NEWSLETTER OF THE HONG KONG COLLEGE OF PATHOLOGISTS

PATHOLOGUE

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability

THE HONG KONG COLLEGE OF PATHOLOGISTS

SCIENTIA ILLUMINAT MEDICINAM
香港病理學專科學院

VOLUME 29, ISSUE 2 APRIL 2021

Message from the President

In this issue of the College Newsletter, I am delighted to announce that the Genetic and Genomic Pathology (GGPath) Training Programme and all successful First Fellows of GGPath have been fully accredited by The Hong Kong Academy of Medicine and this new specialty has been listed as one of the sixty-three specialties in the Specialist Register of The Medical Council of Hong Kong. Therefore, College would like to remind all concerned Fellows about the proper quotation of this new qualification. Also, I would like to thank the joint effort of all members of GGPath Training Programme Working Group, GGPath First Fellow Assessment Team and the newly established GGPath Specialty Board for their hard work. Hopefully, our College can enroll the first batch of GGPath trainees very soon.

As President of the College, I participated in Academy of Medicine's 27th Annual General Meeting held last December. The Sir David Todd Orator 2020 was Professor Francis CHAN with his talk titled 'Being a Leader'. The Conferment Ceremony was conducted in the Academy Building in a very unusual way due to precautionary measures for COVID-19 with all the Fellowship recipients joining via video conferencing. Each College President announced his/her new Academy Fellows on screen.

I would like to send my heartfelt congratulations to Dr FOO Ka Chung, our new Distinguished Young Fellow, who also wrote a Topical Update in this issue of newsletter as well as all new Fellows and Members who were successful in College Examinations 2020 conducted via video conferencing during COVID-19 pandemic. I would also take this chance to thank our External Examiners, Chief Examiners, Deputy Chief Examiner and Local Examiners for their tremendous effort in making it possible for the College Examinations to be conducted as scheduled.

In the Out of the Whitecoat article, Dr LEE Kam Cheong shared with us about his fascinating bird-watching stories.

Professor Paul CHAN was recently interviewed by 'PathWay' of The Royal College of Pathologists of Australasia to share how Hong Kong managed COVID-19.

Finally, allow me to wish you all 'good health' going forward !

Dr CHAN Ho Ming
President
March 2021

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THE HONG KONG COLLEGE OF PATHOLOGISTS

GUIDELINES FOR WEB-BASED/ ONLINE CONTINUING MEDICAL EDUCATION / CONTINUOUS PROFESSIONAL DEVELOPMENT (CME/CPD) ACTIVITIES

Effective from 11 March 2021

1. Requirement for Event Organizers

Organizers of online CME/CPD activities shall perform their due diligence in implementing appropriate measures to ensure participants' attendance and reasonable participation. The minimum requirements for a participant to achieve reasonable participation are as follows:

1.1 The participant must register online personally; registration by proxy would not suffice, except in situations where group registration for attendance is performed at satellite sites and the organizer would be responsible for the registration logistics.

1.2 Upon request and as appropriate to the particular activity concerned, the participant must turn on the camera on his/her viewing device and show his/her face; the display of a still image would not constitute participation.

1.3 The participant must show his/her full name on screen where appropriate upon request.

2. Note on handling of recorded activities

If the event is a live event but recorded and is accessible for Fellows for self-study after the event, Self-Study (SS) points will not be awarded to those who have already accrued CME/CPD points by attending the live event.

Approved by College Education Committee on 5th February, 2021
Endorsed by College Council on 11th March 2021

Specialist title and Quotable Qualification: points to note for "Genetic and Genomic Pathology"

Contributed by Drs. LUNG David Christopher, CHAN Chak Lam Alexander, HO Pak Leung and MAK Siu Ming

The Hong Kong Academy of Medicine (HKAM) engaged The Hong Kong College of Pathologists (College) and sister colleges to form a working group on Genetics and Genomics (GG) to discuss about the development of training in GG. The College subsequently developed a post-fellowship training programme for Genetic and Genomic Pathology, and the training programme was endorsed by the Academy Council in April 2018. The introduction of this new specialty under Specialist Registration was approved by The Medical Council of Hong Kong (MCHK) in October 2019.

First Fellow assessment was conducted in October 2019, and the HKAM Council endorsed the list of First Fellows of Genetic and Genomic Pathology on 19th November 2020. It is important to note that the MCHK has strict rules on the use of Specialist title and professional qualifications.

Specialist title:

According to section 7 "Specialist title" of the Code of Professional Conduct ("the Code") issued by the MCHK, subsection 7.1:

> *"Only doctors on the Specialist Register are recognized as specialists, and can use the title of "specialist in a specialty". A specialist can claim himself as a specialist only in the specialty under which he is included in the Specialist Register but not other specialties."*

A doctor's name can only be included under one specialty in the Specialist Register at any one time. Only doctors whose names are on the Specialist Register are entitled to hold themselves out as specialists and use the title "Specialist in [the relevant specialty]". For example, Fellows who are trained in Clinical Microbiology & Infection and are registered under "Pathology" (Specialty code S11) are entitled to use the title "Specialist in Pathology" but not "Specialist in Clinical Microbiology & Infection" (Specialty code S45). If someone is registered under "Chemical Pathology" (code S41), he/she should not state himself/herself as "Specialist in Pathology" (Specialty code S11). Genetic and Genomic Pathology is one of the Specialties recognized by the MCHK under the Specialty code S63. In accordance with the law, only doctors who are registered under S63 can use the title **"Specialist in Genetic and Genomic Pathology"**. Fellows who are not sure should check their registered Specialty at the MCHK's website: https://www.mchk.org.hk/english/list_register/specialist_list.php

Quotable qualification:

Fellows should note that "Fellow in Genetic and Genomic Pathology" is **NOT** a quotable qualification. HKCPath Fellows belonging to different specialties (e.g. Chemical Pathology, Haematology, Anatomical Pathology, Genetic and Genomic Pathology) should all quote **FHKCPath** as listed in the approved list of quotable qualifications by the MCHK. The list of quotable qualifications is available in the following website: https://www.mchk.org.hk/english/guideline/files/quotable_qualifications.pdf

That means "Fellow in Genetic and Genomic Pathology" cannot be used in stationery (such as name cards, letterheads, envelopes), notice, etc. Registered medical practitioners who fail to comply with the MCHK's rules on quotable qualifications and the legal requirement on using Specialist title may constitute professional misconduct.

