death. **Discussion:** The above patient was misdiagnosed to have acute limb ischaemia alone and waited till demarcation to form for amputation. The post-mortem histology of the left lower limb showed features of Necrotising Fasciitis. The error of clinical judgments in this case had caused the misdiagnosis of SSTI and TACO.

Autopsy case reports of post-intubation laryngotracheal stenosis

Wan Zafirah Zamaliana Alias, Mohd Suhani Mohd Noor
Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: Laryngotracheal stenosis is a recognised complication of endotracheal intubation, with well-established risk factors being mucosal trauma and cuff pressure necrosis. Clinically, it can mimic bronchial asthma leading to a misdiagnosis. Case reports discussing deaths due to post-intubation laryngotracheal stenosis is limited; hence its incidence is unknown. We report two deaths due to post-intubation laryngotracheal stenosis of a child and an adult involved in trauma. **Case:** 1st case: An 8-year-old girl developed persistent stridor three days after extubation (six days post trauma) before a diagnosis of subglottic stenosis grade III was established a month later. She underwent an emergency tracheostomy, and subsequently had an ED visit two weeks later for a blocked tracheostomy tube (TT). She eventually died two months post trauma (three weeks post-tracheostomy) when her TT dislodged while she was playing with her friends. The autopsy showed subglottic scarring with a non-patent tracheostomy wound. 2nd case: A 28-year-old male was intubated for 15 days during admission following a vehicular crash. A month later, he presented with dyspnea and “wheezing” requiring admission with another two-week intubation and was treated for nosocomial pneumonia with bronchospasm. He finally succumbed at home two months after the vehicular crash. The autopsy showed laryngotracheal stenosis and evidence of pneumonia. **Discussion:** The forensic pathology diagnosis and pathophysiology of post-intubation laryngotracheal stenosis will be discussed. It is imperative for forensic pathologists to recognise post-intubation laryngotracheal stenosis, which may have far-reaching implications in medicolegal investigation.

Forensic age estimation in living children: how accurate is Greulich-Pyle method in Sabah, East Malaysia?

Khin Mya Nang, Abdul Jabbar Bin Ismail, Anithaa Tangaperumal, Aye Aye Wynn, Tin Tin Thein, Firdaus Hayati, Yong Guang The
University of Malaysia Sabah, Kota Kinabalu, Sabah.

Background: Greulich and Pyle’s Radiographic Atlas of Skeletal Development of the Hand and Wrist (GP Atlas) is the most widely used method of determining the bone age (BA) of a child. It is also a widely accepted method for forensic age determination. As there is limited data on bone age for forensic age estimation in local populations, this study aims to assess the accuracy of the GP Atlas for forensic age determination in living Sabahan children. **Method:** This study recruited 182 children between the ages of 9 years to 18 years. BA estimation of the left-hand anteroposterior radiographs was performed by two radiologists using the Greulich-Pyle method. **Results:** The BA estimates from two radiologists had very high inter observer reliability (ICC 0.937) and a strong positive inter observer correlation ($r > 0.90$). GP method consistently statistically significantly underestimated CA by 0.7, 0.6 and 0.7 years in overall children, boys and girls respectively. Mean absolute error and root of mean squared error for over all children was 1.5 and 2.2 years respectively while mean absolute percentage error was 11.6%. This underestimation effect was consistent across all age groups but statistically significant only at 13-13.9 and 17-18.9 years old age groups. **Discussion:** Despite high inter observer reliability of GP Atlas estimation of BA to predict chronological age, it consistently, significantly underestimates the age of the child in all children, including both boys and girls, as well across all age groups with an acceptably low amount of error metrics of measurement accuracy. Our findings suggest that locally validated GP Atlas standards are needed for accurate assessment of BA. A larger population-based study would be necessary for establishing a validated atlas of a bone age in Malaysia.

Death in custody: medicolegal perspective in Indonesia

Ma'rifatul Ula^{1,2,3}, Mia Yulia Fitrianti⁴, Mustika Chasanatusy Syarifah^{3,5}

¹Haji General Hospital East Java Province, Jl. Manyar Kertoadi Surabaya; ²Faculty of Medicine, Universitas Surabaya Jl. Raya Kalirungkat Surabaya; ³Bhayangkara Hospital H.S. Samsuerti Mertojoso, Jl. Ahmad Yani No. 116 Surabaya; ⁴Ulin General Hospital Banjarmasin, South Kalimantan, Jl. Ahmad Yani KM 2 No.43 Banjarmasin; ⁵Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Jl. Jemursari 51-57 Surabaya

Introduction: Death in custody refers to the death of an individual while under the control or care of law enforcement or correctional authorities. These deaths can occur due to many reasons, including violence behaviors inside inmates, inadequate medical care, suicide, or psychological condition of the prisoners. Such incident raise concerns about human rights, accountability, and overall treatment of individual including medical care before detention. *Discussion:* Death in custody can occur form various factors, especially over capacity. Over capacity creates a breeding ground forum resolved disputes, especially when there are fewer officers compared to the inmate population, further contributing to risk of fatalities. To address this matter, criminal justice system can explore alternatives to incarceration for non-violent offender and violent offender. Improvement and investing in prison infrastructure, improving case management processes, and promoting sentencing reform scan help alleviate over capacity. Effective prison management to prevent deaths in custody is essential to ensure the safety, security, and well-being of inmates and staff. It involves various aspects, including adequate staff training and recruitment, inmate classification and management, healthcare provision and mental health services, and facility maintenance. *Conclusion:* Medicolegal issues require a comprehensive and holistic approach involving policy makers, criminal justice professional, civil society organisation, and other stakeholders. By addressing the underlying causes and implementing evidence-based reforms, it is possible to improve conditions within prisons, enhance safety, and promote successful reintegration into society for individual who have been incarcerated.

Analysis of receptor gene polymorphisms serotonin 2A (5-HT2AR) with aggressive behaviour

Yudha Nurhantari¹, Nurul Amalia², Perdido¹, Wendi Wiradinata¹, Irwan Supriyanto³, Suhartini¹, Rusyad Adi Suriyanto¹

¹Department of Forensic Medicine and Medicolegal, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada Yogyakarta Indonesia; ²Biotechnology Graduate School, Universitas Gadjah Mada Yogyakarta Indonesia; ³Department of Psychiatry, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada Yogyakarta Indonesia

Introduction: Many factors may affect aggressive behaviour, such as genetic, economic, poverty, social and culture, lifestyle, and substance abuse. Many serotonin receptors (5-HT2AR) are studied as it is the largest amount in the brain and is thought to be related to aggressive behaviour in humans. Several molecular studies have found polymorphisms RS6311 in this gene appears in populations with aggressive behaviour and traits associated with aggressive behaviour. However, no study was reported from Indonesia. *Objective:* Analysing the 5-HT2AR rs6311 gene polymorphism and aggressive behaviour among prisoners in Yogyakarta. This is across sectional study involving 136 male prisoner participants in Yogyakarta. Demographic data was collected using a questionnaire. Aggressive behaviour was sored using Buss-Perry Aggression Questionnaire (BPAQ). Venous blood was taken and proceeded to 5HT2AR rs6311 gene polymorphism by Polymerase Chain Reaction-Restriction Fragment Length. Hardy-Weinberg equilibrium was calculated. Statistical analysis was tested using one way ANOVA. *Results:* Hardy-Weinberg equilibrium applies to the distribution of thers 6311 genotype ($\chi^2 = 0.701$, $p = 0.402$). Polymorphism of the gene were G/G (8.82%) A/G (36.76%) and A/A (54.41%). Total BPAQ score results were 66.58 ± 14.18 for G/G; 70.42 ± 14.61 for A/G; and 72.42 ± 13.59 for A/A. One way ANOVA calculation result was $p = 0.573$. *Discussion:* 5HT2AR gene rs6311 polymorphism were identified and total BPAQ score was measured among participants. No significant difference and no relation between them. Polymorphism of rs6311 does not stand alone to modulate aggressive behaviour. More serotonin-dopamine gene polymorphisms have to be analysed simultaneously.

Postmortem characteristics of drowning death in wetland area: A systematic review

Iwan Aflanie, Gusti Muhammad Fuad Suharto, Pandji Winata Nurikhwan

Department of Forensic and Medicolegal, Medical School, Universitas Lambung Mangkurat
Department of Medical Education, Medical School, Universitas Lambung Mangkurat

Background: Drowning is the third leading cause of unintentional injury deaths accounting for 7% of all injury-related deaths worldwide. The latest WHO Global Health Estimates in 2019 indicate that 236,000 people died from drowning. *Objective:* This study aimed to learn post-mortem characteristics, primarily clinical, laboratory, and other findings of drowning death in wetland areas. *Method:* A systematic search guided by Preferred Reporting Items for Systematic Reviews and Meta-analyses was performed using the PubMed database to find relevant literature. The literature was reviewed for previously reported clinical, laboratory, and other findings of post-mortem characteristics of drowning death in Wetland Areas. The Quality of evidence was evaluated using Cochrane Collaboration Risk of Bias (RoB2.0). *Result:* A total of 1636 studies were assessed and screened to give 95 studies selected for data extraction. We include studies that reported clinical, laboratory, and other findings of post-mortem characteristics of drowning death in Wetland Areas. The froth or foam in the respiratory tract was the most common clinical finding, followed by pulmonary edema and haemorrhage, fluid and debris in the stomach, and post-mortem travel abrasions and lacerations on exposed body surfaces. The analysis of electrolyte levels in the pleural fluid was the most helpful laboratory findings for differentiating between freshwater and seawater drowning. Cerebral and pulmonary

oedema were the most common histopathological findings. The diatom test was the most common test to confirm drowning as a cause of death and localised the drowning site. *Discussion:* Our study highlighted that the most common characteristics associated with drowning death in wetland areas were respiratory tract froth, pulmonary oedema and haemorrhage, fluid in the stomach, and the presence of diatom. Understanding the characteristics of gross clinical, laboratory, and other post-mortem findings leads to the betterment of forensic pathologists in diagnosing drowning death.

Plummeting from the heights: Decoding high-rise child falls - A case series

Wan Mohammad Hafiz^{1,2}, Muhammad Izzul¹, Bashirah Mohd Nor¹, Woo Tay Cheong¹, Shahirah Azman¹, Mohamed Swarhib Shafee¹, Faridah Mohd Nor¹

¹Forensic Unit, Department of Pathology, Faculty of Medicine, University Kebangsaan Malaysia, Kuala Lumpur, Malaysia;

²Department of Forensic Pathology, Faculty of Medicine, Sungai Buloh Campus, University Teknologi MARA, Sungai Buloh, Selangor, Malaysia

Introduction: Falls from a height are frequently encountered in accidents, suicides and rarely in homicides, particularly in urban areas. However, it is considered uncommon in the child. *Case:* In a 12-year time span (May 2011-April 2023), there were 23 cases involving children in Cheras, Kuala Lumpur area, and most of them were classified as accidents. Three occurrences of falls from heights in the high-rise building sites will be discussed. All of these cases were left unattended by their parents for a short moment, where by two cases had fallen from the balcony area, and another case fell through a window. *Discussion:* Falls represent the second leading cause of unintentional injury deaths worldwide, and it is one of the most common accidental deaths in urbanised areas particularly, in high-rise buildings. *Conclusion:* In brief, most home accidents are preventable through increased awareness and improvements in the home environment. Consequently, it is important to evaluate the effectiveness of the intervention and how it is being advised to parents to ensure good compliance with the recommendation.

The characteristics of postmortem examinations in Dr. Cipto Mangunkusumo National Central Public Hospital during 2018-2022

Made Ayu Mira Wiryaningsih¹, Fitri Ambar Sari², Aria Yudhistira³, Suptio²

¹Universitas Indonesia Hospital, Depok, Indonesia; ²Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia; ³Dr. Cipto Mangunkusumo National Central Public Hospital, Jakarta, Indonesia

Introduction: Post-mortem examinations for legal purposes in Indonesia can be conducted either in general, police or other government agency hospitals. Dr. Cipto Mangunkusumo National Central Public Hospital (RSCM), a general hospital, provides these forensic medicine services. The legal system in Indonesia authorises police investigators to decide the continuation of forensic examinations on suspected unnatural death cases. *Objectives:* The purpose of this study was to determine the characteristics of post-mortem examinations conducted in RSCM's forensic department. *Methods:* This study is a descriptive cross-sectional study using secondary data from the forensic department in RSCM during January 2018 until December 2022. *Result:* The result of this study showed the prevalence of corpses admitted to forensic department of RSCM for postmortem examination from January 2018 to December 2022 totalling in 4946 cases. Each case is categorised into seven different case status based on police information and examination results. Autopsies (n=584) were conducted in 83.14% of homicide cases, 10.75% of natural death, 2.69% of traffic accidents, 8.68% of suicides, 8.10% of other accidents, 10% of intoxication cases and 50% of unidentified cases. The continuation of each case was determined by the police investigators. Family members who disapprove of autopsies for various reasons would coordinate with the police. But the final decision is made by the investigators. *Discussion:* The importance of autopsies was deemed necessary for criminal/suspected criminal cases. Hence, a complete post-mortem examination was mostly conducted on homicidal/suspected homicidal cases rather than in non-homicidal cases. For future development, post-mortem imaging should be considered.

POSTER PRESENTATIONS

Ruptured intramural pregnancy: A rare case of maternal death

Dong Pei Yen¹, Ahmad Hafizam Hasmi¹, Grace Wong Yi-Li^{2,3}

¹Department of Forensic Medicine, Kuala Lumpur Hospital; ²Department of Radiology, Kuala Lumpur Hospital; ³Department of Radiology, Penang General Hospital

Background: Intramural pregnancy is one of the rarest sites of ectopic pregnancy, and deaths due to this condition are rarer still. It occurs when product of conception is implanted within the myometrium, with no communication with the endometrial cavity or the fallopian tubes. The underlying pathophysiology is not known; However, prior uterine traumas and procedures have been identified as risk factors. *Case:* A 30-year-old lady, gravida 5 para 1+3, at 17 weeks' gestation presented with severe epigastric pain and vomiting prior to being pronounced dead at the Emergency Department. Post-mortem examination revealed an intramural pregnancy which had ruptured and led to fatal haemoperitoneum. The unusual implantation site had gone undetected despite antenatal booking and repeated ultrasound scans. To the authors' knowledge, this is the first reported case of death due to ruptured intramural ectopic pregnancy. *Discussion:* Literature review focuses on the possible

risk factors, clinical symptoms, imaging modalities and ultrasound features, as well as management overview of intramural ectopic pregnancy. *Conclusion:* Due to the variable and nonspecific presentation as well as non-uniform ultrasound criteria in this rare type of ectopic pregnancy, it poses a diagnostic challenge for clinicians. Early detection and management of patients with this condition are key to avoiding catastrophic outcomes as seen in this case.

