NEUROANAESTHESIA SYMPOSIUM

VIRTUAL

3-4 JULY 2021

SOUVENIR PROGRAMME

MALAYSIAN SOCIETY OF ANAESTHSIOLOGISTS

SIG IN NEUROANAESTHESIA
COLLEGE OF ANAESTHESIOLOGISTS, ACADEMY OF MEDICINE MALAYSIA

PERSATUAN KAKITANGAN ANAESTHESIOLOGI HOSPITAL UMUM SARAWAK (PEKA-HUS)

bridion®
sugammadex

SELECTED SAFETY INFORMATION

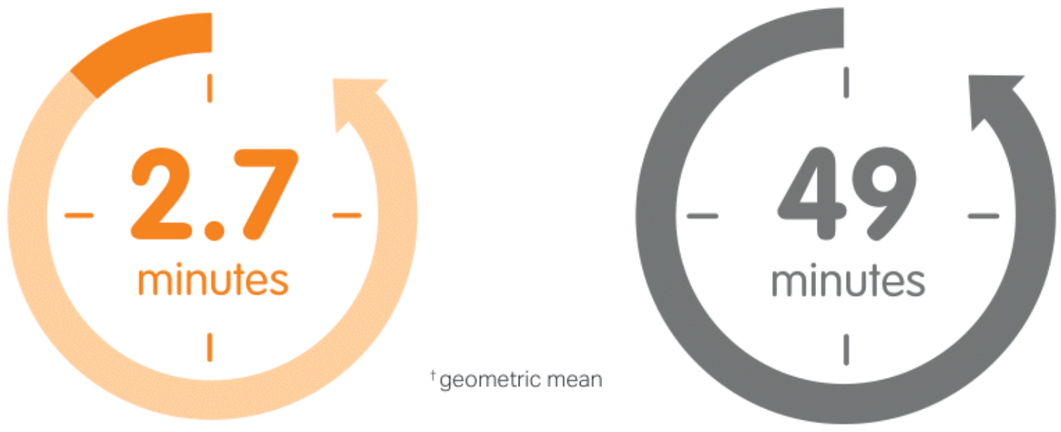
INDICATIONS Reversal of neuromuscular blockade induced by rocuronium or vecuronium. For the pediatric population: BRIDION® is only recommended for routine reversal of rocuronium induced blockade in children and adolescents. **DOSAGE AND ADMINISTRATION** BRIDION® should only be administered by, or under supervision of an anesthetist. The use of an appropriate neuromuscular monitoring technique is recommended to monitor the recovery of neuromuscular blockade. The recommended dose to be administered depends on the level of neuromuscular blockade to be reversed. **CONTRAINDICATIONS** Hypersensitivity to the active substance or to any of the excipients. **WARNINGS AND PRECAUTIONS** • Ventilatory support is mandatory for patients until adequate spontaneous respiration is restored following reversal of neuromuscular blockade. Ventilatory support is also required in cases where co-administration of drugs which depress respiratory function in peri- and postoperative period. • BRIDION® (doses of 4 mg/kg and 16 mg/kg) resulted in maximum mean prolongations of aPTT and of PT (INR) prolongations. However, it did not show an increase bleeding risk when comparing BRIDION® versus placebo in patients treated with anticoagulant. • Based on in-vitro experiments, additional aPTT and PT prolongation has been reported in BRIDION® with anticoagulants. • Bleeding risk has not been studied systematically at higher doses than 4 mg/kg, thus, coagulation parameters should be carefully monitored particularly in patients with known coagulopathies or those who receive high dose of BRIDION® (16 mg/kg). • It is not recommended to administer doses lower than the therapeutic doses due to reported increased incidence of recurrence neuromuscular blockade after initial reversal. • When rocuronium 1.2 mg/kg is administered within 30 minutes after reversal with BRIDION®, the onset of neuromuscular blockade may be delayed up to approximately 4 minutes and the duration of neuromuscular blockade may be shortened up to approximately 15 minutes. • The recommended waiting time in patients with mild or moderate renal impairment for re-use of 0.6 mg/kg rocuronium or 0.1 mg/kg vecuronium after routine reversal with BRIDION® should be 24 hours. • A nonsteroidal neuromuscular blocking agent should be used for patients requiring neuromuscular blockade prior to passing the recommended waiting time. • BRIDION® is not recommended in patients with severe renal impairment, including those requiring dialysis. **ADVERSE EVENTS** In the subset of Pooled Placebo-controlled trials where subjects received anesthesia and/or neuromuscular blocking agents, the following adverse events occurred in 2% of subjects treated with BRIDION® and at least twice as often compared to placebo including airway complications of anesthesia, coughing, tachycardia, bradycardia, movement of a limb or the body, grimacing or suckling on the endotracheal tube. For additional adverse experience information, see the product circular.