Reference:

1. *https://www.mchk.org.hk/english/guideline/files/Guidelines_on_Quoting_of_Qualifications.pdf*
2. *https://www.mchk.org.hk/english/code/index.html*
3. *http://pak-leung.blogspot.com/2020/12/blog-post.html?m=1*

President's Activities

The Hong Kong Academy of Medicine's 27th Annual General Meeting, 27th Annual Fellowship Conferment Ceremony and David Todd Oration were held on 18th December 2020. This year, the David Todd Orator was Professor Francis CHAN Ka Leung, Dean of The Faculty of Medicine, Chinese University of Hong Kong. His thought-provoking speech was entitled 'Being a Leader' where he shared his thoughts on the essential qualities required for blazing his own unique leadership path to influence others. The abstract of his speech was as follows:

"Are you a high performer? If you are, you might find your journey to becoming a leader challenging. Ironically, every experience that led to your previous success may work against you. Previous success often makes high performers reluctant to give up the attitudes and practices leading to that success. They have difficulty in coaching people because they needed little coaching themselves. Being self-driven in achieving their past success, they lack the insight needed to manage people who do not have such self-motivation. Managing others is not an extension of managing oneself. It is therefore not surprising that many high performers often turn out to be mediocre leaders. While many leaders are receptive to learning in their new position, they often stop progressing to become effective leaders. Years of experience is not a prerequisite to effective leadership. How far must we go to become an effective leader? Becoming a leader requires not only new managerial skills but also a lengthy and difficult personal transformation. This journey begins with managing yourself, that is, how you think about yourself and your role, and how you relate to and influence others."

The Conferment Ceremony and David Todd Oration were held in hybrid mode with only speakers and Council Members of the Hong Kong Academy of Medicine attending in person. The newly-admitted Fellows and the audience attended via videoconferencing while the Presidents of various Colleges were invited to announce the Fellows of their Colleges who were being admitted. We congratulate the 11 Fellows of the Hong Kong College of Pathologists who were conferred as Fellows of the Hong Kong Academy of Medicine.

▲ *Council Members of the Hong Kong Academy of Medicine and distinguished guests with Professor Chi-Yan LEONG who was conferred Honorary Fellowship by the Hong Kong Academy of Medicine.*

▲ *College President, Dr CHAN Ho Ming, announcing the College Fellows who were being admitted as Fellows of the Hong Kong Academy of Medicine at the 27th Annual Fellowship Conferment Ceremony.*

Distinguished Young Fellow 2020

Dr. FOO Ka Chung Thomas was elected Distinguished Young Fellow 2020 by The Hong Kong Academy of Medicine.

The award recognises outstanding achievements of Young Fellows, who are nominated by respective Colleges for the Academy Council's consideration on an annual basis. The Awards are normally presented at the Hong Kong Academy of Medicine's Council Dinner in September; an occasion for Past Presidents and Council Members of the HKAM to meet with the newly-elected Distinguished Young Fellows. This event was however postponed in light of the COVID-19 pandemic.

Dr. FOO has been a Fellow of the Hong Kong Academy of Medicine since 2014 and is currently Senior Medical and Health Officer at the Department of Health, Hong Kong SAR. As well as being a member of the Young Fellows' Chapter, he is also Specialty Coordinator (Forensic Pathology) and Member of the Forensic Pathology Specialty Board and Examiner in Forensic Pathology.

Congratulations!!

Announcement from the Training and Examinations Committee

We are pleased to announce that the following candidates have passed the Fellowship Assessment or Membership Examinations. Congratulations:

CHAN Cheong Kin Ronald	Fellowship Assessment	Anatomical Pathology
CHANG Lik Chun John	Fellowship Assessment	Anatomical Pathology
CHU Sin Yan	Fellowship Assessment	Anatomical Pathology
FONG Tsun	Fellowship Assessment	Anatomical Pathology
FUNG Ka Kin	Fellowship Assessment	Clinical Microbiology and Infection
KAM Lok Sang	Fellowship Assessment	Anatomical Pathology
LAM Ming Cheung	Fellowship Assessment	Anatomical Pathology
LAM Yip Cheung	Fellowship Assessment	Anatomical Pathology
LAU Wing See Tiffany	Fellowship Assessment	Anatomical Pathology
LI Jing Xi Joshua	Fellowship Assessment	Anatomical Pathology
LI Xiuling	Fellowship Assessment	Haematology
LIAO Jiawei	Fellowship Assessment	Anatomical Pathology
LO Hui Yin	Fellowship Assessment	Anatomical Pathology
WONG Wing Fung	Fellowship Assessment	Anatomical Pathology

CHEUNG Kevin Ka-chun	Membership Examination	Anatomical Pathology
CHOW Che Ying Maria Bernadette	Membership Examination	Anatomical Pathology
FUNG Ching Ki	Membership Examination	Anatomical Pathology
GAO Yang	Membership Examination	Anatomical Pathology
LAI Shui Wun	Membership Examination	Anatomical Pathology
LEUNG Ho Wai	Membership Examination	Anatomical Pathology
LI Yuk Wah	Membership Examination	Forensic Pathology
LING Tsz Ki	Membership Examination	Chemical Pathology
LO Chun Hai	Membership Examination	Anatomical Pathology
NG Ka Man Joanna	Membership Examination	Anatomical Pathology
SO Yik Ka	Membership Examination	Anatomical Pathology
TONG Hok Fung	Membership Examination	Chemical Pathology
WONG Yuen Sze Sivia	Membership Examination	Anatomical Pathology
YUEN Karen Ka-Wan	Membership Examination	Anatomical Pathology

College Examinations

You will remember that last year, the Newsletter reported on how some of the College Examinations had to be conducted with the assistance of modern technology due to social events happening in Hong Kong. This year, the College Examinations were again heavily reliant on teleconferencing facilities, with our External Examiners joining Viva and Practical examinations virtually from various parts of the world.