Silent killer - A case report

Umul Khairil Fatimah Mohd Mussadik, Husna Syaza Hasim, Hafizatul Solehah Zaki, Kay Ly Chng
Forensic Unit, Pathology and Laboratory Medicine (PALM) Department, Sultan Ahmad Shah Medical Centre @International Islamic University Malaysia (SASMEC @IIUM)

Introduction: This case report discusses the challenging situation forensic pathologists face when dealing with sudden unexpected death in a healthy young adult. While thyroid diseases rarely result in death, they can be a potential cause in some cases. The report highlights the importance of considering thyroid pathology as a possible factor in cases where all other potential causes have been ruled out. *Case:* A young adult male from Bangladesh was found unconscious in bed. No external injuries were observed, but the thyroid was obscured due to a cricothyroidotomy performed during resuscitation. Gross examination of other organs, including the heart, appeared normal. However, histological analysis revealed lymphocytic infiltration with significant destruction of follicles in the thyroid, as well as fibrotic changes in the SA node. Unfortunately, thyroid function tests were not conducted initially. While the exact cause of death remained unascertained, the possibility of lymphocytic thyroiditis as a contributing factor was considered. *Discussion:* Lymphocytic thyroiditis should be considered as a potential differential diagnosis for sudden unexpected death. Microscopic evaluation of the thyroid is often overlooked if gross findings are unremarkable and the patient's history does not suggest thyroid disease. Therefore, routine microscopic examination of the thyroid is advised in cases of sudden death, as many cases present without significant clinical symptoms and normal gross findings. Ultimately, it is important to establish guideline for performing standard autopsies, particularly in cases of sudden unexpected death in young adults. It can help ensure thorough investigations and consideration of potential causes, including thyroid pathology.

False positive NS-1 in disseminated melioidosis infection

Hemananthini Palakrishnan, Nurliyana Johar, Nur Sabrina A.Samad, Nuraida binti Khalid, Mohamad Aznool Haidy Ahsorori
Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor

Introduction: False positive NS1 serological test for dengue fever is reported in cases related to viral infection, haematological malignancy and autoimmune disease. Even though coinfection of dengue fever and bacterial sepsis is frequently seen, there are no known documented cases of bacterial infection misdiagnosed as dengue fever. Till date, the cause of false positive NS-1 in bacterial infection is still unknown. *Case:* We present a case report of a morbidly obese 56-year-old Malaysian gentleman with no documented medical illness complained of sudden onset shortness of breath accompanied with fever on the same day. Besides, his wife claimed he had bilateral knee pain for one week. He did not manifest any bleeding tendencies and no recent fogging was done in his housing area. He was brought to the nearest district hospital. Preliminary full blood count showed neutropenia and borderline thrombocytopenia. His NS-1 Ag and IgG were positive while his IgM was negative. He was subsequently transferred to the tertiary hospital but was pronounced dead upon arrival. An autopsy was conducted within 24 hours of a well-preserved body revealed multiple abscesses at his lungs, liver and spleen which were confirmed by histological examination. Microbiological analysis of the blood, lungs and spleen tissue showed growth of *Burkholderia pseudomallei*. His HbA1c level was high. However, dengue PCR of the liver, cerebrospinal fluid and blood were negative. The cause of death was disseminated melioidosis. *Discussion:* Serological test results should not be interpreted in isolation, but rather in combination with results from other laboratory tests, adequate history and thorough clinical examination. The cause of false positive NS1 in this case is still unknown. However, the presence of interfering factors, cross-reactivity and molecular mimicry of serologic proteins towards NS-1 rapid test cannot be ruled out.

Vaping-induced lung injury death in Malaysia: An autopsy case report

Razuini Rahimi^{1,2}, Nur Hidayah Shamsuddin², Norizal Mohd Noor³, Farah Lyna Darwin Egyptoman Darwin²
¹*Department of Forensic Pathology, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia;* ²*Department of Forensic Medicine, Hospital Sungai Buloh, Ministry of Health Malaysia;* ³*Department of Pathology, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia*

Introduction: E-cigarette or vaping product-use associated lung injury (EVALI) is a new disease associated with aerosol inhalation from the device primarily aimed to deliver nicotine. Clinical presentations include cough, shortness of breath, fever, and systemic symptoms. *Case:* We report a case of a 38-year-old gentleman who was brought-in-dead to the Forensic Department and undergone a medico-legal autopsy examination. The deceased was an ex-smoker of fifteen years before switching to e-cigarettes for the past 5 years. He was presented with cough and chest pain for one year which worsened three days prior to his demise. Autopsy examination showed peripheral cyanosis, marked pulmonary oedema and vascular congestion. Microscopic examination of the lungs revealed diffuse alveolar injury with inflammation of the airways. The alveoli were generally thickened, and hyaline membrane formation was observed in some areas. Abundant foamy macrophages,

lymphocytic and eosinophilic infiltrations were seen within the areas of acute lung injury. Foreign body material was also visible in focal areas via polarised light microscopy. *Discussion:* We wish to demonstrate the pathophysiological changes of vaping via autopsy and histopathological examination to create public awareness of the harmful effects of e-cigarette usage.

Plexogenic pulmonary arteriopathy: A case of maternal death with hypoxia

Nurul Jannah Samsudin¹, Farah Lyna Darwin Egyptoman Darwin¹, Nur Hidayah Shamsuddin¹, Siti Nabihah Mustafa¹, Siti Nurmelati Md Isa¹, Noriah Othman², Tan Ran Zhi¹

¹Department of Forensic Medicine, Hospital Sungai Buloh, Ministry of Health Malaysia; ²Department of Pathology, Hospital Serdang, Ministry of Health Malaysia

Introduction: Plexogenic pulmonary arteriopathy is a subgroup of pulmonary arterial hypertension in which a pathognomonic plexiform lesion can be seen histologically. It is a rare pathology with an estimated prevalence between 1% to 3% of the global population. The underlying cause is unknown and it can lead to sudden death. *Case:* We report a case of a 27-year-old pregnant lady, gravida 2 para 1 about 20 weeks of gestation with no known medical illness who presented with worsening effort tolerance and shortness of breath. Due to the symptoms, she went to general practitioner (GP) clinic and found to be hypoxic with 77% oxygen saturation under room air. However, her lungs were clear on auscultation and symptoms did not improve despite nebuliser treatment. She presented with per vaginal bleed, contraction pain and collapsed. Despite resuscitative effort, she was pronounced dead at the clinic. The autopsy revealed cor pulmonale changes comprising of pulmonary hypertension with right ventricular hypertrophy. Microscopically, the pulmonary arterial walls were thickened, characterised by glomeruloid proliferation of endothelium-lined vascular channels (plexiform lesions) with adjacent dilated and congested, vascular channels (dilatation lesions). While the heart showed hypertrophic changes. The vascular pathology was not seen in other organs. These irreversible vascular changes increase the pulmonary vascular resistance resulting to an increase in right sided filling pressures and causing right ventricular hypertrophy. Over time, the failure in compensatory mechanism subsequently led to death. *Discussion:* We wish to highlight that plexogenic pulmonary arteriopathy is one of the differential diagnoses when pulmonary hypertension is suspected in deceased with hypoxia.

A death too fast - Suxamethonium chloride poisoning: A case report

Razuin Rahimi^{1,2}, Siti Nabihah Mustafa², Rupashini Thangamuthu², Muhammad Afif Munshi³

¹Department of Forensic Pathology, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia; ²Department of Forensic Medicine, Hospital Sungai Buloh, Ministry of Health Malaysia; ³Department of Pathology, Faculty of Medicine, Universiti Teknologi MARA, Selangor, Malaysia

Introduction: Suxamethonium chloride (SUX) is a short acting depolarising muscle relaxant commonly used for medical procedures to induce respiratory paralysis. The case report aims to highlight the important post-mortem findings associated with SUX poisoning. *Case:* A female adult health-care worker in her thirties was found dead in her bedroom at home. There were two empty ampoules of IV/IM Suxamethonium Chloride 100 mg/2 ml found next to the body. The autopsy revealed an adult female with multiple needle injection marks. Generally, gross examination was in keeping with previous reports in which the lungs showed marked congestion and oedema, with froth in the airways. The liver showed foci of petechial haemorrhages and confluent haemorrhages. Other internal organs showed diffuse vascular congestion. Microscopically, significant pathological changes were seen in the lungs and kidneys with areas of pulmonary infarction and acute tubular necrosis. These findings were not reported in the previous literature. SUX was not detected from the toxicological analysis. Correlating the circumstantial evidence at the scene of death, autopsy and microscopic findings, the cause of death was certified as SUX poisoning. *Discussion:* We wish to demonstrate the autopsy and histopathological findings associated with acute SUX poisoning culminating in death due to respiratory paralysis.

Work-related injuries: Autopsy case series

Nur Liyana Johar¹, Hemananthini Palakrishnan¹, Nur Sabrina A. Samad¹, Nuraida Khalid¹, Mohamad Aznool Haidy Ahsorori¹, Mohamad Farhan bin Mormin²

¹Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor; ²Department of Forensic Medicine, Hospital Pengajar Sultan Zainal Abidin, Gong Badak, Terengganu

Introduction: Fatalities due to occupational hazard are not unusual in our society. In cases of work-related fatalities, autopsies are conducted to determine the cause of death and to identify any safety issues that may have contributed to the incident. Here, we illustrated three case series of work-related injuries in which autopsies contributed to a better understanding of the event's dynamics. *Case:* A 35-year-old Bangladeshi garbage collector of the city municipality had accidentally wedged in between the garbage truck and a lamp post when the truck was reversing. He had massive haemoperitoneum resulted from the crushed liver and left kidney. His death was attributed to blunt trauma to the abdomen. Next, a 21-year-old Burmese who worked at a food manufacturing factory, died after being electrocuted from an exposed wire that was left unattended on the floor. Autopsy showed Joule burn over the left foot and left hand. Finally, an 81-year-old Chinese man had allegedly sustained grinder injury to the upper limb while renovating a house. The victim sustained a sharp cut over the right upper arm. The rotating disc on a grinder had transacted the skin, subcutaneous fat and muscles, and both brachial vessels which

led to fatal exsanguination. *Discussion:* Identifying and detailing the injuries in work-related death is crucial in order to put things in perspective to understand the incident better. Thus, it will provide better opportunity to prevent similar occurrence in the future. That is where our role as pathologist in collaboration with investigating safety officer is important.

Case report: He could have been saved. Death due to peritonitis following a penetrating injury to the abdomen

Poh Kuang Jih¹, Amir Saad Abdul Rahim¹, Chandroth Navin Pankajakshan¹, Lim Chia Zhen²

¹Department of Forensic Medicine, Hospital Pulau Pinang; ²Forensic Medicine Unit, Hospital Balik Pulau

Introduction: Penetrating injury to the abdomen can result in life-threatening immediate or delayed complications, particularly due to bleeding and infection. We present and discuss the findings of a post-mortem examination case which revealed acute peritonitis resulting from a penetrating injury to the abdomen that had been overlooked by the clinicians. *Case:* A 42-year-old Bangladeshi man was presented to the tertiary hospital following an alleged self-inflicted injury. The attending clinician diagnosed and treated him as a case of: incised wound of the abdomen. He underwent wound suturing of 8 stitches and was discharged within an hour after the procedure. After 18 hours post discharge, the Bangladeshi man was brought in dead to the Department of Forensic Medicine. Post-mortem examination revealed a single penetrating injury located at the left lumbar region, which penetrated through the skin, subcutaneous tissue, rectus abdominis and the jejunum. Fibrinous exudate was seen on the serosa of the small intestines and the greater omentum, along with exudative ascites within the peritoneum, consistent with the findings of an acute case of peritonitis. *Discussion:* Penetrating injuries to the abdomen can result in visceral injuries, with the small intestine being commonly affected apart from the liver. Our post-mortem examination uncovered a case of acute peritonitis as a result of a perforated jejunum from an alleged self-inflicted injury. Since the symptoms of small intestine perforation take time to manifest, it is likely that the decedent succumbed to peritonitis which developed after being discharged home from the tertiary hospital without a sufficient prolonged observation.

Case report: Who shot the sergeant?

Amir Saad Abdul Rahim, Chandroth Navin Pankajakshan, Poh Kuang Jih, Zufar Ismail Zeid, Goon Hoong Tatt, Sathya Rao Ramachandran

Department of Forensic Medicine, Hospital Pulau Pinang

Introduction: Firearm related deaths are uncommon in Malaysia, owing to the laws that restrict gun ownership. Law enforcers such as police officers were allowed to carry firearms in accordance with Section 85 of Police Act 1967. We report a case of firearm related death involving a police sergeant, discuss the findings of the post-mortem examination and the possible manner of death. *Case:* A police sergeant from a District Police Headquarters was reported to have been found lying in a pool of blood at the rest area of said building. The decedent was holding a handgun in his dominant hand when the body was discovered. Post-mortem examination showed (3) THREE penetrating injuries which are consistent with that caused by a firearm such as a handgun. The injuries were located at the left chest, the jaw and the head, all of which were accompanied by an entry wound together with a corresponding exit wound. The injuries towards the chest and jaw did not cause severe injury to the major organs and big vessels. The gunshot wound to the head which penetrated the bilateral hemispheres of the brain was fatal in nature. *Discussion:* The multiplicity of the gunshot injuries raised questions regarding the likely manner of death. As the first two shots were not fatal in nature, the final shot was the one that caused death. In addition, all three injuries appeared to be self-inflicted from post-mortem findings. In conclusion, the likely manner of death from our perspective is suicidal in nature.

Make up ain't always pretty: A rare case of choking in an adult

Vomanasri Krishnan¹, Ding Chee Swan², Zuraida MD Zainuri¹

¹Department of Forensic Medicine, Hospital Putrajaya; ²National Institute of Forensic Medicine, Federal Territory of Kuala Lumpur

Introduction: Choking is a serious hazard not only for children but for adults especially with learning disabilities. People with learning disabilities are more likely to put non-food items in their mouths. We present a case of choking with unusual foreign body in an adult. *Case:* A 20-year-old partially dependent male with underlying epilepsy and learning disabilities, started coughing and showing abnormal behavior at home then passed out soon after. Upon resuscitation in hospital, the doctor discovered a soft pink foreign body at the epiglottic area, obstructing the airway. On post-mortem examination, cyanosis appeared over lips and nail beds with poor oral hygiene. The examinations of other organs were unremarkable. The foreign body removed from the epiglottic area was identified as a pink makeup tool (beauty blender). Further history from the parents revealed that the beauty blender indeed belonged to deceased's sister and he might have swallowed it without notice. *Discussion:* This case aims to raise awareness of higher morbidity and mortality of choking in adults with learning disabilities. In a Danish study, researchers found that the incidence of fatal choking among people with severe learning disability was almost 100 times greater than in the general population. Routine health care for them should include choking and swallowing risk assessment, also focusing on oral care because they often suffered from dental problem, either due to side effects of prescribed medications or abnormal eating habits.

Scooby Doo: Drown without a clue

Muhamamad Marwan Zulkify Apandi, Mohd Ariza Kamaruddin, Mohd Redzuan Mohd Noor, Ahmad Faisal Harun @ Ismail, Norzita Mohamed, Mohd Mukhlee Shah Mat Rahim, Siti Wira Md Yaro
Department of Forensic Medicine, Hospital Sultanah Nur Zahirah, Kuala Terengganu

Introduction: Snorkelling is depicted as a simple and leisurely activity that is safer than scuba diving because it does not require a licence, training, sophisticated equipment, or deep water. However, this perception is far from true. *Case:* We report three drowning cases while snorkelling that were presented to the Forensic Department of Hospital Sultanah Nur Zahirah, Kuala Terengganu, Malaysia. The snorkelers were aged 17 to 35, without any known medical illness. All were allegedly wearing adequate safety gear. The triggering factors resulting in the drowning were unknown. *Discussion:* The public superstitious belief of drowning cases is the annual obligatory human sacrifice to the sea. To dispel this belief, we have conducted literature reviews and present the possible theories that may have led to the deaths of our cases, such as rapid-onset pulmonary oedema, shallow-water blackout, and rapture of the deep.