References: 1. BRIDION® (sugammadex) Product Information July 2020. **2.** Cammu, G. Residual Neuromuscular Blockade and Postoperative Pulmonary Complications: What Does the Recent Evidence Demonstrate? CurrAnesthesiol Rep.2020; 10,131–136. **3.** Tong J. Gan, et al. Fourth Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. Anesthesia & Analgesia, Volume 131, Number 2, August 2020, pp. 411-448(38).

VIRTUAL NAS 2021

BRIDION® PROVIDES RAPID REVERSAL FROM DEEP NEUROMUSCULAR BLOCKADE WITH FASTER PATIENT RECOVERY.*,[1]

* following rocuronium-induced NMB; geometric mean time from administration at 1-2 PTCs to recovery (TOF ratio 0.9) compared to neostigmine with glycopyrrolate (p<0.0001):[1]



BRIDION® 4 mg/kg
(95% CI, 1.2-16.1)† (n=37)

70 µg/kg of neostigmine
(95% CI, 13.3-145.7)† (n=37)

Use appropriate neuromuscular monitoring. Recurrence of neuromuscular block may occur; 0.2% incidence seen in a study of patients treated with rocuronium/vecuronium (n=2022)[1]

Residual neuromuscular blockade can contribute to risk of **postoperative pulmonary complications.**[2]

New Update!!

2020 Fourth Consensus Guideline for the Management of PONV[3]

Scan to view the **Cammu 2020 Paper**

Free clinical paper

Strategies to Reduce Baseline Risk

- Avoidance of GA by the use of regional anesthesia (A1)
- Use of propofol for induction and maintenance of anesthesia (A1)
- Avoidance of nitrous oxide in surgeries lasting over 1 h (A1)
- Avoidance of volatile anesthetics (A2)
- Minimization of intraoperative (A2) and postoperative opioids (A1)
- Adequate hydration (A1)

Using sugammadex instead of neostigmine for the reversal of neuromuscular blockade (A1)

PONV = Post-Operative Nausea and Vomiting; GA = General Anesthesia; NMB = Neuromuscular Blockade; PTCs = Post Tetanic Counts; TOF= Train of Four
Disclaimer : "Sugammadex is not an anti-emetic drug and has no indication for PONV"

Before administering Bridion®, please read the full prescribing information

Merck Sharp & Dohme (Malaysia) Sdn. Bhd.
B-22-1 & B-22-2, The Ascent Paradigm, No. 1, Jalan SS 7/26A, Kelana Jaya,
47301, Petaling Jaya, Selangor Darul Ehsan.
Tel: +603 7499 1600 Fax: +603 7499 1700 www.msd-malaysia.com

MY-XBR-000273 Jun/2021

MSD

VIRTUAL NAS 2021

Ultiva

Remifentanil hydrochloride

OPTIMIZING PATIENT COMFORT IN ICU[1]

ULTIVA ENABLES FLEXIBLE TITRATION[2,3]

ULTIVA REDUCES NEED FOR SEDATIVE AGENTS[4,5]

ULTIVA FACILITATES SHORTER WEANING TIME[2,6]

ULTIVA REDUCES TIME SPENT IN THE ICU[2,6]

Abbreviated Prescribing Information:

C: Remifentanil HCl **I:** Analgesic agent during induction &/or maintenance of general anesth during surgical procedures including cardiac surgery; continuation of analgesia into immediate post-op period, during transition to longer-acting analgesia. Provision of analgesia & sedation in mechanically ventilated intensive care patients. **D: Adult General anaesth** induction 0.5-1 mcg/kg/min w/ or w/o an initial bolus infusion of 1 mcg/kg over not <30 sec. **Maintenance** Dosage may be decreased individually & supplemental bolus infusion may be administered every 2-5 min. **Spontaneously breathing anaesthetised patient w/ secured airway** Initially 0.04 mcg/kg/min. **Continuation into immediate post-op period Patient breathing spontaneously** Initially, decrease infusion rate to 0.1 mcg/kg/min, may then be increased or decreased by not >0.025 mcg/kg/min every 5 min. **Cardiac anesth induction** Initially 1 mcg/kg/min. Maintenance 0.5 mcg/kg. **Intensive care patient** Initially 0.1-0.15 mcg/kg/min, titrated in increments of 0.025 mcg/kg/min. Further increase in increments of 0.025 mcg/kg/min if additional analgesia is required. **Additional analgesia for ventilated patient undergoing stimulation procedures** Maintain 0.1 mcg/kg/min for at least 5 min prior to procedure, may be adjusted every 2-5 min. Max: 0.75 mcg/kg/min. **CI:** Hypersensitivity to other fentanyl analogues. Epidural & intrathecal use. **SP:** Hypersensitivity to opioids. Not recommended for use as sole agent in general anaesth. Muscle rigidity; marked resp depression; hypotension; bradycardia; drug dependency. Administer analgesics prior to or immediately following discontinuation of treatment in patients undergoing surgical procedures w/ anticipated post-op pain. Concomitant use w/ benzodiazepines. May affect ability to drive & use machines. Severe hepatic impairment. Pregnancy & lactation. Abrupt cessation. Inadvertent administration. Debilitated, hypovolaemic & elderly patients. **AR:** Skeletal muscle rigidity; hypotension; nausea, vomiting. Bradycardia; post-op HTN; acute resp depression, apnoea; pruritus; post-op shivering. **INT**: Decreased amount or dose of inhaled & IV anaesth & benzodiazepines required for anaesth. Exacerbated CV effects eg, hypotension, bradycardia w/ cardiac depressants drugs eg, β-blockers & Ca-channel blockers. Limit dosage & duration of use w/ benzodiazepines & opioids. **P/P: Powd for inj** (vial) 1 mg x 5's. 5 mg x 5's.

Abbreviated prescribing information prepared July 2018, based on Ultiva Package Insert version dated 15 April 2018

References:

1. Battershill A J. et al Remifentanil. A review of its analgesic and sedative use in the intensive care unit. Drugs 2006; 66(3): 365-85 **2.** Dahaba A A. et al. Remifentanil versus morphine analgesia and sedation for mechanically ventilated critically ill patients. Anesthesiology 2004; 101: 640-46 **3.** Karabinis A. et al. Safety and efficacy of analagesia-based sedation with remifentanil versus standard hypnotic-based regimens in intensive care unit patients with brain injuries: a randomised, controlled trial. Critical Care 2004; 8: R268-80 **4.** Muellejans B. et al. Remifentanil versus fentanyl for analgesia based sedation to provide patient comfort in the intensive care unit: a randomized double-blind controlled trial. Critical Care 2004; 8: R1-11 **5.** Park G. Remifentanil in the ICU: A new approach to patient care. Current Anaesthesia & Critical Care 2002; 13: 313-20 **6.** Wilhelm W. et al. Remifentanil/propofol versus fentanyl/midazolam for ICU sedation. European Journal of Anaesthesiology 2004; 21: 173

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Aspen Medical Products Malaysia Sdn. Bhd. 201201020269 (1004761-w)
Unit 1302A, Level 13A, Uptown 1, 1 Jalan SS21/58, Damansara Uptown, 47400 Petaling Jaya,
Selangor, Malaysia. Tel: 603-7733 9795 Fax: 603-7733 9796

For healthcare professionals only.
For more information, please refer to full prescribing information.

MY-REM-06-21-00002

Contents

Welcome Message

Dear friends and colleagues,

On behalf of the Organising Committee, it is my great pleasure to welcome you to the Neuroanaesthesia Symposium (NAS) 2021!

After the cancellation of NAS2020, the Organising Committee has opted for a safer option by bringing a virtual edition of NAS2021 into your home / workplace. I believe that the programme is still exciting which has been well-crafted with topics related to the current trends in perioperative neuroscience.