▲ ***Examiners in Anatomical Pathology 2020***
From left to right: Dr. CHAN Chak Lam Alexander; Dr. MAK Siu Ming; Chief Examiner Prof. TO Ka Fai; Dr. NG Wai Fu; Dr. LOKE Shee Loong; Prof. CHEUNG Nga Yin Annie; Dr. LAM Woon Yee Polly
External Examiner Prof. Richard Alexander WILLIAMS (on the screen)

▲ ***Examiners in Chemical Pathology 2020***
From left to right: Dr POON Wing Tat; Dr TAI Hok Leung ; Dr. CHAN Ho Ming; Dr. SHEK Chi Chung; Chief Examiner Prof. LAM Ching Wan; Dr. CHAN Yan Wo ; Dr. YUEN Yuet Ping ; Dr. CHAN, Kwan Chee; Dr. CHEN Pak Lam Sammy; External Examiner Prof. John BURNETT (on the screen)

▲ ***Examiners in Forensic Pathology 2020***

From left to right:
Prof. BEH Swan Lip; Chief Examiner Dr. POON Wai Ming; Dr. LAI Sai Chak
External Examiner Prof. Noel Woodford (on the screen)

▶ *Examiners marking papers while respecting social distancing measures.*

▲ ***Examiners in Haematology 2020***

From left to right: Dr. MA Shui Kwan Edmond; Dr. CHOW Yu De Eudora; External Examiner Dr. Matthew WRIGHT (on the screen); Chief Examiner Prof. NG Heung Ling Margaret; Dr. SO Chi Chiu Jason; Dr. LEUNG Fung Shan Kate

THE HONG KONG COLLEGE OF PATHOLOGISTS:

TOPICAL UPDATE

Editorial note: *Drowning often presents in various scenarios depending on the circumstances. This Topical Update provides a proper approach to the diagnosis. We welcome any feedback or suggestions. Please direct them to Dr. FOO Ka-chung of Education Committee, the Hong Kong College of Pathologists. Opinions expressed are those of the authors or named individuals, and are not necessarily those of the Hong Kong College of Pathologists.*

Volume 15, Issue 2 July 2020

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability

Drowning: A Rational Approach to its Diagnosis

Dr. FOO Ka-chung
Specialty Coordinator (Forensic Pathology),
Education Committee
The Hong Kong College of Pathologists

Introduction

Drowning is referred as "death occurring within 24 hours of a submersion incident". Definition by World Health Organization is "the process of experiencing respiratory impairment from submersion or immersion in liquid ". [1,2] It is a form of asphyxia with a distinct pathophysiology and mechanism of death. It is also a diagnosis by exclusion, and therefore every piece of information should be regarded as crucial. Pathologists are obliged to work under Coroner's jurisdiction in interviewing the next-of-kin (if available), reviewing antemortem medical records and preliminary findings provided by investigating officer, performing an autopsy as directed and compiling reports capable of addressing anticipated issues.

As Forensic Pathologists mostly deal with sudden and unexpected deaths, cases of drowning with unsalvageable outcome are often encountered. Hospital Pathologists, on the other hand, are dealing with patients presenting a clinical picture in which death eventually occurred after vigorous cardiopulmonary resuscitation followed by development of various systemic complications, e.g. pneumonia, acute respiratory distress syndrome, multi-organ failure, disseminated intravascular coagulopathy, hypoxic-ischaemic encephalopathy etc.

Manner of Death

TInformation derived from the Coroner's Report [3] and the Centre for Health Protection [4] suggested that majority of cases were accidental or suicidal in nature. Only a few were homicides. However, it should be remembered that a body found immersed in water does not necessarily imply a diagnosis of drowning. Nor its manner be automatically presumed basing on the prevalent trend. The deceased can die of natural conditions preceding or during submersion as well as unnatural elements that contributed to the drowning process, explaining the failure of extrication from water versus genuine lethal trauma before or while in water. [5,6]

Pathophysiology

The mechanism of death is complex involving changes to viscera, biochemical alterations and also at a cellular level. The culprit is the medium imposing hydrostatic and osmotic effect to the lungs. [7] The acute change in intravascular

volume with electrolyte imbalance is the consequence. Several stages of drowning present in response to the rising levels of carbon dioxide and decreasing oxygen tension in blood. Voluntary breath holding for about 1 to 2 minutes is followed by a stage of involuntary urge to breath with aspiration of fluid for about 1 to 3 minutes. Tonic-clonic seizures, together with some degree of respiratory activity, will occur in the next 1.5 minutes with eventual involuntary breath holding and terminal gasping before cessation of cardiac activity. [1]

It has even been mentioned that only a few inches of water is sufficient to drown a person, as in the case of sudden incapacitation by onset of acute illness while standing close to a washbasin or bucket. [5,6] It was reported that about 1 mL/kg to 11 mL/kg of water aspirated can result in drowning. [7]

A rare entity underdiagnosed in daily practice, or seldom made by pathologists, is referred as "dry drowning" or "immersion syndrome", with negative autopsy findings of typically drowned lungs due to severe laryngeal spasm, therefore preventing further intake while stimulating the sensitive receptors and subsequently triggering cardio-inhibitory reflexes (Ebbecke reflex, Aschner reflex, Hering reflex). [1,5,6,7,8]

Diagnosis of Drowning

The possibility of drowning should always be considered when a deceased was recovered from a body of fluid or the head was found submerged inside a medium of fluid. The deceased could be found near a body of fluid where it could be washed onto the rocky shore, beach, or riverbank. Domestic environments such as bathtub also house this potential danger affecting all walks of life, especially for those who have chronic illness with sudden unexpected precipitation or the young. While the diagnosis of drowning could be straightforward one, such as a witnessed fall into water with subsequent submersion, it can be extremely difficult when critical information derived from the case is absent or inconclusive. Challenging scenarios can appear with unclear circumstances preventing proper formulation of the manner of death. Moreover, while findings derived from postmortem and ancillary investigations may collaborate with the diagnosis, it can be equally confusing when concomitant conditions are unveiled.

Presence of a natural condition which may contribute to death

Let's consider the following case:

A 51 year-old female was found collapsed underwater in a public swimming pool of about 1.4 meters deep and was certified dead despite intensive resuscitation. There was no eye witness leading to her collapse. Autopsy revealed severe ischaemic heart disease with no evidence of acute infarction. Both lungs were congested and oedematous but frothy fluid was absent probably due to suction during resuscitation. Cause of death is labelled as drowning as the overall features were compatible with drowning.