The travelling killer clots

Muhammad Aniq MA¹, Ahmad Syahmi A², Mohd Redzuan MN¹, Mohd Ariza K¹, Ahmad Faisal H¹, Muhammad Marwan ZA, Siti Wira MY
¹Hospital Sultanah Nur Zahirah; ²University Sultanah Zainal Abidin

Introduction: Pulmonary thromboembolism (PTE) is one of the most under diagnosed conditions in British death certification. According to Saukko *et al.*, 20% of PTE cases were ambulant and healthy without predisposing factors such as injury, surgical operation or immobility. One of the risk factors for blood clot formation is immobile and sitting still on a long-haul flight. Gavish *et al.* (2011) found that travelling more than four hours was a risk of developing blood clots. Lack of evidence in the literature, limited number of studies that are heterogeneous in nature and limited patient numbers are the factors that hindered forensic pathologists from establishing PTE as a cause of death. *Case:* We present a case of 18 an old girl with no other risk factor of Pulmonary Thromboembolism (PTE) except for a history of 8-hour air travel. She complained of pain and swelling over her left calf, progressing in nature prior to her demise. Post-mortem revealed a saddle thrombo-embolus across the pulmonary trunk, and the clots attended into the main bronchus of the pulmonary arteries. The cut section of calf muscles revealed deep vein thrombosis with the presence of a greyish-red clot. *Discussion:* Long-haul flights up to eight hours and longer increased the risk for PTE. Forensic pathologists must have a high index of suspicion for PTE even if the deceased was healthy and only presented with calf pain after a long-distance air travel.

A case report on drug-induced multiple gastric ulcerations

Nurul Sofea Nor Hishamuddin, Mohammad Shafie Othman, Ain Nurfarahana Hamdan, Nur Aida Zainuddin
Department of Forensic Medicine, Hospital Raja Permaisuri Bainun, Ipoh, Perak, Malaysia

Introduction: Drug-induced gastric ulcers are defined as defects in the stomach wall extending through the muscularis mucosa due to prolonged use of certain medications. In 2005, Zabidah *et al.* discovered 41% of the Malaysian population surveyed took traditional medications and 62% of the traditional medications examined contained steroids. According to Okabayashi *et al.*, 30% of 360 cases of gastric ulcers had multiple ulcers, 0.8% had more than 10 ulcers, with the highest number reported being 13 ulcers (0.3%). However, only a few studies have been done and devoted solely to the subject of drug-induced gastric ulcers. *Case:* We hereby report a case of multiple gastric ulcers in a 52-year-old wife of an immigrant worker who experienced upper gastrointestinal bleeding symptoms for one week. However, no medical attention was sought. A post-mortem examination revealed massive coffee-ground gastric content with melaena. At least 15 scattered, sharply demarcated ulcers, each measuring 5mm in diameter discovered all over the stomach. Histological examination showed multiple necrotic ulcers with complete loss of gastric mucosal folds, associated with fibrinopurulent exudates. Additional history revealed that she had been taking various over-the-counter traditional medications throughout her lifetime to improve her physical well-being. *Discussion:* To date, the case of drug-induced multiple gastric ulcers at autopsy is under reported. Adulteration of herbal products with exogenous steroids masquerading as traditional conventional medication is a recurrent problem encountered in Malaysia, especially among immigrants. Thus, a strict policy on traditional medication and its adulterants should be implemented, which in turn would reduce the case of steroid-induced gastric ulcers in the community.

Unusual biliary atresia sequela: Probable due to vitamin K deficiency bleeding in infancyLuqman BI¹, Zubair AR²¹Unit of Forensic Medicine, Hospital Enche Besar Hajjah Khalsom, Kluang; ²Department of Forensic Medicine, Hospital Sultan Ismail, Johor Bahru

Introduction: Biliary atresia is an obstructive biliary disease with unknown aetiology. This disease is rarely known to cause sudden death among infants. The disease causes the bile to be blocked from moving to the small intestine from the liver via the bile duct. Biliary atresia could cause vitamin K-dependent coagulation factors deficiency due to cholestasis-induced fatmal absorption in the small intestine. This report describes a sudden death case of a male infant who was found to have spontaneous intracranial haemorrhage due to probable vitamin K deficiency with undiagnosed biliary atresia at the time of the post-mortem examination. *Case:* A 3-week-old male Indonesian baby was brought in dead to Hospital Sultan Ismail, Johor Bahru. External examination, the body was diffusely jaundiced with no obvious external marks of injury. Examination of the liver shows atresia of the hepatic duct, biliary duct, and gallbladder, with dilated bile duct seen on cross-section. Internal examination showed left subdural blood clot, right parietal subarachnoid haemorrhage, and right intraventricular haemorrhage. No scalp contusion seen. Microscopic histological examination, presence of bile duct obstruction. Thus, it is concluded that the death was brought upon by spontaneous intracranial haemorrhage complicating biliary atresia. *Discussion:* Intracranial haemorrhage is a very rare complication of biliary atresia. Biliary atresia could cause vitamin K deficiency bleeding. Furthermore, he was delivered at home and never given a vitamin K injection. Vitamin K deficiency bleeding in infancy could lead to spontaneous intracranial haemorrhage.

Wolf in sheep's clothing: A diagnostic dilemma in a case of fatal thyrotoxic cardiomyopathy who was involved in road traffic collisionYap Oi Chia¹, Mohamad Aznool Haidy Ahsorori¹, Nuraida Khalid¹, Faridah Mohd Nor², Mohd Swarhib Hj. Shafee²¹Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor; ²Department of Forensic Medicine, Hospital Canselor tuanku Muhriz, Kuala Lumpur

Introduction: Thyrotoxic cardiomyopathy is an uncommon but life-threatening complication of hyperthyroidism which can lead to considerable morbidity and mortality despite early recognition and treatment. *Case:* A 49-year-old man with no known medical illness was allegedly involved in a motor vehicle incident. He presented to the Emergency Department (ED) 4 hours later with the complaint of chest pain. He was noted to have reduced consciousness, tachycardia and hyperthermia. He developed fast atrial fibrillation in which cardioversion and antiarrhythmic agent were given. He was pronounced dead 22 hours after the incident. The post-mortem examination showed diffuse enlargement of thyroid gland with histological diagnosis of nodular hyperplasia. The thyroid function test showed primary hyperthyroidism. The heart was minimally enlarged and histologically, there was foci of myonecrosis, fibrosis and hypertrophic cardiomyocytes. There was evidence of acute tubular necrosis in the kidneys. Externally, there were superficial blunt injuries which were consistent with the pattern of motor vehicle collision. There was associated fractures of medial malleolus of left tibia and cervical vertebrae with microscopic evidence of fat emboli in the lungs and kidneys. His death was attributed to thyrotoxic cardiomyopathy due to toxic multinodular goiter which was worsened by fat embolism syndrome as a result of bony fracture due to road traffic crash. *Discussion:* An apparent trauma case may turn out to be death due to medical illness or the trauma only plays an indirect role in causing the death. Hence, meticulous interpretation of the available information with an open mind is essential to prevent misdiagnosis and miscarriage of justice.

Exaggerated placental site: The culprit in postpartum haemorrhageMohamad Farhan Mormin¹, Mohd Hazlin Jaafar², Yap Oi Chia²¹Hospital Pengajar Universiti Sultan Zainal Abidin, Kampus Gong Badak, Kuala Nerus, Terengganu; ²Hospital Sultanah Aminah, Jalan Persiaran Sultan, Johor Bahru, Johor

Introduction: Exaggerated placental site (EPS) is most often discovered retrospectively after a first trimester miscarriage on histological examination of curettage specimens, but it may occasionally cause fatal torrential postpartum haemorrhage. We illustrated the EPS manifesting as postpartum haemorrhage and discuss the literature on this uncommon lesion. *Case:* A 27-year-old Indonesian lady, para 2 developed massive postpartum haemorrhage following unattended home delivery. A conscientious post-mortem examination was conducted as per police order. External examination revealed a pallid-appearing woman of medium build with mildly distended abdomen. No external marks of injuries were observed including in the genital tract. Vast majority of the internal organs were pale upon examination. The gross examination of the uterus showed enlarged and flabby uterus which measured 21.5 x 15 x 5.5 cm in dimension. Neither residual haematoma nor retained product of conception were seen upon sectioning. The histological examination of the uterus showed intermediate trophoblast infiltration within the endometrium and myometrium surrounded by oedema. It was positively highlighted by the immune histochemistry staining. The exaggerated placental site reaction resulted in poor uterine contractility and eventually led to inevitable extensive postpartum haemorrhage. *Discussion:* Exaggerated placental site is a histological diagnosis wherein the intermediate trophoblast of the implantation site proliferates exuberantly and extensively into the myometrium. The EPS might cause postpartum atonic uterus which might lead to fatal torrential postpartum hemorrhage.

Macrophages infiltration into tissues in severe dengue infection: An autopsy case report

Mohamad Rusydi Mazlan, Rupashini Thangamuthu, Ikrimah Idris, Azmyza Azmy, Rohayu Shahar Adnan
Department of Forensic Medicine, Hospital Sungai Buloh, Ministry of Health Malaysia

Introduction: Viral infection typically resulted in reactive lymphocytosis. However, dengue virus (DENV) primarily infects blood monocytes and tissue macrophages, thus resulting in monocytosis. The case report aims to discuss the gross and histopathological findings of dengue infection with highlight to macrophages tissue infiltration. *Case report:* A 19-year-old adult male who had complained of fever and gastrointestinal symptoms was tested positive for dengue fever by a rapid combo test. He was found dead at home the next day. *Results:* The autopsy revealed an adult male with pale conjunctivae and nail beds. Gross examination showed pericardial, pleural and peritoneal effusions. The heart showed minimal subendocardial haemorrhage below the aortic valve. The spleen was markedly heavy. Other internal organs showed diffuse vascular congestion. Microscopically, widespread inflammatory response and disseminated bleeding throughout the internal organs with significantly heavy macrophages infiltration in the brain and lungs noted. IgM serology for dengue was positive. Dengue virus infected macrophages, leading to release of cytokines and widespread inflammatory response with disseminated bleeding. Correlating the history prior to death, autopsy and microscopic findings, the cause of death was concluded as multi-organ failure due to severe dengue infection. *Discussion:* This case report highlights marked macrophages tissue infiltration especially lungs and brain in a decedent who died of dengue infection.

Autopsy diagnosis: A rare posterior perforation of gastric ulcer

Nur Sabrina S, Nuraida K, Mohamad Aznool Haidy A
Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor

Introduction: Gastric ulcer perforation is less common than duodenal ulcer perforation. Posterior gastric ulcer perforation is even rarer and usually has a distinct and delayed presentation that carries higher morbidity and mortality. As the posterior gastric ulcers erode into the lesser sac, which is a potential space behind the stomach, the patient does not typically present as an acute abdomen as in other cases of perforated viscus. We presented a case of a death in custody, in which the death occurred after two weeks of initial presentation. *Case:* A 51-year-old gentleman was found unconscious in a prison cell by other inmates. He had a history of epigastric discomfort and reduced appetite with weight loss which brought him to medical attention two weeks prior to his demise. He was treated for dyspepsia as an outpatient. Postmortem examination revealed a thin-built male adult. No external injuries were seen on the body, and subcutaneous tissue dissection was unremarkable. A posterior gastric ulcer perforation of the body of the stomach along the lesser curve was noted. There was a sealed collection of necrotic tissue and pus inside the lesser sac. No perforation was seen at the anterior surface of the stomach or the duodenum. No peritonitis. Examination of the rest of the gastrointestinal tract was unremarkable. Laboratory investigation showed elevated white blood cells, Blood C + S showed mixed growth of *Escherichia Coli*, *Klebsiella Pneumoniae*, *Aeromonas Hydrophila* (Aerobic) and *Proteus Mirabilis*, *Klebsiella Pneumoniae* and *Escherichia Coli* (Anaerobic). Histopathological examination showed benign gastric ulcer with no evidence of *Helicobacter pylori* infection. *Discussion:* Among reported cases of posterior gastric ulcer perforation, nearly half of them were diagnosed during autopsy. This case highlights the importance of maintaining a high index of suspicion in cases with equivocal presentation, especially with patient under special circumstances.

Rectus sheath haematoma following caesarean delivery: An autopsy case report

Mohd Hazlin bin Jaffar, Nuraida binti Khalid, Mohamad Aznool Haidy bin Ahsorori
Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor

Introduction: Rectus sheath haematoma (RSH) is the accumulation of blood within the sheath of rectus abdominis muscle, resulting from either the disruption of the inferior epigastric vessels or a direct tear of the muscle itself. Frequently misdiagnosed, it can be potentially life-threatening. It is also considered a rare complication of caesarean delivery. Thus, there is a small number of reported death cases. *Case:* A healthy 30-year-old primigravida, with an uneventful antenatal period, had undergone an emergency caesarean section delivery at term due to fetal distress. The procedure was reported to be uncomplicated. However, she developed shortness of breath a few hours after the procedure. During resuscitation, she appeared pale, and the abdomen was found to be distended. She was pronounced dead within 24 hours post-delivery. The post-mortem examination revealed an obese lady with extensive bruise on the right lower aspect of the abdomen. Further examination showed a massive haematoma surrounding the rectus sheath layer and abdominis muscles. It was associated with substantial haemoperitoneum. Examination of the reproductive organs showed intact sutured uterus with no injuries seen. No signs of pulmonary thromboembolism. Histologically there was no evidence of amniotic fluid embolism. The death was attributed by postoperative massive rectus sheath haematoma due to injury to the inferior epigastric vessel. *Discussion:* The rarity of RSH following post-caesarean section compared to other obstetric complications makes it a greater challenge in diagnosis. Nonetheless, timely diagnosis is essential in reducing maternal and perinatal morbidity/mortality associated with this condition.

The mysterious caseating granulomas: Caseseries

Rashed Shatnawi^{1,2}, Wan Mohammad Hafiz^{2,3}, Muhammad Izzul², Mohamed Swarhib Shafee², Faridah Mohd Nor²

¹Department of Forensic Medicine and Toxicology, Faculty of Medicine, Yarmouk University, Irbid, Jordan; ²Forensic Unit, Department of Pathology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia; ³Department Of Forensic Pathology, Faculty of Medicine, Sungai Buloh Campus, Universiti Teknologi MARA, Sungai Buloh, Selangor, Malaysia

Introduction: Diagnosing multiple caseating granulomas without an obvious cause can be challenging due to various potential underlying conditions. This case series examines two young adults with multiple caseating granulomas in different organs of unknown cause. The absence of tuberculosis and other significant infections, along with the presence of caseating granulomas, could raise suspicion for an underlying immunodeficiency disorder, like chronic granulomatous disease (CGD). **Case 1:** A 27-year-old male presented with a pus-filled lump on his chest. Examination revealed necrotic masses and lesions in multiple organs. Laboratory tests showed elevated Troponin-I and high potassium levels, while microbiological tests identified *Streptococcus vestibularis* infection. Tuberculosis and other infections were ruled out. Histology revealed caseating granulomas in various organs. The cause of death was invasive streptococcal infection. **Case 2:** Another 27-year-old male presented with no significant external findings. Examination showed a whitish lesion in the midbrain, pleural adhesions, and pericardial thickening. Laboratory tests showed elevated CK-MB and Troponin-I levels, while microbiological tests identified *Klebsiella* and *Bacillus* species in blood and lung tissue cultures. Tuberculosis and other significant infections were also ruled out. Histology revealed liquefactive necrosis of the pons, myocarditis, and caseating granulomas in the lungs and mesenteric lymph nodes. The cause of death was septicemia due to *Klebsiella* infection associated with acute myocardial infarction. **Discussion:** These cases emphasize the diagnostic challenge of multiple caseating granulomas of unknown origin. Underlying immune deficiency disorders such as CGD, should be considered. Further investigation and awareness are crucial for accurate diagnosis and appropriate management.