I would like to extend my heartfelt gratitude to all speakers, participants, sponsors and biomedical industry for joining us. The NAS2021 would not have been possible without your participation.

Finally, I wish you an enjoyable and fruitful symposium.

Thank you and stay safe everyone!

Peter Tan

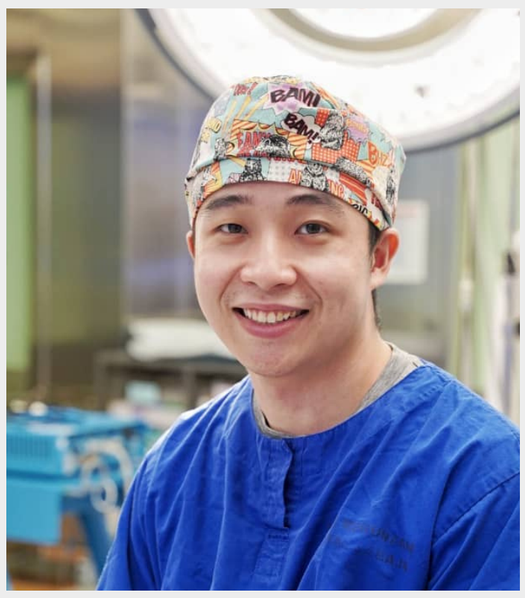
Organising Chairperson

Symposium Information

Organising Commitee

Peter Tan

Sanah Mohtar



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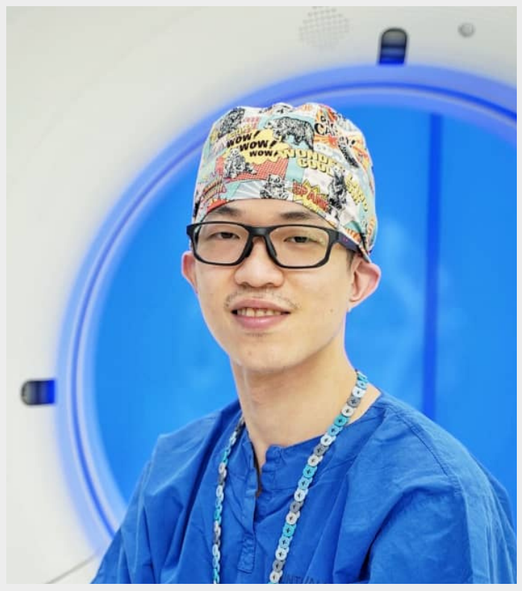
Olivia Harry



Fadly Mohd Safri

Elisha Culas

Website: https://coa.org.my/nas2021

Email: virtualNAS2021@gmail.com

CPD Points

12 points will be awarded

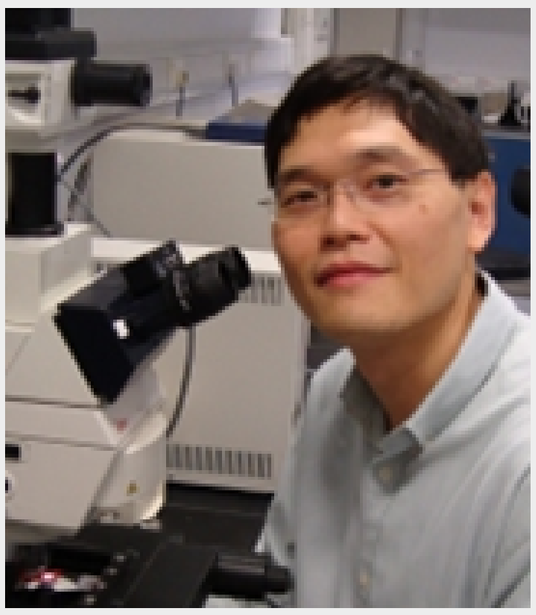
Certificate of Attendance

E-certificates will be sent via e-mail to participants after the Symposium. Please ensure the Secretariat has your e-mail address.