The presence of a co-existing medical condition, be it undiagnosed or known to the deceased, has to be evaluated carefully to attribute its extent of contribution to death. A sudden precipitation into cardiac arrhythmia explained the reason why a habitual swimmer is incapacitated and eventually succumbed in the water. From the investigator's point of view, possible legal issues regarding adequate supervision of the swimming environment may be raised which could lead to possible lawsuit and inquest. As such, the pathologist should be ready to address the extent of contribution of medical condition to the tragic outcome.

Medical background of the deceased has to be thoroughly reviewed including conditions such as asthma, epilepsy, cardiovascular conditions (e.g. Long QT syndrome type 1). Psychiatric history including substance abuse should also be elicited.

Presence of trauma which may be related to death

Another case is presented here:

An 87 year-old female was found floating off shore from a pier. She was known to be a habitual swimmer and there was no known chronic illness. There were multiple lacerations on chest and right upper limb. The thoracic cavity was breached and right lung had collapsed. Tinge of frothy fluid was noticed briefly by paramedics before transportation to mortuary. Autopsy revealed severe coronary stenosis and the left lung was mildly hyperinflated.

The presence of trauma may or may not be related to death as injuries inflicted can be produced ante-mortem or post-mortem. Assessment for vital reactions at the wound margin may be helpful to determine its nature.

All forms of injuries must be explained correlating inanimate objects in the environment. Sliding abrasions may be inflicted upon skidding down a slope while blunt force injuries may be a genuine assault. Self-inflicted injuries may occur in suicide as a back-up technique, for example, a stab to the chest or incised wound on the neck, yet it might at times mimic a homicide.

Dragging effects as a result of contact with river bed or ocean floor propelled by sea waves or tidal current is not uncommon and should be interpreted in light of such movement in water. Abrasions or lacerations may be found on forehead, dorsum, knees and toes. In addition, aquatic animal activity, such as crustaceans, will produce bites and nipping around orifices. The body, on the other hand, may be struck by watercraft or its parts including the propeller, predominantly located below the waist and over the extremities while the subject is maintaining a vertical position. It should be located posteriorly upon floating postmortem. [5,6] At times injuries could be severe enough to hinder the diagnosis by producing serious disruption of the viscera. The presence of postmortem mutilation further complicate the diagnosis, let alone in jeopardizing the facial features and hindering identity as often encountered in mass fatalities.

Healthy adults who can swim rarely drown unless there is an intervening reason such as superimposed injury, fatigue or dangerous environment. The level of fitness, history of risk-taking behaviour, pre-swim activities, swimming ability and experience should be explored.

In the present case, the cause of death is labelled as drowning and suggested an accidental manner with sudden precipitation of undiagnosed cardiac condition, complicated by postmortem propeller injuries by marine traffic, evidenced by lack of blood infiltration at the site of traumatic amputation.

Let's consider another case:

An 80 year old male, who was an inmate of old aged home with multiple comorbidities confined to a wheelchair, was found submerged underneath river. He was last seen swaying around a footbridge about 3 meters above the river several hours earlier. Probable suicidal intention was identified. Autopsy revealed extensive comminuted fractures of the vault, subarachnoid haemorrhages and cortical contusions. Both lungs did not appear to be waterlogged.

Injuries may also be produced before or upon entering water and their extent have to be assessed. This could be related to subsequent question of survivability. In this case, considering the severity of the head injuries, it would appear that the deceased was unable to survive in water (or at most only a transient period) and succumbed rapidly. The cause of death is therefore attributed to head injuries upon falling with his top of head bumping the river bed.

Another case to ponder:

A 33 year-old female was found submerged about 20 meters off shore. Linear reddish bruising was found on the anterior neck. The face and eyes were congested with petechiae. Small amount of frothy fluid was present. Both lungs were congested and oedematous. Dissection also revealed deep bruising of strap muscles suggestive of pressure applied to neck. Subsequent investigation revealed spouse's involvement with manual strangulation during a quarrel.

Suspicious injuries should be noticed which may be an act of homicidal drowning. In the present case, the cause of death is a combination of drowning and pressure on neck, with latter being a significant event rendering the deceased unconscious when pressure was applied and succumbed to the effects of immersion.

Presence of drugs which may be related to death

Let's consider the following case:

A 29 year-old male was found floating in the river reported by local residents. No personal property could be found. No suicide note was present. He was last seen alive by wife 3 days ago and was believed to have quarreled with a female acquaintance, exhibiting violent behavior and soon disappeared afterwards. Wife reported missing to Police the next day and his personal belongings were discovered in a shopping mall. Autopsy revealed features of drowning. Postmortem toxicology analysis showed presence of cocaine and its metabolite benzoylecgonine in blood. It was not known to the family whether he had a history of drug abuse.

Toxicology samples are crucial to exclude conditions that may mimic autopsy features of drowning, such as pulmonary oedema. It may help to exclude an accident, explain for failure to extricate or survival in water, as well as inferring an intention to end one's life or a deliberate intoxication. In the present case, analysis of hair samples was performed to

address the issue whether he was exposed to illicit drug on a chronic basis and therefore exhibiting tolerance.

Presence of decomposition features may obscure the effects of drowning

Let's consider the following case:

A 32 year-old male was found in the reservoir exhibiting moderate decomposition changes. Suicide note was found in personal property placed neatly on the shore. Autopsy did not reveal any significant trauma or lethal disease conditions. Both lungs were not hyperinflated but huge amount of serosanguinous effusion was present in chest cavities. Police investigation also revealed a strong suicidal intention and third party was not involved.

Typical findings of drowning are often masked by decomposition changes. In addition, the time of death has to be determined during investigation. For fresh bodies examined at scene, corrective factors should be applied while measuring the core temperature against ambient temperature as the rate of cooling in flowing and still water are different. Casper's dictum refers to the rate of putrefaction after 1 week in air being equivalent to 2 weeks in water and 8 weeks burial in soil. The varying features of decomposition hint to the postmortem interval and is generally slower in cold water than a body discovered on land, but may be accelerated in bacterial laden stagnant water. As micro-organisms continue to disseminate and distribute throughout various body compartments, decomposition will be accelerated upon retrieval.