Non-traumatic intracranial haemorrhage: Have you ruled out leukaemia?

Nabila Huda MY¹, Zubair AR²

¹Unit of forensic Medicine, Hospital Enche Besar Hajjah Kalsom, Kluang; ²Department of Forensic Medicine, Hospital Sultan Ismail, Johor Bahru

Introduction: Intracranial haemorrhage (ICH) is the second most common complication which may lead to death among patients diagnosed with acute myelogenous leukaemia (AML). Differential diagnosis in post-mortem examinations of non-traumatic ICH rarely includes AML as it is an uncommon autopsy finding since AML patients commonly died due to sepsis in hospital setting, in which do not require post-mortem examination. **Case:** We present you a case of 28-year-old Bangladeshi with no-known medical illness who developed sudden onset of dyspnoea and succumbed to death. Post-mortem examination of the brain showed cerebral oedema causing flattening of the gyri and narrowing of the sulci. Cut sections showed extensive left frontal lobe haemorrhage, multiple foci of intracerebral haemorrhage at right frontal lobe (3x3x2cm), right parietal lobe (3x3x3cm) and right temporal lobe (2x1x1cm). The intracerebral haemorrhage also forms focal subarachnoid haemorrhage. Cerebral arteries were intact. There were no signs of external injuries. Apart from splenomegaly, other organs were grossly normal. Histopathologic examination display abundance of blast cell infiltration within the parenchyma of visceral organs including the brain and bone marrow. Immuno histochemistry stain confirmed acute myeloid leukaemia. Therefore, the cause of death was concluded as intracranial haemorrhage complicating acute myeloid leukaemia. **Discussion:** Intracranial haemorrhage is a common complication in leukemic patients, however it is unusual for ICH to be the presenting sign that leads to the diagnosis of leukaemia. One should raise clinical suspicion and consider sending histopathology samples, specifically bone marrow tissue in patients with non-traumatic ICH to exclude leukaemia.

Rare cause of nontraumatic subdural haematoma: Cerebral venous sinus thrombosis complicating septicemia

Wan Mohammad Hafiz^{1,2}, Muhammad Izzul¹, Rashed Shatnawi^{1,3}, Mohamed Swarhib Shafee¹, Faridah Mohd Nor¹

¹Forensic Unit, Department of Pathology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia; ²Department of Forensic pathology, Faculty of Medicine, Sungai Buloh Campus, Universiti Teknologi MARA, Sungai Buloh, Selangor, Malaysia; ³Department of Forensic Medicine and Toxicology, School of Medicine, Yarmouk University, Irbid, Jordan

Introduction: Subdural haematoma is often associated with a traumatic head injury, either inflicted or accidental. A few natural causes, although uncommon, have been discussed including haemostatic disorder, vascular anomalies, cerebral sinus thrombosis or infection that can cause subdural haemorrhage. **Case:** A 36-year-old female with underlying diabetes mellitus and newly diagnosed autoimmune disease, who had defaulted treatment for renal abscess, was found unresponsive in the house by her husband and died later upon arrival to the hospital. Autopsy showed no significant marks of injury on her body. Head examination revealed the presence of the subdural haematoma, measured 12x6 cm on the right temporal region and weighed 25 g with a thrombus in the right transverse sinus. However, no cerebral venous infarction was found. Multiple abscesses were seen in the right lung, kidneys, and peripancreatic area, mainly at the tail of the pancreas. Blood culture isolated *Streptococcus agalactiae* and *Candida* species. Pus culture from the lungs, kidneys, peripancreatic revealed *Candida albicans*. Histology of the dural region showed acute haematoma with fibrin infiltration and several neutrophilic infiltrations. Histology from other organs such as the lungs, kidneys and peripancreatic were consistent with abscess formation. **Conclusion:** Recognition of other uncommon causes of non-traumatic subdural haematoma, such as cerebral sinus thrombosis,

is paramount in forensic pathology. Identifying the underlying aetiology can significantly impact an accurate determination of the cause and manner of death, enabling forensic experts to provide critical information to legal authorities, thus aiding in the pursuit of justice.

Suicide by means of arterio-venous fistulacannulation: A case report

Zufar Zeid, Chandroth Navin Panjakashan
Department of Forensic Medicine, Hospital Pulau Pinang

Introduction: A case of suicide committed by self-cannulation of an arterio-venous fistula is presented. Atypical methods of suicide require careful deliberation to ascertain the cause and manner of death. The correlation between chronic diseases and suicidal actions have been well-established in the medical literature. *Case Report:* A 44-year-old male who suffered from end-stage renal disease was reported to be unresponsive in his room after cleaners discovered blood seeping out from below his door and into the hallway. Upon gaining access into the room, investigators found the decedent lying on his side on the floor in a pool of blood. He was pronounced dead at the scene and police investigation found no evidence of foul play. History taken from a staff member at the haemodialysis center revealed the decedent being progressively morose as well as having had suicidal ideation expressed verbally. An autopsy was performed. The body exhibited diffuse pallor and faint hypostasis. A 21-gauge butterfly needle attached to an infusion tubing was found to have been cannulated into the decedent's left brachiocephalic fistula with the tube left in a 'free-flow' state. The cause of death was determined to be due to exsanguination due to cannulation of the left brachiocephalic fistula. *Discussion:* Cases with a typical presentation require much deliberation by the pathologist prior to determining the cause and manner of death. This includes a thorough examination of the body and the scene of death, astute history taking, and the cooperation of the investigating police. We compare this case to similar instances in literature and highlight the correlation between chronic diseases with suicidal action as well as disease-knowledge-related suicides.

The "deadly leather"

Asif Amri Hussin, Muhammad Uzair Ahmad Suriani, Nurul Huda Husna Harun
Department of Forensic Medicine, Queen Elizabeth Hospital

Introduction: A rare but possibly lethal contagious disease is diphtheria. The bacterium *Corynebacterium diphtheriae* is the culprit, and it can cause mild to potentially fatal infections. The prevalence of the disease was significantly reduced in Malaysia as a result of the country's active immunisation campaign and high vaccination rates, and today it is seldom seen in clinical settings. Due to the diversity of its population, which includes a sizeable number of immigrants, Sabah periodically has isolated cases of diphtheria. The major issues are probably transportation, lack of knowledge and awareness, budgetary constraints, and poor access to the medical facility. A deadly diphtheria case was reported by us. *Case:* A three-year-old, non-local boy was brought in dead to the hospital. He presented with a history of fever and neck swelling for five days. He coughed up blood on the day of his death before losing consciousness. Upon post-mortem examination, it was discovered that the upper airways had darkish membrane and haemorrhagic cervical lymph nodes. *Discussion:* This case highlighted the need for a wider immunisation campaign and awareness, particularly among vulnerable and marginalised communities such as immigrants. The greatest first step towards making Malaysia a diphtheria-free nation may be to facilitate, educate, and reach out to these communities, though one possibility may be to amend pertinent legislation relating to infectious diseases.

U5 death investigation: Late-presentation of congenital diaphragmatic hernia

Soon Siew Han¹, Jessie Hiu², Kimyin Tan¹, Hor Jie Ning³
¹Forensic Medicine Unit, Lahad Datu Hospital; ²Forensic Medicine Department, Queen Elizabeth Hospital; ³Forensic Medicine Unit, Hospital Duchess of Kent, Sandakan

Introduction: Congenital diaphragmatic hernia (CDH) is a relatively common birth defect, affecting 2-5/10,000 live births. Most cases are diagnosed during antenatal or shortly after delivered when baby present with respiratory distress. Occasionally the presentation is delayed and may be difficult to diagnose clinically. *Case:* We present two cases of delayed presentation of CDH. One was a baby who presented at day 15 of life with history of rapid breathing and cyanosis but was pronounced dead on arrival at hospital. The second case was a 3-year child who presented with four days history of colicky abdominal pain. Child was diagnosed as acute gastroenteritis at the Emergency Department and was given out-patient treatment. At home, child's condition deteriorated and was subsequent brought in dead to the hospital. Radio-imaging study of both cases showed loops of bowel in the left chest cavity with trachea and heart pushed to the right. Autopsies showed left Bochdalek congenital diaphragmatic defect with part of abdominal content herniated into the left pleural cavity. There was no intestinal malrotation or pulmonary hypoplasia observed. *Discussion:* Late-onset CDH symptoms can be subtle and may be misdiagnosed despite numerous case reports published in the literatures. The autopsies performed on these cases as part of under 5 death investigation provided an opportunity for creating awareness among clinicians. This in turn aim to prevent similar mortality in future as appropriate diagnosis and prompt surgery carries good prognosis in late-onset CDH.

Adipositas cordis: A rare cause of sudden cardiac death

Hemananthini Palakrishnan, Nurliyana binti Johar, Nur Sabrina binti A. Samad, Nuraida binti Khalid, Mohamad Aznool Haidy bin Ahsorori

Department of Forensic Medicine, Hospital Sultanah Aminah, Johor Bahru, Johor

Introduction: Adipositas cordis or also known as obesity cardiomyopathy, is a rare form of cardiomyopathy. It is characterised by extensive infiltration of adipocytes into the myocardium, primarily of the right ventricle, without degeneration of the myocytes or replacement-type fibrosis. The diagnosis usually incidental during post-mortem of an obese female patient. Even though it's a controversial diagnosis, there is an increase in the number of complications and deaths by this rare disease. *Case:* We presented a case of a 50-year-old Malaysian lady who was found dead during sleep. She was well prior to her demise and with normal annual medical check-ups. Her BMI was 33.3kg/m². There were xanthelasma over her bilateral upper eyelids. Examination revealed a borderline enlarged heart with patent coronary arteries arising from the ostia. No structural abnormalities seen. Histologically, there was transmural fatty infiltration of the myocardium of the right ventricle without myocyte degeneration and fibrous tissue replacement. No similar fatty infiltration seen at the septum and the left ventricular wall. Sections of the kidneys showed multiple fociglobal glomerulosclerosis. No diabetic or hypertensive nephropathy seen. Her HbA1c was 6.0%. *Discussion:* The pathogenesis of adipositas cordis is complex and multifactorial. Thus, a thorough post-mortem examination should not only distinguish it from other conditions such as arrhythmogenic right ventricular cardiomyopathy but also evaluate for other obesity related diseases such as hypertension and coronary atherosclerosis.

Cystic medial necrosis in a case of ruptured atherosclerotic ulcer of abdominal aorta

Sharimini Nair P. Nagarajan¹, Asyraf Md Najib², Nor'amirah Ahmad¹, Khairul Anuar Zainun^{1,2}

¹Department of Forensic Medicine, Hospital Sultan Idris Shah, Serdang, Selangor; ²Department of Pathology, Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia

Introduction: Cystic medial necrosis (CMN) is a condition that affects major arteries, particularly the aorta. Aortic dissection, aortic aneurysm, and aortic rupture are all known to be caused by CMN, which is also linked to connective tissue disorders such as Turner, Ehlers-Danlos, and Marfan syndromes. Aortic wall fragility may be the primary cause of the occurrence of CMN. The main characteristic of CMN is elastic tissue fragmentation and separation of the elastic from fibromuscular parts of tunica media by small cleft-like areas with resultant widespread normal elastic laminae tissue loss. These spots of tissue loss are filled with connective tissue's amorphous extracellular matrix and resemble, but are not true cysts. *Case:* We presented a brought-in-dead case of a previously healthy young man who was found unresponsive in his room. The post-mortem examination revealed neither significant marks of external injuries nor relevant syndromic features but presence of massive retroperitoneal hematoma. Further examination has demonstrated ulcerated atherosclerotic abdominal aorta at the infrarenal region with presence of aortic dissection from the level of renal region distally. Post-mortem histopathological examination showed atheromatous changes of the aortic wall and features of CMN was confirmed with immunohistochemical staining. *Conclusion:* CMN is a potential aetiology of ruptured atheromatous abdominal aorta presented as sudden and unexpected death. A histopathological study is required to diagnose CMN. Immunohistochemical staining will help with the diagnosis further by outlining its common histological features.

Sudden death from glial tumour in children

Reuben Fernandez¹, Wan Nurul Azimah Jamalludin¹, Jessie Hiu², Muhammad Uzair Ahmad Suriani², Nor Haizura Abd Rani³

¹Forensic Medicine Unit, Labuan Hospital, Labuan Federal Territory; ²Department of forensic Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah; ³Department of Pathology, Queen Elizabeth Hospital, Kota Kinabalu, Sabah

Introduction: Death due to central nervous system-related pathologies is less common compared with cardiac causes. The most common causes encountered in forensic practises include severe trauma, haemorrhage, epilepsy, and infection. Occasionally, forensic pathologists come across cases where the central nervous system tumour was not diagnosed until the person passed away. *Case:* In this case report, a 3-year-old girl was found to have non-specific symptoms like irritability, failure to thrive, and lethargy. She had been discovered unresponsive in bed. A post-mortem examination revealed a 7-cm mass at the left inferior frontal lobe. The mass after being formalin-fixed revealed a greyish tumour with haemorrhagic regions inside the tumour tissues. Microscopically, the tumour showed tightly packed cells with small and rounded nuclei. The neoplastic small-rounded nuclei cells showed perinuclear clearing, giving them a fried egg appearance (a detailed description will be given during the poster presentation). The tumour was most likely a glial tumour based on its location, gross appearance, and histological characteristics. *Discussion:* Glial tumours are the most common primary brain tumours which include astrocytoma, oligodendroglioma and ependymoma. The definitive diagnosis of gliomas requires demonstration by molecular testing irrespective of features on histology.

Headache in post COVID-19: Is it always long COVID?

Nur Sofaa Shahira Othman, Nor'amirah Ahmad, Khairul Anuar Zainun
Department of Forensic medicine, Hospital Sultan Idris Shah, Serdang

Introduction: Long COVID is defined as the continuation or emergence of new symptoms within 3 months after an initial SARS-CoV-2 infection, of which the symptoms lasting at least 2 months without an apparent cause. Common symptoms include dyspnoea, fatigue, cough, headache, and/or myalgia. These symptoms are non-specific, and they could also resemble symptoms of other potentially fatal diseases. A common perception of associating the symptoms with Long COVID may be a factor that discourage patients from seeking further medical attention. *Case:* We present a case of 36-year-old Malay lady who has been found dead at home. She had history of hospital admission at a tertiary centre for Category 2B COVID-19. During that time, she presented with respiratory symptoms and headache. She was treated symptomatically and advised for home quarantine after two days of ward admission. Despite recovery from COVID-19, she continued to have persistence headache for about six weeks until her demise which was thought to be symptom of Long COVID. At the autopsy, the brain appeared oedematous with evidence of midline shift and uncal herniation. There was a huge ill-defined mass across the right fronto-temporal, of which histopathological examination confirmed as glioblastoma. *Discussion:* Patients with glioblastoma commonly present with headache, with or without neurological symptoms. There might be difficulties to recognise this non-specific symptom of headache and make the impression of a brain tumour when it concurrently presents with COVID-19. Therefore, a thorough post-mortem examination should be performed in such cases to exclude other pathologies, apart from identifying complications attributed to Long COVID.