While the cause of death can remain unascertainable due to decomposition, the pathologist could nonetheless leave a remark stating the overall findings was not inconsistent with that of drowning. This is dependent on the degree of diagnostic certainty dictated by the available circumstances and likelihood of other intervening events, such as injuries (which could also be obscured by decomposition).

Let's consider another case:

A 69 year-old female with a history of psychotic illness was found floating in the sea, three days after her husband had reported missing to Police. No suicide note was found. Body exhibited early decomposition changes. Postmortem toxicology analysis revealed a toxic level of amisulpride in the blood samples. As there was no concrete evidence about the suicidal intention or actual clinical progress on the psychiatric condition, it remained unclear whether the deceased fell into the water out of her intention.

Destruction of micro-architecture by decomposition permit considerable degree of postmortem redistribution of drugs which possibly account for the elevated levels in the specimen. The cause of death and manner can remain inconclusive.

Mysterious circumstances

Let's consider a case with apparently suspicious circumstances:

A 32 year-old male with a known history of mood disorder was found floating near a port. His leg was tied to a dumbbell. Suicide note was found at home. He was last seen alive two days ago and reported missing by family another two days later. The body exhibited early decomposition changes but the lungs appeared hyperinflated. Further Police investigation tracked the last whereabouts of the deceased including the use of surveillance camera in the vicinity and revealed no evidence of third party involvement. The shopkeeper selling the dumbbell clearly recalled visit by the deceased on the day of death.

Forensic Pathologists do not interpret a case relying solely on the autopsy findings. Circumstantial information can play a role to hint the pathologist appropriate features that should be looked for during scene and body examination. In the present case, there could be an underlying psychiatric vulnerability suggestive of a suicidal intent. A body with weight affixed to limbs can of course represent an unlawful disposal, but may as well indicate a determination to kill oneself. Examination of the knot tying at the involved body part is crucial.

For suspicious case a detailed investigation into the events before death is expected. The salient areas of such are briefly mentioned here.

Witness account

This is valuable and gives considerable weight to the case. For example, witnessed jumping into the water, signs of mental impairment, activities prior to submersion, the duration of immersion, bystander resuscitation with possibility of repositioning of body, accounts provided by lifeguard and nearby video surveillance, are all hints to the state of mind prior to drowning. [5,6] Homicidal drowning is rare unless one is being incapacitated by alcohol, drugs or physical weakness, or taken by an element of surprise such as being pushed unexpectedly into water. [9]

Scene and environment

Water temperature, current, terrain, water depth, underwater condition, floating objects, marine animal activities or plants, presence of safety and rescue measures are important to consider. A seemingly innocent river with slow volume of flow may harbor strong underwater currents creating significant eddies and vortex sucking the swimmer rapidly, coupled by additional injuries inflicted by submerged rocks and waterfalls, or falling log from trees nearby. [10]

Body floats owing to formation of putrefactive gas producing buoyancy and is affected by lung volume. It could even overcome weights added to the body in concealed homicide. The body will continue to sink as hydrostatic force exert pressure to the chest and abdominal compartments creating negative buoyancy. In extremely cold water with minimal bacterial activity, the body will never resurface and decompose through formation of adipocere. [1,5,6,7,8] Coupled together with witness account about the last seen at the point of immersion, an estimation of current speed and body drop rate (about 1.5 and 2 feet in salt and fresh water respectively) can allow back-calculation of the site of drowning in moving water, i.e. the distance from shore, which is useful for rescue and case reconstruction. [5,6]

For indoor environment a bathroom may present with wet, floor, wet towels and soap scum level in the tub (if water has been drained already). The presence of bucket and mop, and other cleansing material maybe an attempt to disturb the scene. [5,6] A discovery of electrical appliances would call for a proper investigation to the possibility of electrocution.

Location of body

The place where body is discovered does not necessarily indicate the site of drowning. A body can be brought by a receding tide to the shore and there is always a possibility of drowning in another place, such as an indoor environment. [5,6,7] The body maybe disposed into the sea as an act of mimicking suicide. Differentiation between genuine drowning versus other causes; as well as fresh versus salt water immersion would be helpful. The appropriateness of the subject to the location is important. A restricted access may suggest unauthorized entry to the premises and should be investigated.

State of body

The condition of body regarding to its state of dryness or wetness, any attachment by aquatic debris and clothing identified are important. [5,6,7] Minute pieces of evidence pertaining to the identity, drug habit, personal property, weapon and suicide note should not be overlooked. Clothing and status of equipment, especially in diving related fatality should be examined. A naked body may be a deliberate act of hindering proper identification, or could be linked to a sexually motivated homicide. The body composition, water temperature, current action, type of clothing, method of water entry may all affect the presence or absence of clothing on body and should be interpreted with care. [6]

The presence of sand, seaweed or other vegetation should be documented and described, with the possibility of sampling for trace evidence and hinting the location of drowning in doubtful situations. A pair of shriveled and pale hands or feet can be found regardless of whether the individual was alive or not. Commonly referred as "washerwoman's skin", there is wrinkling and grayish white discoloration of skin at sites devoid of sebaceous glands. Histological features of swelling of epidermis keratinizing squamous epithelium, detachment of horny layer, fraying of keratin lamellae and vacuolation in the basal layer are observed. There are reports in older literature with reference to such histological changes in an attempt to determine the postmortem interval, though subjecting to environmental factors of water type, temperature, movement, pollution and dermal characteristics of the subject. [11]

Hospital Pathologists are familiar with the appearance of hypostasis but such phenomenon would be present on face, upper chest and distal end of extremities. This is explained by dangling position adopted by the body with head and limbs pointing downwards owing its specific gravity while the posterior trunk is floating backup. [1,5,6,7] On the other hand, hypostasis can be minimal when exposed to fast flowing water. [5,6] For bodies lying in bath tub there may be a line of demarcation corresponding to the water level. [7] The importance of visiting a scene cannot be emphasized more.

Clear or blood tinged oedema is usually described as a plume of froth around the nose and mouth. It is non-specific in nature and consists of bronchial mucus, oedematous fluid, air and the drowning medium. The redness is accounted by the ruptured capillaries exuding into the respiratory tract. [7,8,]

And most importantly it is transient in nature. In addition, slit, mud, sand, vegetation, algae and shell fragments may be present in bronchi and bronchioles visible both grossly and microscopically.[5,6]

Autopsy Findings

The role of an autopsy is to retrieve relevant findings that support the diagnosis. Not all the features will be present, depending on the nature of drowning process. Interpretation is only meaningful when combined with sufficient circumstantial information.

Emphysema aquosum

A pair of waterlogged lungs is a result of over-distension due to strenuous effort in an attempt to overcome oxygen depletion upon water influx. It is more prominent in the periphery and a combination of both lungs with effusion weighing more than 1000 g is usual. [7,8] There is also overlapping of medial edges in the anterior mediastinum with indentation or imprints by the corresponding ribs. It is distinguished from chronic emphysema by protrusion of sectioned bronchial and vessels at the cut surface for the latter. Histology shows flattened inter-alveolar septa, dilated pulmonary alveoli and compression of septal capillaries. [11] Alveolar macrophages stained CD 68+ (smoker cells) may be washed from the alveoli to heart allowing its detection, as well as stimulation of certain subsets of myelomonocytes in lung tissues [8], though the validity of such remains low from a practical point of view. In addition, aspirated particles such as plant material in the distal bronchioles may be suggestive of ante-mortem aspiration.

Paltauf's spots

These are subpleural haemorrhages located in middle lobe fissure of about the size of a fingernail due to rupture of capillaries by overdistension and haemolysis by fresh water drowning.

Haemorrhage in neck muscles

The strap muscles and posterior occipital muscles may show tiny haemorrhages and altered histological appearance of the myofibrils with fiber degeneration, abnormal clumps of red material and ragged red fibers, owing to anoxic and ischaemic insult secondary to violent convulsive movements. At an ultra-structural level there is myofibrillar disruption and abnormal mitochondria. [12] A prudent approach is to exclude a mechanical cause before ascribing such to the effects of drowning.

Spleen

A contracted and anaemic spleen due to hypoperfusion and sympathetic stimulation with vasoconstriction is often nonspecific. [8]

Mastoid ear haemorrhages

Haemorrhage into ear compartment occurs as a result of pressure difference subsequent to blockage of Eustachian tube by water. [8,9]

Aspiration of fluid in the sphenoidal sinus:

"Svechnikov's sign" refers to presence of fluid (about 9 ml) in sphenoid and maxillary sinus by water penetration, which could also occur during postmortem. [7,8] It has been studied in literature with recent attempt to quantify and be detected by postmortem CT scan. [13]

Gastric dilatation

"Wydler's sign" refers to swallowing of water with resultant layer of sediment separating into three layers. This is also reported in recent postmortem imaging modalities with a certain degree of diagnostic confidence. [14] Oesophageal mucosal tears can be found occasionally due to distension by water. The presence of superficial radial ruptures of gastric mucosa is referred as "Sehrt's sign".

Ancillary Investigations

These tools can diagnose drowning with a higher degree of confidence, yet their limitations should be observed at the same time.

Histology

A differential staining of the intimal of aortic and pulmonary trunk is reported in the literature between saltwater and freshwater drowning. [15]

Immunohistochemical staining

Intrarenal aquaporin-2 (AQP2), intracerebral expression of aquaporin-4, aquaporin-5, HSP70, fibronectin are studied and reported with variable results. Surfactant protein A (SP-A) is produced by type II alveolar cells and showed increased expression with granular pattern in drowning case, despite that these stains could not readily

differentiate between fresh and salt water drowning. AQP2, a channel protein for controlling flow of water molecules in the cellular interface, has shown apical expression in the apical membrane of the collecting in salt water drowning.[16] Arginine-vasopressin (AVP) was similarly expressed in the cytoplasm of renal tubules. Both have potentially served as markers to distinguish between salt and fresh water drowning, accounted by the increased binding and expression in a hyperosmolar environment.[17] While differentiation is necessary to exclude unlawful disposal of body, this can occur "naturally" when the body was dragged by sea currents from river in some regions.

Biochemistry

There are literatures studying derangement of electrolytes including sodium, chloride, and magnesium between left and right ventricles basing on the effect of hypertonic and hypotonic action of the aspirated water in drowning, referred as the "Getter's test". Results were not promising and appeared to be controversial and not adopted for routine use. Strontium was also studied to a certain extent as an indicator of drowning. It has been reported that a difference of 75 μg/L between cardiac chambers could be an indicator of drowning. This test also falls short if the drowning medium has relatively low strontium concentration.[7,8]

Diatom test

This test has often been quoted as a gold standard for some to prove that drowning has occurred. Diatoms are microscopic unicellular algae coated with silica that exist in soil, water and atmosphere. If an individual is drowned in fluid which contains diatoms, they may be identified in the lungs and other organs if circulation is maintained at the time of aspiration. The diatoms can reach various organs such as brain, kidney, liver and bone marrow (femur being the most protected bodily compartment therefore its detection is generally regarding as true positive). The technique in collection of proper bodily samples should be strictly free from environmental contamination. Aided by the oxidizing property of strong acids, detergent or enzyme, the rest of the diatom tissue is consumed leaving a pellet to be centrifuged and then examined microscopically.[1,7,8,11,18] A sample of water must be taken from the suspected site of drowning for comparison. One should notice that a negative result does not rule out drowning as the cause of death.

Its application in cases with advanced decomposition explained why it is often regarded as a gold standard.[19] The confounding factor is often the presence and concentration of diatoms in the environment plus the amount being aspirated. Unfortunately there is scanty environmental data about the species and frequency of their occurrence in local waters. Much data is needed for quantification for the profile of these algae in the environment, before designing an appropriate cut off value and proper positive species identification to achieve a reasonable sensitivity and specificity. Comparison may not be possible when the original site of drowning is unknown.

Postmortem imaging

Postmortem CT scan may show accumulation of aspirated fluid in the maxillary and sphenoidal sinuses (Svechnikov's sign), apart from detection of fluid in trachea and patchy ground glass opacities in the lung parenchyma. In another study, the presence of three layers consisting frothy material, fluid materials and dense component, visualized via different image contrasting features [13,14]. Care should be exercised during transportation as movement of body may result in reshuffling of content.