Sticky ending: An unusual suicidal asphyxiation by occlusion of mouth and nose by duct tapes

Nur Syafiqah Idris, Kunasilan A/L Subramaniam, Amirul Azim Halim, Mohd Shah Mahmood
Department of Forensic Medicine, Hospital Kuala Lumpur

Introduction: In some cases, the unusual suicide methods and the deceased's physical conditions can raise suspicions of homicide. Therefore, a detailed post-mortem must be coupled with scene examination and reenactment to conclude these cases. *Case:* This is a case report of a 61-year-old man with underlying Parkinson's disease and left-sided weakness due to a history of previous stroke who was allegedly found unconscious with multiple layers of duct tape covering both his mouth and nose in his house. There was no evidence of break in or missing items from his house. He lives alone and his brother found him dead on a mattress with empty duct tape roll, used clear duct tape roll and a pair of scissors. A suicide notes was found in the medication drawer saying his last words to the family. During the autopsy, there were two types of duct tape identified: grey duct tape and clear duct tape, which were used alternately by the deceased to wrap around his face, covering both mouth and nose. These made a total of four layers of duct tape in various sizes. There were no blood stains on the tapes and the edges were cut. Apart from that, there were no external injuries seen to indicate any struggle or harm. Histotoxicology screening was negative. A carefully monitored reenactment demonstrated, that the duct tape that had been used did not cause complete airway obstruction and that it was possible to wrap a considerable length of tape around the head and neck without arresting breathing for some period of time. *Discussion:* This suicidal method may initially raise suspicion. However, proper post-mortem examination, scene examination, and reenactment suggest that self-inflicted suicide by this method is possible.

Deaths due to hypervirulent *Klebsiella pneumoniae* renal abscesses with septic embolism: Two case reports

Wan Zafirah Zamaliana Alias, Muhammad Sakti Abdullah, Nur Amalina Aminuddin Baki, Mohd Suhani Mohd Noor
Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: *Klebsiella pneumoniae* (Kp) is a member of the *Enterobacteriaceae* family and typically causes nosocomial infection. Nevertheless, an emerging community-acquired invasive syndrome attributed to the hypervirulent strain of Kp (hvKp) has been reported in the literature. While Kp liver abscesses affecting those with diabetes have been frequently reported in Asia, case reports of Kp renal abscesses with septic embolism are scant. We present two cases of sudden deaths of undiagnosed hvKp renal abscesses with septic embolism. *Case Description:* 1st case: A 40-year-old female with no past medical history was found dead at home after a week history of fever. The autopsy revealed left renal abscesses and septic emboli to the lungs attributable to Kp on bacteriological culture. The autopsy also showed evidence of meningitis and diabetic ketoacidosis. 2nd case: A 47-year-old female diabetic was dead on arrival at the hospital following a month-long history of lethargy. Bilateral renal abscesses with systemic septic emboli also attributable to Kp on bacteriological culture were demonstrated on autopsy. She had no metabolic complications of diabetes, unlike the former. *Discussion:* The pathology and virulence characteristics of hvKp will be discussed. The forensic pathology diagnosis of invasive hvKp syndrome is imperative in aiding the prevention and early diagnosis of the infection at the primary healthcare level.

Subdural empyema by *Streptococcus constellatus*: A case report

Siti Katijah Ismail, Logaraj Ratha, Sharifah Aziah Syed Alwi, Khairah Nasrin Abdul Khalid, Anaiki Zaini, Norliza Ibrahim, Hwang Ing Siong

Department of Forensic Medicine, Sarawak General Hospital

Introduction: Subdural empyema (SE) is a rare intracranial infection defined as a collection of pus in the subdural space. *Streptococcus constellatus*, which belongs to the *Streptococcus Milleri* Group (SMG), is a commensal organism found in the upper respiratory and gastrointestinal tracts that has pathogenic potential to complicate some infections with SE. Herein, we describe a case of SE caused by *Streptococcus constellatus*. **Case Report:** A 19-year-old healthy male suffered from left eyelid swelling associated with headache for four days. The eyelid swelling was self-subsiding. The headache worsened with fever, vomiting, nausea, photo-light sensitivity, and neck stiffness for one week before he succumbed to death. Retrospective history revealed that he also suffered from a toothache for a few days but self-subsided one month prior to his death. The gross and histological examination revealed pus collection within the subdural space with inflamed meninges, unhealthy left fronto-parietal brain tissue, and brain oedema with poor oral hygiene. *Streptococcus constellatus* was isolated from culture in the subdural pus, blood, lungs, and spleen tissues. **Discussion:** The *S. constellatus* subspecies is frequently isolated as part of mixed flora. It has less association with empyema, and less severe infection than other SMG subspecies. However, in this case, it has been significantly isolated as a pathogen which spread through thrombophlebitis of the venous sinuses in the subdural space, originated either from preseptal, orbital, sinus, or odontogenic infections. The finding of subdural empyema justifies the need for further examination of those regions which are not routinely included in our autopsy procedures.

“What the fork?”: An unusual case of penetrating injury to the neck

Nirel Kaur Harban¹, Kunasilan Subramaniam¹, Mohamad Helmee Mohamad Noor², Siew Sheue Feng¹

¹*Department of Forensic Medicine, Hospital Kuala Lumpur*; ²*Department of Radiology, Hospital Kuala Lumpur*

Introduction: Penetrating injuries are caused by objects piercing the skin and damaging the underlying tissues. Careful examination of wound appearances may provide essential clues to the nature of the weapon used, especially when unusual implements leave characteristic patterns. **Case:** This case is of a 77-year-old man who was found dead in his car with blood stains over his neck, upper limbs, and clothes and a dinner fork were found on his lap. Postmortem examination revealed a penetrating wound, multiple puncture wounds, and blunt injuries on his neck and abdomen and left palm. Internal examination showed defects at the strap muscles of the anterior neck, thyroid gland, right carotid artery, bilateral internal jugular veins, thyroid cartilage, cricoid cartilage, and tracheal rings. **Discussion:** The wounds on the external and internal structures have a unique pattern that is consistent with being inflicted by an implement with two or more prongs. The four main types of wound patterns observed in this case are linear abrasion, pattern abrasion, superficial puncture wounds, and penetrating wound. The fatal wound is the penetrating wound on the neck, which is a hole with a notch as a result of deep penetration and the prongs imprints are seen internally. In this case, based on the pattern, dimension, location, and nature of the wound, the injuries are likely to have been caused by the dinner fork or similar objects. This case enlightens the importance of post-mortem examination to recognise wounds and match them with a possible implement.

Beyond the acronym: A case study of a baby with charge syndrome

Jacinta Toimin, Ahmad Shafie Ahmad Amran, Wong Shin Nyuk, Faiz Farhann Chee Bidin Chee, Danial Aizat Rosli, Mohammad Nasir Ismail, Mohammad Nasri Samawie

Department of Forensic Medicine, Hospital Miri

Introduction: CHARGE syndrome is a rare autosomal dominant genetic disorder and each patient has their own unique collection of multiple congenital anomalies and complications. The acronym CHARGE includes coloboma, heart defect, atresiachoanae, retarded growth and development, genital hypoplasia, and ear anomalies. Constructing an appropriate cause of death can be challenging because of the broad range of systems that are affected. **Case:** A brought-in dead case of a 1-years-3-months-old baby who has been diagnosed with CHARGE syndrome was found collapsed during nasogastric tube feeding by his mother. He presented with fever and increased oral secretion for 2 days. Post-mortem examination findings revealed bilateral lung consolidation, more on the right lung suggestive of pneumonia, and dysmorphic features consistent with CHARGE syndrome. Histology of the lungs show mixed infiltration by inflammatory cells predominantly neutrophils which confirmed the findings of pneumonia. **Discussion:** The cause of death, in this case, is pneumonia which could probably be due to aspiration as a result of having a cleft palate which leads to feeding difficulty in this baby. Based on study, a total of 90% of mortality case were at risk for aspiration or pharyngeal in coordination due to gastroesophageal reflux, trachea esophageal fistula, or swallowing and chewing difficulties which was reported as a common cause of death. Identifying the pathology and the severity of the complication that this baby had would not only facilitate a holistic care model for these children with CHARGE syndrome but would also provide avenues for future research to improve their management.

Cause you were all yellow (A case report on kernicterus)

Fatin Nabila K, Huud AR, Muhammad Huzaifah AR, Nurulhusna A, Hanif M, Akma Nurain Fairuz MA, Zunaizah H, Nasfati M, Fatin Afiqah MR, Faten Sakinah S, WY Tiam, Mohd Faizul AW
 Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: Kernicterus is a type of brain damage caused by excess bilirubin in the blood or hyperbilirubinemia affecting the central nervous system. The term kernicterus literally translated as “yellow kern”, in which “kern” refers to the brain. Hyperbilirubinaemia, particularly of unconjugated bilirubin is a lipid soluble substance which can cross the blood brain barrier. It also has a special affinity for basal ganglia and hippocampus, but less frequently affect the thalamus, cranial nerve nuclei and dentate nuclei of the cerebellum. It will subsequently bind to the cell membrane and since it is toxic to neurons and glial cells, it will lead to cellular apoptosis. *Case:* We would like to present a case of a male neonate, who was born term via spontaneous vertex delivery, with history of admission for one day requiring single photo therapy at day 4 of life. Though the mother was advised for son’s blood monitoring in clinic, but failure to attend follow up has led to the demise of this 8-days-old boy. An external examination revealed generalised yellow discoloration all over the body extending to palms bilaterally and both soles consistent with level 5 of Kramer’s rule. No cephalohematoma seen. Internal examination demonstrated diffused petechial haemorrhage involving both grey and white matter of the cerebellum. However, no prominent yellow staining seen over the basal ganglia, dentate nuclei of cerebellum or other specific regions. *Discussion:* Further investigations and the challenges faced to diagnose this case will be discussed here.

Blunt head injury and coagulation disorder: A case report description

Hwang Ing Siong¹, Siew Sheue Feng², Jessie Hiu³

¹Forensic Medicine Department, Sarawak General Hospital; ²Forensic Medicine Department, Kuala Lumpur Hospital;

³Forensic Medicine Department, Queen Elizabeth Hospital

Introduction: Blunt head injury is common in homicide cases. The relationship between injury and the cause of death is usually direct, unless the victim has underlying coagulation disorder. The underlying bleeding disorder may pose a legal conundrum. Here, we present a case of assaulted head injury with underlying hereditary bleeding disorder. *Case:* A young adult male, a known case of severe Haemophilia A with inhibitor, whom has prolonged a PTT on treatment PRN, presented with traumatic head injury following an assault. He survived for a few hours in the hospital. A few years prior, He had spontaneous right fronto-temporal subdural haemorrhage (SDH) which was treated conservatively. Autopsy showed multiple abrasions and bruises on the body. Internally, there were large intramuscular contusions of the left leg and, rib fracture. Skull showed no fracture but there was bilateral acute SDH. The right frontal leptomeninges was thickened and was associated with acute on chronic subarachnoid haemorrhage (SAH) and adherent overlying dura. Brain was oedematous with herniation. Brownish cavitation was noted at right temporal lobe. Histology examination confirmed the gross findings. *Discussion:* Hereditary coagulation disorder may present with spontaneous bleeding or exaggerated bleeding following minor trauma. This may pose significant legal ramification in a case of assault as to whether the trauma was fatal in nature. The principle remains that the manner of death is unnatural.

We are what we eat: The bugs story

Muhammad Izzul¹, Wan Mohammad Hafiz^{1,2}, Rashed Shatnawi³, Mohamed Swarhib Shafee¹, Faridah Mohd Nor¹

¹Forensic Unit, Department of Pathology, Faculty of Medicine, University Kebangsaan Malaysia, Kuala Lumpur, Malaysia;

²Department of Forensic Pathology, Faculty of Medicine, Sungai Buloh Campus, Universiti Teknologi MARA, Sungai Buloh, Selangor, Malaysia; ³Department of Forensic Medicine and Toxicology, Faculty of Medicine, Yarmouk University, Irbid, Jordan

Introduction: Drugs or toxins present in a body can be found by analysing various specimens such as blood, urine, and solid tissue. However, in some cases where advanced decomposition is present, the analyses could be unavailable. However, bugs collected from a decomposed body can be used as alternative toxicological specimens. The old adage says “you are what you eat” so bugs feeding on a body should take in substances from the dead body and store them in their own bodies. *Case:* A 19-year-old Malay male was found decomposed in a vehicle with the engine turned off, windows fully closed, and the battery oil indicator showed ‘empty’. He was last seen alive six days prior to the incident. Autopsy showed a decomposed body with generalized bloating, greenish discoloration, skin marbling, and slippage with cherry-red discoloration of the mucosa. Abundant first to third instar maggots were found on the body. Internal examination and histology showed mainly decomposed organs. The liver and kidney, sent for toxicology, showed no common drugs. The maggots sent for toxicology, astonishingly yielded nine compounds: N-Methyl-2-Pyrrolidone, Ethylpropamine, N-Methyl-N-Ethylcathinone Acetyl derivative, Para-Methoxyfentanyl, 2-Fluoro MT45, Promethazine, Levo-Alpha-Acetylmethadol, Biperiden, and Mecamylamine, which may constitute a particular designer drug. The cause of death was determined to be consistent with carbon monoxide poisoning. *Discussion:* This case shows the importance of the toxicological analysis for the larvae on the bodies as the positive qualitative drug screen in the larvae, combined with rigorous post-mortem examination, may ultimately reflect a different manner of death, particularly in cases of antemortem drug intoxication.

Post infectious encephalitis: An autopsy case

Siti Asma' Mohd Saman, Aneesa Azhar, Khairul Anuar Zainun
Department of Forensic Medicine, Hospital Serdang, Ministry of Health, Malaysia

Introduction: Post infectious encephalitis or secondary encephalitis is extremely rare condition especially in paediatric age group. It is known to be related to the preceding respiratory tract infection or vaccination as the inciting event. Bickerstaff's brainstem encephalitis is among central nervous syndromes which may develop following microbial infections characterised by ophthalmoplegia, ataxia, and disturbance of consciousness. *Case:* A 1 year 7 months girl with no known premorbidities presented with preceding upper respiratory tract infection for four days prior to her death with partial antibiotic treatment. Parents denied child were having any neurological symptoms. Post-mortem examination showed insignificant gross pathological findings while histopathological examination showed evidence of brainstem encephalitis and pneumonic changes. Nevertheless, microbiology analysis did not yield any significant bacterial or viral pathogens which could have caused the infection. *Discussion:* Bickerstaff's brainstem encephalitis has been rarely reported and the absence of triad of ophthalmoplegia, ataxia, and disturbance of consciousness may defy towards the diagnosis of this condition. Although death is rare, the probability of one acquiring this condition cannot be taken for granted. It has been reported that one may only be presented with merely altered conscious level prior to death. *Conclusion:* This case highlighted the possibilities of post infectious encephalitis as a presentation for sudden death in paediatric age group; a good understanding of this clinical entity, the circumstances of death and the presentation of illness is important in determining the cause of death in the presence of significant histopathological changes with the absence of causative pathogen.