Conclusion

Despite ever expanding literature on the research about the pathophysiology and findings, as well as validity of ancillary investigations, pathologists are still facing challenges with vague circumstantial information, presence of ante/post-mortem trauma, decomposition changes, as well as non-specific autopsy findings. Nevertheless, as part of the indispensable team in death investigation, pathologists are obliged to take a proactive role in analyzing all available findings which might eventually shed light on any interpretable direction despite circumstantial evidence might still remain unclear. An inquest may be held after careful consideration by the Coroner and this has been the practice adopted to rebut unfounded allegations and refute rumors, when submitted evidence would be intensely examined. It is hoped that evidence presented and testimony of witnesses can address the appropriate issues and allow the next-of-kin to understand the circumstances before the final moment.

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Out of the Whitecoat:

My Birdwatching Journey

contributed by Dr. LEE Kam Cheong

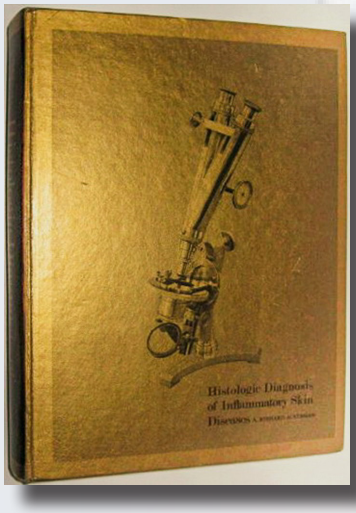
Dr K.C. LEE is a Consultant Anatomical Pathologist and former Chief of Service of Princess Margaret Hospital with a special interest in skin pathology. He served as the College President from 2003 to 2007. He is also an avid birder and a long-standing member of the Hong Kong Bird Watching Society.

In his 1978 classic textbook "Histologic diagnosis of inflammatory skin diseases," Bernard Ackerman's approach to dermatopathology was novel. He described nine major histopathologic patterns peculiar to inflammatory skin diseases, most of which can be identified with the scanning objective of the microscope. He called them the silhouettes of lesions, and compared them to the silhouettes of birds – the keys to making quick identification in birdwatching are equally applicable to dissecting the conundrum dermatoses.

▲ *A flock of migratory birds at Mai Po (Godwit, Black-tailed黑尾塍鷸)*

I was deeply fascinated by the silhouette approach the first time I opened this "gold book," so called by many both for its worth and the colour of its cover. It was at a time before I decided to go into dermatopathology, before I knew anything about birdwatching, and long before I found out Hong Kong is such a wonderful place for the pastime.

▼ *Ackerman Dermatopathology Gold Book*



"Hong Kong has more than 530 bird species – accounting for one third of the total species recorded in China …"

While the statement from the tourist's pamphlet could be somewhat misleading, as different location-based bird records are not mutually exclusive, nevertheless Hong Kong is without doubt remarkably rich in bird diversity. By the latest count over 550 bird species have been recorded in Hong Kong, of which approximately 20% are residents, 60% migrants, and the rest seabirds, vagrants or introduced species.

▲ *Siberian Crane白鶴 at Mai Po*

▶ *Spoonbill, Black-faced 黑臉琵鷺*

Comparing with another large city nearby in Southern China, with equally crowded streets thronging with towering skyscrapers, and also nature reserves in various sizes and shapes, Hong Kong still holds a record of approximately a hundred more bird species. The variety of birds in Hong Kong in fact rivals that of Great Britain, which is 88 times bigger in size. The large number of bird species recorded is certainly related to the place's exceptional geographical location and environment, but the long history of birdwatching activities is also contributory.

In the early days, the hatching and sturdy growth of birdwatching as a pastime among Hong Kong people is closely related to the affection, obsession and promotion of the British. The Hong Kong Bird Watching Society, established in 1957, is the first birdwatching organisation in Greater China. During its long history the society has accumulated a large amount of information and experience on local birds and their habitats, and has made Hong Kong the undisputed centre for birdwatchers in the region.

Yet my birdwatching journey starts from the north in the mainland.

In 1996, soon after getting my first Home Return Permit, with absolutely no idea on what to expect in birdwatching, I joined a trip to Kuatun (掛敦) of China's Fujian Province (福建) to look for the Short-tailed Parrotbill (掛敦鴉雀). At the time I thought: bird or no bird, the wondrous scenery of Wuyi Mountains is enough reason and attraction for my debut. But amazingly, I was captivated by my first encounter; I was enchanted by a passion in birds that led my footsteps all over China and beyond for the next 20 years.

In 1999, I travelled to Xinjiang (新疆), taking along with me a spotting scope and a compact digital camera, which was then still an expensive and exclusive new toy. As I looked at a Little Owl (縱紋腹小鴞) through the scope, I suddenly came up with the idea of taking images of the cute and smart little creature using the digital camera, even before the term "digiscoping" for this way of shooting

▲▶ *Ala Shan Redstart in Helan Mountains*
賀蘭山的賀蘭山紅尾鴝

bird photos was coined. At the time, with conventional film-based equipment, bird photography was extremely challenging. Therefore, I hoped, the innovative technique of image recording could be instrumental in filling the gaps in knowledge of China's birds in the wild, when visual information of its many species and subspecies was rather lacking.

And so I proceeded on my journey, armed with notebook, telescope and camera, to every remote quarter of the mainland. I have scaled the scrubby mountains in the west along the Yellow River, trod through the snowy steppes in the north up the Manchuria, trudged the rocky shores in the east beside the coast of Taiwan, and roamed the rainy valleys in the south by the Himalayas. On Orchid Island (Lanyu 蘭嶼), I observed the endemic Lanyu Scops Owl (蘭嶼角鴞) in great gratifying details. In Helan Mountains (Ala Shan賀蘭山), I was eventually rewarded by tracking down my nemesis bird Ala Shan Redstart (賀蘭山). At the frontier of Tibet (西藏), I captured on film Fire-tailed Myzornis (火尾綠鶲), probably the first time in the wild in China, and also made the country's first record of Himalayan Bulbul (白頰鵯).

With rapid growth of the Chinese economy, which renders travel and photography gear accessible and affordable to more people, I witnessed the beginning of birdwatching in the mainland, and was delighted in making acquaintance with many of their first-generation birdwatchers and bird photographers. Together with some earnest enthusiasts among them, and under the auspices of the China Zoological Society, we built the first online database of wild bird photos of China.

Due to my head start, I have been, for over a decade, unofficially crowned for shooting more Chinese bird types than anybody else, and also the first to cross the 1,000-mark of bird species photographed, an alluring goal that would take years of strategically planned trips to reach. My experiences in birdwatching have entitled me to sit in the panels of judges in national bird photography contests and bird races, in which birdwatchers compete to spot as many bird varieties as possible over a 24-hour period, and to co-author in or contribute to over ten books, field guides and magazines.

Meanwhile my journey in search of birds continues. I have visited all five countries of the Himalayan region, which boasts the tallest mountains in the world and four Global Biodiversity Hotspots, and travelled to over half of the twenty-three nations in the East Asian-Australasian Flyway of migratory birds, trekking through landscapes as contrasting as desolate tracts of Mongolia, thorny thickets of Laos, and pristine coasts of North Korea.

▲ *Owl in flight*

◥ *Lanyu Scops Owl on Orchid Island 蘭嶼的蘭嶼角鴞*

▶ *Brown Fish Owl 褐漁鴞at Cheung Chau*

But the more I behold the magnificent stretches of wilderness beyond, the more I marvel at the unique clustering of habitats in Hong Kong - more so at a time when international travel is on pause.

Undeniably without high mountains, long rivers, or vast plains, Hong Kong is in no way comparable ecologically to China mainland, which boasts 1474 bird species. Moreover, unlike isolated enclaves like Taiwan or Hainan, Hong Kong is literally only a speck in the shadow of an enormous terrain, hardly able to harbour endemic species or subspecies. Yet, with its special geographical location, diverse natural environment, juxtaposition of urban and rural areas, and organic combination of development and conservation, Hong Kong is small but mysteriously classic.
What has been packed within Hong Kong's total area of just around 1100km2, in terms of habitat diversity, is simply incredible. It has curvy and vegetated hillsides, brackish and freshwater marshes, mature and dense secondary forests, open and grassy farmlands, and gentle and broad mudflats, all by the side of a boundless ocean. This fertile concurrence creates some of the most suitable habitats for a large variety of birds to roost, replenish and breed.

For so vibrant a metropolis, Hong Kong's rich wilderness and tranquil retreats are surprisingly close by – never failing to astound bird and nature lovers:

When the first drops of sunray nimbly pierce through the morning clouds, and the reed-bed is tinged gold along the waterside, the beautiful Mai Po (米埔) becomes even more spectacular with the arrival of its majestic guest - a rare visitor from the freezing subarctic. Its bewitching silhouette

emerging from the shadow, the elegant white feathery Siberian Crane (白鶴), fully recovered from the weariness of the 6000km-long journey, is gracefully strolling across the lowly grass.

When the sun begins to set and the night advances, a ferry boat is chugging forward towards the pier of Cheung Chau (長洲), where a crowd has already been gathering along its busy shores. They are the keen birdwatchers, the avid photographers, the laid-back tourists, and the casual passers-by just enjoying the breeze, all of them gaze intently as their attentions are simultaneously drawn by a pair of big and round golden eyes. The Brown Fish Owl (褐漁鴞) is perching right on the top of the fishing-boat mast, deliberately scanning the surrounding. Sometimes it watches patiently; sometimes it patrols around confidently. Sometimes, in swift motions, it strikes into the sea to hunt. In the magical twilight, it weaves an unfading silhouette.

▲ *Sunset at Mai Po*

PathWay

Managing COVID-19 in Hong Kong

Hong Kong had its first COVID-19 cases in late January, however, despite sharing a border with mainland China, infection numbers remained relatively low and the spread was controlled quite quickly. Professor Paul KS Chan is currently the Chairman of the Department of Microbiology of the Chinese University of Hong Kong as well as the Chief Examiner in the Specialty of Clinical Microbiology & Infection under the Hong Kong College of Pathologists. He explains how Hong Kong has responded to the COVID-19 pandemic.

"Hong Kong made a swift response to COVID-19 and a diagnostic test was available very soon after the culprit virus was identified. Initially, the testing service was provided by major public hospitals and the public health laboratory, and later extended to private hospitals and private laboratories. To assure the quality of testing, we still maintain a policy that all cases should be confirmed by the public health laboratory.

"Free tests are available at public general out-patient clinics as well as private clinics. In addition to testing persons with suspected symptoms or contact history, special surveillance programs were implemented from time to time according to the situation of the pandemic," said Prof Chan.

In March, Hong Kong experienced its 'second wave', following the return of overseas students and residents which led to a spike in imported infections. This prompted Hong Kong to introduce strict border controls, allowing only residents to enter the territory from overseas, with all those returning required to undergo a COVID-19 test and 14-day quarantine.

"Since late March, our second wave, all persons entering Hong Kong from high-risk areas are tested regardless of the presence of symptoms. Since the start of the third wave in August, we have conducted intense focused testing programs for high-risk groups identified at that time, including taxi drivers, people working in elderly homes, restaurants and cafeterias, and wet markets.

"Testing capacity in Hong Kong increased from several thousand per day during the second wave, to more than ten thousand per day during the third wave. A special community-wide voluntary universal testing program was also completed in in mid-September. This meant that, with the support of a mass mobile testing centre setup, and operated 24/7 round the clock by a mission team from mainland China, 1.78 million people received a COVID-19 test within two weeks. Through this mass testing, 42 cases were identified," said Prof Chan.

Earlier this month, the Chinese University of Hong Kong established a COVID-19 testing centre which aims to reach a daily testing capacity of 2,000. The centre specialises in stool testing, on top of usual respiratory specimens, to enhance the capacity to deliver a screening program for young children and infants in the community. A pilot study on more than 2,000 young children and infants supported stool as a good specimen of choice to detect asymptomatic infections.

"With our enhanced testing capacity and the experience we have had in managing the three waves, Hong Kong is in a much better position to face the coming challenges," said Prof Chan.