The scourge of homemade firearms in sabah

Lee Jiun Yih, Jessie Hiu
Department of Forensic Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah

Introduction: Although Malaysia has strict gun law, homemade firearms continue to be easily available in the villages of Sabah. They are used for hunting and for farmers to protect their fruits from animals. The three common firearms are Bakakuk (shotgun), Ginsuk (musket) and 'senapang angin' (pump airgun or rifle). We report two separate fatalities involving children playing with homemade airgun/rifle. Pump airgun/rifle utilises air or compressed air to propel projectile towards the target. The airgun/rifle uses commercial pellet, homemade pellet or suitable objects e.g. marble. *Case:* We report two cases presented with head injury. The projectiles penetrated the brain causing severe bleeding and brain injury. A tiny metal diabolo domed-shaped pellet was retrieved from one case whilst the other a marble. The diabolo domed-shaped pellet was tiny and was difficult to find despite radio-imaging study. History of the incident in both cases was not immediately forthcoming, as adults tried to protect suspect children involved in the shooting. The post-mortem examination and radio-imaging study assisted in the police investigation by identifying the cause of death and the profile of the inflicting object. *Discussion:* Pump airgun/rifles are generally low velocity. The majority of death reported in literatures involved children with obvious male preponderance. The head and chest are the frequent sites penetrated by the projectile resulting in fatalities. Children are more vulnerable to brain injuries from the projectile as their skulls are relatively thinner and softer.

Rodenticide (bromadiolone) induced encephalopathy: Autopsy case report

Nurul Eddiya Kiew, Sri Marni Zainal Abidin, Nor Zaimah Mohamad Idris
Department of Forensic Medicine, Hospital Tengku Ampuan Afzan, Kuantan, Pahang

Introduction: Bromadiolone is a second-generation long-acting dicoumarin rodenticide which is commonly available worldwide. This deadly super warfarin has been reported to cause severe internal haemorrhage in major organs along with rare butlethal involvement of the central nervous system (CNS). Throughout the years, cases of bromadiolone poisoning that happened through suicidal, homicidal and accidental exposure have been increasing fairly rapidly due to its easy accessibility globally. We report a fatal case of bromadiolone intoxication at our hospital. *Case:* A 24-year-old male was presented to the hospital with severe vomiting, abnormal behaviour and reduced conscious level after ingesting a small amount of liquid from a bottle, labelled to contain bromadiolone as an active ingredient. Upon arrival at the emergency department, he had frequent episodes of arrhythmia which were reverted. Laboratory findings showed deranged coagulation profile. Computed tomography (CT) scan of the brain showed no evidence of intracranial bleeding. Unfortunately, his condition deteriorated, and cardiopulmonary resuscitation failed to revive him. An autopsy and histological examination revealed cerebral oedema with foci of micro-haemorrhage and necrosis. Other organs showed no gross haemorrhage. Toxicology analysis did not detect bromadiolone or any substance of abuse. Police investigation revealed that the death was a suicide. *Discussion:* The incidence of bromadiolone poisoning have been reported periodically over the years. This condition is potentially reversible if diagnosed and treated promptly. In this case, toxicology analysis failed to identify the presence of bromadiolone in the blood. This is mainly due to the limitation in the laboratory device to detect the chemical substance in the system. Despite negative toxicology findings, the possibility of bromadiolone being present in the body should still be considered. Thus, it is extremely vital to recognize contact history with the chemical poison to avoid misdiagnoses which can lead to fatality. Other important issues related to the case shall be discussed.

No fury like an elephant scorned

Nur Adlina Afiqah Sa'adon, Lee Jiun Yih, Nurul Huda Husna Harun, Muhammad Syarizmi Abdullah Zawawi, Nur Atiqah Azmi, Tan Hsien Jon

¹Department of Forensic Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah; ²Unit of Forensic Medicine, Tawau Hospital, Sabah

Introduction: Elephants are the largest terrestrial mammals. In Malaysia's territories (Peninsular Malaysia and Borneo), there are two subspecies of elephants. Borneo is home to the pygmy elephants (*Maximus elephas borneensis*). Lately, human-elephant conflict increased significantly in Malaysia resulting in crop raiding, property damage, injuries and, worst, human or elephant fatalities. Sabah wildlife recorded statistic of 5 fatalities occurred in the plantations and the wildlife centres for the past 20 years. The fatalities were caused by stomping, trampling, tossing, and/or gored down by elephant's tusks. *Case:* We present two cases of fatalities involving adults being attacked by elephant. First case recounts a lady who passed by a plantation and was trampled by an adult elephant. She sustained blunt force injuries to the upper half of her body which led to fatal head and chest injuries. The second case involved a Mahout in a wildlife zoo who was gored by the tusk of an adult elephant while he was laving a calf. He sustained multiple fatal penetrating injuries to the trunk. *Discussion:* The pattern of injuries varies depending on the mechanism of the attack by the elephant. Elephants have a good notion of where vital organs are in humans, therefore they mainly target the head and chest. Due to the elephant's massive size, injury created usually lack specificity yet results in a greater extent of injuries. Understanding the determinants of elephant confrontation and engagement in implementation of various preventive measures could possibly mitigate these deadly retaliations.

Apparently fatal but not: A paediatric case report

Nurulhidayatussolihah Sakhi Mohd, Nur Ilyani Nor Azmal, Nur Ayutimasery Abdullah, Kartini Md Ariff

Forensic Medicine Department, Tengku Ampuan Rahimah Hospital, Klang, Selangor

Introduction: Death during the first month of life or neonatal period, is absolutely devastating to any parents. From the perspective of a forensic pathologist, neonatal death can be challenging in term of determining the cause of death in cases where the history and the autopsy findings were not in congruent. *Case:* This is an interesting case of a 2-day-old boy, who was born term via normal per vaginal delivery at hospital and was discharged well. According to the mother, the deceased had difficulty in breathing since birth. He was found weak at home and rushed to hospital but unfortunately pronounced dead upon arrival. No other relevant history obtained. Postmortem examination revealed a 3.13 kg neonate (birth weight of 3.3kg) with markedly congested face. The conjunctivae were normal with no petechias seen. No anomalies or external injuries appreciated. Internal examination revealed hemoperitoneum of 158 millilitres of blood admixed with clot without any identifiable source of bleeding and no sign of haemorrhagic shock. Postmortem histology showed an acute bleeding of unknown origin with no sign of healing or presence of antemortem clot and there were findings of massive amniotic fluid aspiration in the lungs which was finally agreeable as the cause of death. The bleeding was concluded as being aperi-mortem or post-mortem finding. *Discussion:* This case highlighted that not all significant bleeding is fatal in nature and how histological examination helped in pointing out the relevant autopsy findings that fit the history and deriving to the cause of death of this unfortunate neonate. Hence, apparently, not all significant bleeding is fatal.

The puzzling case of death by hanging with tied ankles: Suicide or foul play?

Sara Afiqah MZ, Nur Fatin Faizah MI, Ahmad Hafizam H

Department of Forensic Medicine, Hospital Kuala Lumpur

Introduction: Death by hanging with the ankles tied together is a rare occurrence. It could be a suicide or homicide case, requiring further investigations by the police together with the autopsy findings to determine the manner and cause of death. *Case:* We report a case of a 28-year-old Myanmar male who was found hanged in a decomposed state in an abandoned house with his ankles tied together. He was hanged in full suspension. There was no eyewitness or suicide note found around the area. This scene was suspicious and was investigated as a crime. The autopsy showed the hanging material in the form of a nylon rope encircling the neck with a ligature mark consistent with hanging. The cause of death was certified as compression to the neck, consistent with hanging. *Discussion:* This is a case of interest due to a suspicious circumstance; if the manner of death was suicide, why would a suicidal man tie his ankle? If it was a homicide, there was not much evidence to support foul play. Therefore, the determination of the probable manner of death will be discussed further in the case report and further suggestions and recommendations will be made for future reference.

Compression of the pelvic venous system: Atypical risk for deep vein thrombosis and pulmonary embolism

Jamil Ibrahim Nawab Rajah, Koo Zhao Peng, Shatishraj Jothee
Department of Forensic Pathology, University Malaya Medical Centre

Introduction: Pulmonary Embolism (PE) occurs in approximately 23 to 69 out of every 100,000 individuals. Clinically, it can manifest in various ways, ranging from asymptomatic cases to severe life-threatening PE that can cause pulmonary infarction and sudden death. In 80% of cases, the clot originates from a deep venous thrombosis (DVT). Approximately 50% of patients diagnosed with DVT will develop PE if it is not treated appropriately. Well-known risk factors for DVT include obesity, immobility, pregnancy, surgeries, trauma, malignancy, oral-contraceptives, and long-haul air-travel. Additionally, it was reported that mechanical compression to the pelvic venous system can contribute to the development of DVT by causing blood flow stasis and turbulence in venous flow from the lower limbs. *Case:* We present a case of a 42-years-old nulliparous and obese lady who was asymptomatic prior to her demise. There were not known risk factors for DVT. Autopsy revealed a bulky and heavy uterine leiomyoma extending beyond the pelvis and into the abdomen, resembling the size of a 24-week gestation uterus. Thrombosis of the deep vein was discovered on further examination of the lower limbs. The cause of death was ascertained to be PE resulting from DVT. *Discussion:* The case highlights that mechanical obstruction of the pelvic venous system by a bulky pelvic mass should be a recognised risk for DVT and potentially serious thrombotic complications despite being clinically unperturbed. This is in addition to known risk factors such as obesity and molecular expressions in leiomyoma that can trigger the cascading thrombosis.

Mimicker of myocardial infarction: Neutrophilic myocarditis

Tuan Minanoriah TM, Muhammad Safwan Hakimi B, Jamil Ibrahim NR, Shatishraj Jothee, Koo Zhao Peng
Department of Forensic Pathology, University Malaya Medical centre

Introduction: Myocarditis is a diverse pathological condition where infective agents or other inflammatory conditions results in myocardial injury from which, myocardial ischemia and cardiac immune cellular rejection were excluded. The incidence of myocarditis at both pediatric and adult autopsies ranged from 0.3-14.8%. Neutrophilic Myocarditis (NM), a rare subset, is commonly caused by bacterial and fungal aetiologies and may even be seen in early stages of viral myocarditis. Clinically, NM may be indistinguishable from a Myocardial Infarction and both may result in sudden death. Nevertheless, histopathological examination may be crucial in distinguishing one from the other. We present a case of fulminant NM with microscopic features of cardiac ischaemia. *Case:* A 59-year-old Chinese man, complained of fever for three days prior to his sudden death. Autopsy revealed significant atheromatous occlusions of the three main coronary arteries with patches of mottled myocardium over the left ventricular free wall and the interventricular septum (IVS). Histology displayed circumferential, fulminant, neutrophilic infiltrations of the heart. They were associated with adjacent myocytolysis and haemorrhage. Additionally, myocardial ischaemia was evident by the presence of contraction bands and myocyte nuclear dissolution. The cause of death was concluded as myocarditis with underlying coronary artery disease. *Discussion:* The case highlights the challenges of distinguishing between NM and myocardial infarction from a histological standpoint and their pathological differences discussed. Regardless, it should be emphasised that histology plays a crucial role in accurately determining the diagnosis especially when there is a large overlap between their clinical presentation and gross autopsy findings.

Sodium nitrite poisoning

Hasena¹, Chandroth Navin², Amir Saad²
¹*Department of Forensic Medicine, Hospital Sungai Bakap;* ²*Department of Forensic Medicine, Hospital Pulau Pinang*

Introduction: Sodium nitrite (NaNO) is water-soluble, white-yellow-coloured crystalline powder. Commonly used as preservative, antimicrobial, and food colouring. Medically, it is administered as an antidote to cyanide poisoning. Accidentally swallowing it, is rare. Poisonings most likely occur from intentional ingestion. Methaemoglobinaemia is produced with vasodilatory effect, reducing oxygen carrying capacity of erythrocytes. Symptoms of toxicity includes hypotension, hypoxemia, encephalopathy, dysrhythmia and cardiac arrest. It is now a popular method of suicide. *Case:* 36 years old, American, female, with underlying gastritis, was found unconscious at home by the husband. Death confirmed by paramedics, she was brought in dead to forensics. No possibility of crime from police investigations. However paramedics noted a bottle of (NaNO), beaker, weighing scale & spoon nearby. Autopsy findings showed, Oral mucosa in bright red colour. Grey-blue discolorations of the skin, organs appears to be in bright red colour, and deposition of white powdery substances over the antrum of stomach. With tinted chocolate brown colour blood. Histological examination revealed nonspecific changes. Blood level NaNO and methaemoglobinaemia was not quantified, as there were limitations from the laboratory side. Vitreous humour analysis shows nitrite positive. Methaemoglobin level of 50-70 % is believed to cause death. Postmortem findings and circumstantial evidence show acute sodium nitrite poisoning after all other causes of high methaemoglobin level has been excluded. *Discussion:* Intoxication & death due to the ingestion of (NaNO) represent a challenge for forensic pathologists. Consideration based on symptoms, postmortem findings and circumstantial evidence is vital. It is an emerging cause of intentional ingestion for self-harm and important for us to recognise.

Death in immigration depots: A case report of death highlighting the need for better healthcare

Wan Mohamad Zamri WN, Siti Zanariah MN, [Muhammad Fa'izzuddin AR](#), Abdul Muiz Hassani MY, Faizal N, Hanis Syazana CAK

Department of Forensic Medicine, Hospital Raja Perempuan Zainab II, Kota Bharu

Introduction: Healthcare is a basic human right even for detainees. Inadequate healthcare facility and services in detention centres are one of the major contributing factors for death in custody. Herewith we present a case of lack of medical care that resulted in death. *Case:* A 51-year-old illegal immigrant lady had history of fall in May 2022 when she sustained L2 compression fracture and right neck of femur fracture. She was admitted to hospital and was subsequently detained in the immigration depot upon discharged. Whilst in the depot, she was bedbound. She developed unilateral lower limb swelling and succumbed to death a week later. Autopsy showed pulmonary thrombo-embolism as well as multiple whitish lesions in both lungs. Histopathology examination revealed pulmonary oedema and lung adenocarcinoma. *Discussion:* Basic healthcare service is recommended in immigration depots. There is a need to draw up legal framework to improve medical facility in detention centres and to ensure at least one qualified medical personnel is assigned to conduct regular visits, monitor detainees' health status and identify any detainee who may need special medical attention.

An autopsy case of pseudoaneurysms originating from a thoracic aortic aneurysm

Mohd Suhani Mohd Noor¹, Wan Zafirah Zamaliana Alias¹, Ashkurina Zakaria¹, Muhammad Ibrahim Ahmad²

¹*Department of Forensic Medicine, Sultanah Bahiyah Hospital;* ²*Department of Pathology, University Malaya Medical Centre*

Introduction: The difference between a true aneurysm and a pseudoaneurysm (false aneurysm) is the wall constituent; the wall of a true aneurysm is composed of layers of the vessel wall, whereas in a pseudoaneurysm, there is the containment of blood by a wall of granulation or fibrous tissue. Although the fibrous wall is ultimately weaker than those of a true aneurysm, a pseudoaneurysm can be survived for years before rupturing. Whilst thoracic aortic aneurysm associated with atherosclerosis is not uncommon in sudden death autopsies, especially amongst elderly, it is most unusual to find pseudoaneurysms in the aortic aneurysm itself. We present such a finding in a case of sudden death in an elderly that was initially investigated as a serious adverse event following immunisation (AEFI). *Case:* A 79-year-old man with chronic obstructive airway disease collapsed and died after a massive haemoptysis about 9 hours following COVID-19 immunisation. At autopsy, a pair of saccular pseudoaneurysms was observed in an atherosclerotic aneurysm of the thoracic descending aorta, and one of the pseudoaneurysms has ruptured into his left lung, causing fatal haemoptysis and haemoaspiration. During subsequent causality assessment for AEFI, his death was deemed to have no causal association with immunisation. *Discussion:* The pathology of the aortic pseudoaneurysms will be discussed. This report highlights an unusual pathologic condition in sudden death. It under scores the importance of a thorough medicolegal autopsy in causality assessment for fatal AEFIs to allay public concerns during mass immunisation.

The emergence of the absolute killer: A case report

[Muhammad Khairul Anwar Mohd Yusof](#)¹, Nur Ayutimasery Abdullah¹, Kartini Md Ariff¹, Nur Ilyani NurAzmal¹, Wong Chee Seng¹, Soon Ching Gan²

¹*Department of Forensic Medicine, Hospital Tengku Ampuan Rahimah, Selangor;* ²*Department of Pathology, Hospital Tengku Ampuan Rahimah, Selangor*

Introduction: Cerebral Toxoplasmosis is a fatal opportunistic infection caused by the intracellular protozoan parasite *Toxoplasma gondii* in immune compromised individuals. In fact, central nervous system (CNS) manifestation of toxoplasmosis is very rare and often undetected clinically until discovered during post-mortem examination. *Case:* This 27-year-old Indonesian male was brought in dead to the Forensic Department, Tengku Ampuan Rahimah Hospital with history of sudden onset of paralysis for the few days prior to his death. No other significant information was available. Despite being a young gentleman, he appeared cachexic and post-mortem showed multiple 'suspicious' gelatinous materials upon subcutaneous dissection of the breast area. The brain showed multiple yellow-coloured lesions on cross section of the cerebrum; histological examination confirmed that these lesions were necrotic tissue with numerous toxoplasma cysts containing bradyzoites and free roaming tachyzoites. Microbiological analysis of other postmortem samples was unremarkable, including human immunodeficiency virus (HIV) serology test. *Discussion:* Despite negative laboratory investigations for pathogens affecting the immune system, the detection of cerebral toxoplasmosis in a cachexic individual is usually highly suggestive of an immunocompromised state but was not demonstrable in this case due to the unremarkable result of HIV test. Here we will discuss on plausible causes of the negative HIV test and explore on other causes of immune deficiency that perhaps could and should have been done during post-mortem.

Heat stroke: A case report of sudden death

Wan Mohamad Zamri Wan Nawawi, Siti Zanariah MdNaziri, Abdul Muiz Hassani Mat Yaacob, Muhammad Fa'izzuddin Abd Rahman

Department of Forensic Medicine, Hospital Perempuan Zainab II, Kota Bharu, Kelantan

Introduction: Heat stroke poses a mortal threat characterised by elevated core temperature above 40°C and dysfunction of the central nervous system, resulting in delirium or convulsion and multiple organ dysfunction. An average of 702 heat-related deaths occurs each year in United States based on Centres for Disease Control and Prevention's statistic, however no reliable data was available for Asian countries. In case of mortality, the autopsy findings of heat stroke may be minimal and non-specific. *Case:* The case was a sudden death of an 11-year-old boy who had fever, vomiting, and lethargy after vigorous outdoor activity in Malaysia during hot weather. Thenceforth, he developed delirium and seizure attack and became unconscious in ambulance while being taken to hospital and was pronounced dead after an unsuccessful resuscitation. External examination suggested severe dehydration with sunken eyes, coated tongue, dry skin and diminished skin turgor. The autopsy showed petechial haemorrhages in the liver and lungs with no significant pathologic findings. Laboratory findings revealed elevated liver and cardiac enzymes, rhabdomyolysis and impairment of renal function that suggested multiorgan involvement. *Discussion:* There are two key issues that may be challenging, i.e. identifying heat stroke as the cause of death and proving its association with the incident. In this case, it was discovered that the symptoms and autopsy findings led us to conclude that the cause of death was heat stroke with severe dehydration. Various aspects related to heat stroke, the autopsy diagnosis and its prevention are discussed.

Leprosy: The neglected infectious disease

Asyraf Md Najib, Wan Mohammad Hafiz Wan Razali, Muhammad Izzul Jamaludin, Mohd Swarhib Shafee, Faridah Mohd Nor

Forensic Unit, Department of Pathology, Faculty of Medicine, National University of Malaysia

Introduction: Back in the day, leprosy was one of the dreaded infectious diseases in Malaysia. It has been officially eliminated since 1994 and is rarely encountered in forensic pathology practice. However, the number of cases resurges steadily, and may have spread within the community over the years. Here, we report a case of leprosy with concurrent pulmonary tuberculosis to highlight the role of forensic pathology in aiding infection control surveillance in Malaysia. *Case:* A middle-aged Indonesian man with historic recurrence of hand swelling and foot ulceration, was brought dead to the mortuary. There were night sweats, intermittent fever and lethargy, however there was no previous chronic cough, haemoptysis or breathing difficulty. Externally, there were facial disfigurement, hand deformities and localised hypopigmented lesions on the feet. Lung examination showed generalised pleural adhesions with nodular necrotic tissues. The histological findings of the earlobes, skin lesions and ulnar nerve showed diffuse foamy histiocytic infiltrates of lepra cells with numerous acid-fast bacilli within the dermis and nerve. The lung histology showed granulomatous caseating necrosis, whereas the lung culture isolated *Mycobacterium tuberculosis* complex. The ultimate cause of death was determined to be pulmonary tuberculosis. *Discussion:* Information gathered from forensic pathology practices could play a role in the preventive pathology aspect. In this case, identification of leprosy and tuberculosis, and notification to the authorities will help public health to improve the infection control surveillance system by conducting contact tracing and providing early medical intervention, thus preventing further spread into the local community.

Lethal hypothermia in a tropical country –Yay or nay?

Ashkurina Zakaria, Muhamad Yazid Yahya

Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: The global burden of death due to hypothermia from 2000-2019 is recorded in a study to be about 4.59 million deaths per year. Even though about 52% of that is recorded in Asia, only 3.66% of that is seen in the Southeast Asia region. To certify at post-mortem that death has occurred due to hypothermia is never easy because there are no pathognomonic signs of fatal hypothermia at autopsy. Here, we discuss a rare case of lethal hypothermia in an elderly male vagabond found dead, naked, near a waterfall at the peak of Mount Jerai, Kedah, Malaysia. *Case:* The 80 years old, was said to have gone up Mount Jerai to meditate alone since a week prior until he was found dead, naked, near a small waterfall by the localites. The post-mortem examination showed early decomposition changes of the body with no obvious external marks of injury. The Wischniewski spots seen on the gastric mucosa were reflected as brownish haematinic pigmentation on histology. Other finding includes T12 vertebral body fracture and severe stenosis of the coronaries. The T12 fracture is believed to have rendered immobilised, thus strengthening the diagnosis of hypothermia. *Discussion:* The clinic pathology of lethal hypothermia will be discussed. This report highlights the importance of analysing the case as a whole before coming to a conclusion of lethal hypothermia despite being in a typical tropical country like Malaysia.

A case report of sudden childhood death: Carnitine deficiency leading to endocardial fibrosis and restrictive cardiomyopathy – Too young for a heart attack?

Joshua Thavaraj S Retna Singam¹, Muhamad Yazid bin Yahya²

¹Forensic Medicine Unit, Sultan Abdul Halim Hospital; ²Department of Forensic Medicine, Sultanah Bahiyah Hospital

Introduction: Carnitine, a naturally occurring amino acid derivative known as beta-hydroxy-gamma-trimethyl aminobutyric acid, is produced endogenously in the kidneys and liver and is obtainable from meat and dairy products. Its essential role lies in facilitating the transfer of long-chain fatty acids into the mitochondria for β -oxidation. Primary carnitine deficiency (PCD), an autosomal recessive disorder affecting mitochondrial β -oxidation, is a rare but treatable cause of metabolic cardiomyopathies. Inborn errors of metabolism account for only 5% of all paediatric cardiomyopathies, with known causes identified in 15% of these cases. We report a case of sudden death in an infant discovered to have primary carnitine deficiency with endocardial fibrosis and restrictive cardiomyopathy during autopsy. *Case:* A 1-year-4-month-old toddler with no known medical illness suddenly collapsed and became unresponsive while playing with his grandfather. The forensic autopsy revealed an enlarged heart with endocardial fibrosis in the left ventricle. Histological examination revealed endocardial fibrosis and vacuolization of the myocardium within the sub-endocardial layer. Screening for inborn errors of metabolism (IEM) suggested a diagnosis of primary carnitine deficiency. However, genetic studies were not readily available at the time. *Discussion:* The clinic pathology of restrictive cardiomyopathy resulting from primary carnitine deficiency will be discussed. While the screening test provided some insights, it is essential for Forensic Pathology practices in Malaysia to recognize the importance of conducting a molecular autopsy, including genetic testing, to establish a more conclusive cause of death and also contribute to future healthcare prevention strategies.

Domestic violence causes death

Liya Suwarni¹, Bianti Hastuti²

¹Karawang Regional General Hospital; ²Centre General Hospital Dr. Kariadi Semarang

Introduction: Domestic violence according to Law no. 23 of 2004 in force in Indonesia, is defined as any act against a person, especially a woman, which results in physical, sexual, psychological misery or suffering, and/or neglect of the household including threats to commit acts, coercion, or deprivation of liberty unlawfully within the household scope. A case of fatal domestic violence that has been disguised as death due to choking is presented. *Case:* A body of a 25-year-old lady was brought to the hospital for a post-mortem examination. It has been alleged by the husband that her death was attributed to choking on a meatball. However, apart from intact meatballs in the oral cavity, the autopsy revealed presence of petechial haemorrhages on the skin over the neck and shoulder, multiple bruises on the chin and cheeks, fine foam at the nostrils and along the airways, soft tissue haematoma at the neck, and subarachnoid haemorrhage. Based on the findings of post-mortem examination in this case, her death has been concluded as asphyxia due to manual strangulation, which contradicts with the allegation by the husband. *Discussion:* The manner of asphyxial death can either be suicide, accidental, or homicide. The findings of post-mortem examination in asphyxial deaths are nonspecific. However, the pattern of injuries seen in this case strongly indicates the presence of foul play. Therefore, it is crucial to perform a thorough forensic post-mortem examination to assist police investigators in revealing the truth behind every death case. Physical evidence collected and observed during forensic examination are useful both to support and also to dispute allegations made by so called eyewitnesses, whom more often than not, give hearsay statements which cannot be substantiated.

Insect succession patterns of rabbit carcasses stored inside black plastic bags placed at indoor and outdoor locations and their implications for determining postmortem interval (PMI)

Robin Maramat¹, Anaiki Zaini¹, Norliza Ibrahim¹, Nor Aliza Abdul Rahim²

¹Department of Forensic Medicine, Sarawak General Hospital, Kuching, Sarawak; ²Faculty of Medicine and Health Sciences (FMHS), UNIMAS, Kota Samarahan, Sarawak

Introduction: Calliphoridae (blowflies) are first arrivals on a corpse and utilise it as a substrate for egg laying. Most forensic entomological succession studies have been carried out using rabbit carcasses; however, none investigated carcasses stored in plastic bags. Therefore, our study aimed to investigate forensically important blowflies and estimate the minimum post-mortem interval (mPMI) in tightly enclosed carcasses at outdoor and indoor locations. *Methods:* In the present study, three rabbit carcasses were kept inside black plastic bags and immediately brought to the study sites. The experiment was repeated five times to obtain reliable results. Larvae and adult flies were collected and identified. Meteorological data i.e. ambience, body surface, soil temperature, relative humidity and rainfall were recorded. The degree of carcass decay was observed and recorded. *Results:* Only the adults and larvae of blowflies from genus *Chrysomya*, i.e. *Chrysomya megacephala* and *Chrysomya rufifacies* were identified at both indoor and outdoor locations, which was concordant with other published studies using non-enclosed carcasses. The complete decomposition of carcasses inside the plastic bags at indoor and outdoor locations took 15 and 21 days respectively and included of the five decomposition stages. *Discussion:* Our study concluded that for accurate mPMI estimation, correct insect identification and meteorological data of scene are key parameters. This study provides useful data for decomposition and insect succession pattern of human cadaver with animal carcasses. *Chrysomya megacephala* and *Chrysomya rufifacies* may act as a reference for further forensic entomological study in Malaysia.

Dissecting right and left sinus of valsalva aneurysm (SOVA) into the intramural myocardium in a man with aortopathy: A complex sudden death

Muhammad Fadhli Ikhsan Abdul Razak¹, Fatin Amirah Ahmad Thawari¹, Nabila Diyana Ismail¹, Murali Narayanasamy¹, Fazarina Mohammed²

¹Department of Forensic Medicine, Taiping Hospital, Taiping, Perak, Malaysia; ²Department of Laboratory Diagnostic Service, UKM Medical Centre, Kuala Lumpur

Introduction: Sinus of Valsalva aneurysms (SOVA) are rare cardiac anomalies characterised by abnormal dilation of the aortic sinuses. Although often complicated by rupture or compression of adjacent structures, an exceptionally rare and fatal manifestation involves the dissection of the aneurysmal sac into the interventricular septum (IVS) and left ventricle (LV). *Case:* We describe the case of a 28-year-old male who presented with sudden death due to an unruptured SOVA dissecting into the intramural myocardium. The deceased had no prior history of cardiovascular disease or drug abuse and was found unresponsive at home. The autopsy revealed a thin-built adult male with clubbing of the hands and feet, with no stigmata of heart failure. Cardiac examination demonstrated dissection of both the right and left SOVA into the IVS and LV wall, accompanied by intramyocardial thrombi. The dissection likely disrupted the cardiac conduction system, leading to a fatal arrhythmia. Histopathological studies of the aorta exhibited moderate to marked interlamellar mucoid extracellular matrix accumulation (MEMA), with no translamellar MEMA seen. The elastic lamina displayed multifocal microfragmentation and lamellar disorganisation. Overall histological findings are in favour of congenital aortopathy, which likely contributed to the development of the aneurysms. *Discussion:* This case emphasises the crucial role of autopsy in identifying and characterising this intricate cardiac pathology. It highlights the involvement of aortopathy in the causation of SOVA in our case and provides valuable insights into the mechanism of sudden death. Additionally, further molecular studies are necessary to determine the specific type of congenital aortopathy suspected.

Forensic biochemical analysis of metabolic disorders in a case of sudden neonatal death: Lessons learned

Siti Nurwani Ahmad Ridzuan, Noor Hafizah Hassan, Karniza Khalid, Jeffrey Vun, Nurul Farahana Rosli, Anasufiza Habib *Specialised Diagnostic Centre, Institute for Medical Research, Kuala Lumpur, National Institute of Health, Ministry of Health Malaysia, Malaysia*

Introduction: A comprehensive post-mortem biochemical analysis is vital in diagnosing rare metabolic disorders, particularly maple syrup urine disease (MSUD). MSUD is a rare inherited disorder caused by defective metabolism of branched-chain amino acids (BCAAs) leading to its accumulation in the plasma and their respective branched-chain ketoacids (BCKAs) in the urine. This case highlights the importance of prompt identification and appropriate biochemical analysis for diagnosing rare metabolic disorders like MSUD. *Case:* A prematurely born baby girl weighing 2.19kg was admitted to the Neonatal Intensive Care Unit (NICU) for respiratory distress. No maple syrup urine odour was documented. She was discharged home (stable) after six days but tragically passed away one week later due to respiratory failure. Post-mortem biochemical examinations revealed elevated BCAAs with presence of alloisoleucine, indicating the likelihood of classical MSUD. Other abnormal markers suggested a potential liver disease or mitochondrial disorders. Unfortunately, no urine and whole blood samples were submitted for organic acid analysis and molecular confirmation, reasons for which were not specified. *Discussion:* The lack of expanded newborn screening in Malaysian necessitates a heightened level of clinical suspicion and appropriate biochemical testing when dealing with suspected cases of rare diseases. The classical sweet-smell of urine associated with MSUD is not always present in every case. Nonetheless, MSUD is rarely diagnosed post-mortem. Therefore, this case serves as a stark reminder that clinical vigilance and comprehensive biochemical analysis are critically required in neonatal care as to improve patient management and preventing recurrent cases of sudden infant death within the affected families.

Fatal bee envenomation – A case report

Anwar Hakim Bin Abdul Azmi¹, Nor Zaimah Mohamad Idris², Sri Marni Zainal Abidi²

¹Forensic Medicine Unit, Hospital Sultan Haji Ahmad Shah, Pahang, Malaysia; ²Department of Forensic Medicine, Hospital Tengku Ampuan Afzan, Pahang, Malaysia

Introduction: Bees are insects that sting to defend their colonies and they do not usually attack unless provoked. The severity of reaction to bee venom varies from one person to another. Incidence of fatal bee stings in Malaysia are not uncommon, however, most cases were unreported. Due to under-reporting, bee-sting mortality rate in Malaysia is low. In the state of Pahang, there were only two cases from 2018 to 2022 including this case. *Case:* This is a case of a 32-year-old man who earned his living by harvesting Tualang honey from colonies of *Apis dorsata*, also known as giant honeybees. While harvesting honey, he died shortly after being attacked by a swarm of honeybees. Autopsy revealed more than 500 bee sting apparatus still attached to the skin all over the body with local erythema. Gross internal examination did not show typical findings of anaphylactic reaction such as pharyngeal or laryngeal oedema. *Conclusion:* Multiple bee stings can lead to a fatal outcome. The most common cause of death is due to anaphylaxis. Sometimes death can result from direct toxicity of the bee venom. Typical findings of anaphylaxis may not be visible due to rapid onset of death. Hence, absence of findings does not rule out anaphylaxis. Other related issues shall be discussed.

A case report of “Saphir’s” myocarditis: A misconception in forensic pathology practice

Radiyah Mat Yasin, Ashkurina Zakaria, Wan Zafirah Zamaliana Alias
Forensic Medicine Department, Hospital Sultanah

Introduction: Myocarditis is defined as inflammation of the myocardium associated with or without myocardial damage. From a forensic pathology perspective, its gross morphological recognition is indistinctive with no pathognomonic features, and the predominant inflammatory cells seen on histology examination may assist in expounding its pathoetiology. Meanwhile, known by various names, Saphir’s myocarditis is an eponym describing primary isolated myocarditis with unknown aetiology. *Case:* Here, we report a case of a 42-year-old woman with previously no known medical illness who presented with symptoms of acute coronary syndrome (ACS) as an initial presentation. She was clinically diagnosed with myocarditis and was discharged home well. However, a few days later, she was brought in dead, and the post-mortem histology confirmed the clinical diagnosis to be the cause of death. Viral studies did not reveal any evidence of infection. *Discussion:* This report aims to realign the misconceptions among forensic pathologists in arriving at the diagnosis of myocarditis. Myocarditis at autopsy is an uncommon cause of death, and forensic pathologists should not merely use it as a “fashionable” diagnosis. Whilst the Dallas criteria are used for the clinical diagnosis of myocarditis, there are no specific criteria for the diagnosis of fatal myocarditis at autopsy. Although determining the underlying aetiology of myocarditis is not mandatory in forensic investigation and is primarily academic, it is invaluable in cases where the causality plays an important role, such as investigating deaths following vaccination.

Fatal euphoria: When erotic ecstasy takes a deadly turn

Goon Hoong Tatt, Amir Saad bin Abdul Rahim
Department of Forensic Medicine, Hospital Pulau Pinang

Introduction: Autoerotic asphyxia is a sexual practice involving deliberate induction of hypoxia for enhanced arousal, predominantly observed in males but also reported in females. Due to its secretive and taboo nature, this practice remains largely unknown and its true incidence under reported. *Case:* We present a case of a 29-year-old male hotel manager in Batu Ferringhi, Penang, who was discovered deceased in his bedroom. The scene revealed the cross-dressed decedent lying prone on his bed surrounded by various sex and drug-related paraphernalia. A ribbon tape with a fixed knot was wound around his neck, and a plastic bag covered his face. A plastic tubing connected the inside of the plastic bag to a glass bong. Petechial haemorrhages were observed in the conjunctivae. Additionally, his face was congested and there was vomitus around his mouth. No external injuries were found. Internal examination revealed pulmonary oedema, as well as petechial haemorrhages in and around the epiglottis, and on the epicardial surface. Microscopic examination yielded no significant findings other than pulmonary oedema and mild hepatic steatosis. Toxicologic analysis confirmed the presence of amphetamine and methamphetamine in the decedent’s blood. *Discussion:* The cause of death was determined to be suffocation resulting from oxygen deprivation caused by the neck ligature and plastic bag, exacerbated by drug use. While gross findings in asphyxial deaths are typically nonspecific, circumstantial evidence in this case strongly suggests that the individual was engaged in a failed autoerotic asphyxiation, ultimately leading to his demise.

The perforation conundrum: Unravelling the tragic outcome of an infant with undiagnosed Hirschsprung disease

Goon Hoong Tatt, Amir Saad bin Abdul Rahim
Department of Forensic Medicine, Hospital Pulau Pinang

Introduction: Hirschsprung disease (HD) is a congenital anomaly of innervation of the colon, characterised by the absence or paucity of ganglionic cells in the rectum or more rarely, the entire length of the colon. Unless recognised and treated early, it has a high mortality. *Case:* The deceased infant was born at term at a government hospital in Seberang Jaya through vacuum-assisted vaginal delivery. After birth, he passed stools once but subsequently experienced progressive abdominal distension, bilious vomiting, and refusal to nurse. An abdominal x-ray revealed a perforated bowel, leading to transfer to a tertiary hospital. Despite conservative treatment, his condition worsened. The clinical autopsy revealed colonic infarction and a perforation at the transverse colon, along with an inflamed peritoneal cavity containing faeculent material. Microscopic examination revealed aganglionosis in the rectum and sigmoid colon, transitioning into normal ganglia starting from the transverse colon. The cause of death was attributed to peritonitis resulting from colonic infarction and perforation, stemming from short-segment Hirschsprung disease. *Discussion:* Diagnosing HD requires histological confirmation of the presence of ganglionic cells in the colon. The passage of meconium after birth does not definitively rule out HD, and its possibility should not be dismissed in infants with unexplained abdominal distension. It should be recognised that, colon perforation, although rare, may be a presenting sign of HD. This case under scores the importance of maintaining a high suspicion for HD in neonates presenting with acute abdomen in order to institute prompt intervention. Timely diagnosis can mitigate complications and forestall mortality associated with HD.

A case of fatal helicopter crash: Who is at fault?

Anaiki Zaini¹, Faridah Mohd Nor², Mohamed Swarhib Shafee²

¹Department of Forensic Medicine, Sarawak General Hospital, Kuching, Sarawak; ²Forensic Unit, Department of Pathology, Faculty of Medicine, University Kebangsaan Malaysia, Kuala Lumpur, Malaysia

Introduction: Deaths in helicopter crash are uncommon, but cases have increased for the past two years due to recreational and other uses of helicopters. The most common causes of helicopter crash include pilot error, negligence or a fault in the helicopter design along with inclement weather conditions and harsh terrain. To date, few studies or reported cases have examined the types of injuries sustained in fatal helicopter crashes but not many focused on determining who controlled the helicopter at the time of accident. Herein, we discuss the possibility of determining who was controlling the helicopter by comparing the injuries using the results from the autopsy. *Case:* In this case, the helicopter was piloted by two persons, both of whom possessed valid pilot certificates. The helicopter is Guimbal Cabri G2-typed and registered under a private helicopter club. Both victims were found inside the cockpit and certified dead at the scene. The bodies were subjected to full body post-mortem computed tomography (PMCT) prior to the autopsy. Autopsy showed multiple injuries in both victims, but there were no signs of acute or chronic medical conditions, that could explain loss of control of the helicopter. The PMCT, histological examination and toxicologic analysis failed to identify an explanation for the crash. *Discussion:* Determining who is liable for the helicopter crash is very important as 'pilot error' is one of the possible factors that can lead to an accident. Hence, based on the autopsy, PMCT and injury pattern analysis, we reached a conclusion about which of the two victims was the most likely to have been in control of the helicopter at the time of accident.

An unplanned complex suicide by sharp weapon injury and hanging: A case report and review of the literature

Radiyah Mat Yasin, Wan Zafirah Zamaliana Alias

Department of Forensic Medicine, Sultanah Bahiyah Hospital, Kedah.

Introduction: Complex suicide refers to suicide by a combination of methods. Marcinkowski *et al.* classified complex suicides into 'planned' and 'unplanned' types. The term 'planned complex suicide' is a combination of more than one method of suicide to prevent failure of the first method and ensure a fatal outcome. On the other hand, an 'unplanned complex suicide' represents a case where the failure of the first method brought about the subsequent alternative method of inflicting death. *Case:* We report a case of a 34-year-old Malay divorcee who was found hanged from the kitchen ceiling of his family home with multiple stab wounds on the abdomen. His pre-autopsy COVID-19 screening showed the detection of the SARS-CoV-2 genome. His death was certified as compression of the neck by hanging in a man with COVID-19. *Discussion:* A detailed analysis of the case with the relevant literature review will be discussed. Since the deceased presented with sharp weapon injuries with a ligature mark around the neck, it is crucial to establish the cause and manner of death, as well as to exclude any third-party involvement in this case.

Ruptured aneurysm of a left descending coronary artery

Nasfati M^{1,3}, Amirul AAH^{2,3}, Nurquinn FS³, Peter V³, Hanif M¹, Akma NFM¹

¹Department of Forensic Medicine, Hospital Tuanku Ja'afar, Ministry of Health Malaysia; ²Department of Forensic Medicine, Hospital Kuala Lumpur, Ministry of Health Malaysia; ³Academy of Forensic Medicine and Sciences, London, United Kingdom

Introduction: A coronary artery aneurysm (CAA) is an uncommon condition usually detected during an angiogram, in which, with prompt surgical response, it can be treated accordingly. A ruptured CAA is almost always discovered only following a post-mortem examination. In adults, the aneurysm is commonly caused by atherosclerosis, while in children, it is mostly attributable to Kawasaki disease. *Case:* We report a case of a 75-year-old female who was allegedly healthy prior to being found unconscious at her house. Cardiopulmonary resuscitation was commenced but failed to revive her. Autopsy examination showed an obese female. The internal examination revealed an enlarged heart weighing 575gm. A ruptured saccular aneurysm was detected at the distal part of the left anterior descending coronary artery. The aneurysmal rupture resulted in 600ml of haemopericardium and acute cardiac tamponade. *Discussion:* The pathology and histology description of CAA will be presented. The role of angiogram as a preventive tool in fatal ruptured CAA will also be discussed.

Unravelling the mystery: The significance of whole exome sequencing (WES) in the case of sudden death

Nenny Noorina Saaid, Azlah Kamilah Azhari, Lokzhashininimisha Pulandran, Nur Adlina Zainal Abidin, Sayyidi Hamzi Dato Abdul Raub, Roziana Ariffin, Mohd Hareeff Muhammed
Cytogenetics and Molecular Diagnostics Laboratory (CMDL), Reference Specialised Laboratory, Premier Integrated Lab Sdn. Bhd., Pantai Hospital Kuala Lumpur

Introduction: Whole exome sequencing (WES) is a powerful tool that allows the identification of rare genetic variants associated with various diseases. In the case of sudden death, WES can provide crucial information about the individual's risk factor and the possible cause of death. *Case:* We report a case of the deceased; 13-year-old teenager, seemingly healthy and active male, with no clinical history of illness or allergies. Sudden death occurred when he suddenly fainted and was

quickly brought to the hospital but unfortunately died an hour later despite resuscitation efforts. Death was attributed to sudden cardiac death secondary to sudden arrhythmic death syndrome based on post-mortem findings. WES was carried out at Premier Integrated Labs on the myocardial tissues using Illumina DNA Prep with Enrichment Exome panel according to the manufacturer's instruction (Illumina, USA) and sequenced in Next Seq 550system (Illumina). Data analysis using The Illumina® DRAGEN found that the deceased carried a pathogenic missense variant in RYR2 (c.13489C>T; p.Arg4497Cys), a gene that is associated with Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT), an inherited cardiac condition that causes sudden rhythm disturbances (arrhythmias). *Discussion:* The mutation of RYR2 gene was observed in patients who died due to cardiac arrest in previous reports. These reports concluded that the RYR2 mutation likely contributed to the patient's sudden death. Associating WES may allow the recognition of genetic mutations potentially responsible for otherwise unexplained deaths.

Case report – The genetic and rare diseases associated with sudden unexpected death

Azlah Kamilah Azhari, Nenny Noorina Saaid, Lokzhashininimisha Pulandran, Nur Adlina Zainal Abidin, Sayyidi Hamzi Dato' Abdul Raub, Roziana Ariffin, Mohd Hareeff Muhammed
Cytogenetics and Molecular Diagnostics Laboratory (CMDL), Reference Specialised Laboratory, Premier Integrated Lab Sdn. Bhd., Pantai Hospital Kuala Lumpur

Introduction: Molecular autopsy has emerged as an effective tool in detecting genetic mutations associated with rare diseases and is increasingly used to identify an underlying genetic factor in cases of sudden unexplained death. *Case:* We present the case study of the deceased; a 21-year-old Indian woman with history of one episode of syncopal attack. The deceased was found at the scene near a live electrical source. The underlying cause of the condition remains unclear during initial investigations. Molecular autopsy was carried out at Premier Integrated Labs on blood sample via Whole exome sequencing (WES) using Illumina DNA Prep with Enrichment Exome Panel and sequenced in Next Seq 550 (Illumina, USA). The results were analysed using The Illumina (R) DRAGEN. *Discussion:* The analysis identified two pathogenic variants, which are ATP7B gene; c.2906G>A, (p.Arg969Gln) that is associated with Wilson's Disease (WD) and CRLF1 gene; c.531G>A (p.Try177Ter) that is associated with Crisponi Syndrome. Both are rare autosomal recessive disorder. WD develops because of copper accumulating in affected tissues and is often fatal if not recognised and treated when symptomatic. Cardiac manifestation in WD include cardiomyopathy which can be life threatening. Crisponi/cold-induced sweating syndrome is characterised in the neonatal period by orofacial weakness with impaired sucking and swallowing resulting in poor feeding necessitating medical intervention. This shows that a combination of molecular autopsy and conventional autopsy are a powerful tool and bow which can provide opportunity to confirm unexplained cause of death.