Plenary Speakers

John Patrick F. Bebawy (USA)

Associate Professor of Anesthesiology & Neurological Surgery, Northwestern University
Feinberg School of Medicine, Chicago, Illinois



Matthew T.V. Chan (Hong Kong, China)

Professor, Department of Anaesthesia and Intensive Care, The Chinese University of Hong Kong

Judith Dinsmore (United Kingdom)

Consultant in Neuroanaesthesia, St George's Hospital NHS Trust, London
Immediate Past-President Neuro Anaesthesia & Critical Care Society (NACCS)

Deepak Sharma (USA)

Virginia & Prentice Bloedel Professor, Division Chief Neuroanesthesiology & Perioperative Neurosciences, Unive
Washington, Seattle, WA
Immediate Past-President, Society for Neuroscience in Anesthesiology & Critical Care (SNACC)

Local Faculty

Fadhli Suhaimi bin Abdul Sukur
Neuroanaesthesiologist,
Hospital Kuala Lumpur

Goh Chin Hwee
Neurosurgeon,
Sarawak General Hospital

Jeyaganesh Veerakumaran
Consultant Neuroanaesthesiologist,
Universiti Malaya Medical Centre

Laila Ab Mukmin
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Local Faculty

Leong Kok Weng
Neuroanaesthesiologist,
Hospital Kuala Lumpur

Maizatulhikma binti Md Miskan
Neuroanaesthetic Fellow,
Hospital Kuala Lumpur

Mohd Fahmi bin Lukman
Associate Professor & Consultant
Anaesthesiologist,
Tuanku Mizan Armed Forces Hospital

Mohamad Hasyizan Hassan
Neuroanaesthesiologist,
School of Medical Sciences,
Universiti Sains Malaysia

Local Faculty

Naeema S. Masohood

Neuroanaesthetic Fellow,

Hospital Kuala Lumpur

Wan Aizat binti Wan Zakaria

Neuroanaesthesiologist,

Universiti Malaya Medical Centre

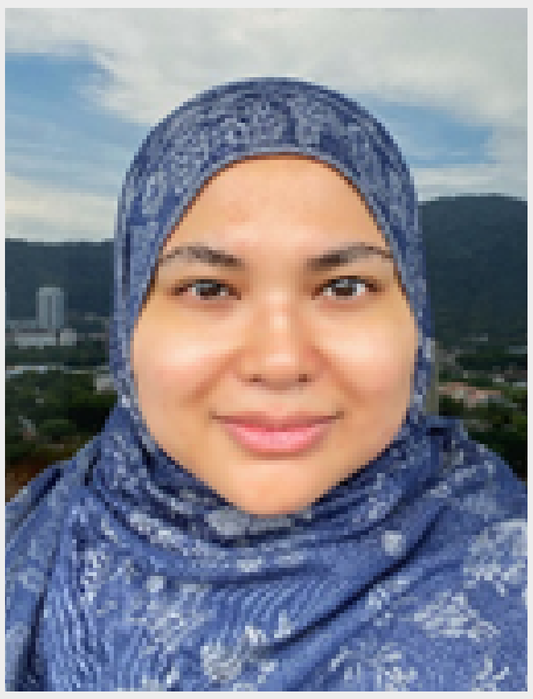
Wan Mohd Nazaruddin bin Wan Hassan

Associate Professor, Consultant

Neuroanaesthesiologist and Head of Department of

Anaesthesiology & Intensive Care,

School of Medical Sciences, Universiti Sains Malaysia



Zettie Akhtar Shuib

Neuroanaesthetic Fellow,

Hospital Pulau Pinang

Symposium Programme

3 July 2021 (Saturday)		
Time	*Agenda*	*Speaker*
0845-0900	*Doa recital by Mohd Fahmi bin Lukman* *Welcome address by Peter Tan*	
Plenary 1 Chairperson: Wan Mohd Nazaruddin bin Wan Hassan		
0900-0930	The perioperative use of adenosine: historical perspectives and current treatments	John Patrick F. Bebawy *(USA)*
0930-0945	*Break*	
Symposium 1 Chairperson: Jeyaganesh Veerakumaran		
0945-1000	Lecture 1.1 Understanding cerebrovascular reactivity	Leong Kok Weng *(Malaysia)*
1000-1015	Lecture 1.2 Anaesthetic considerations for epilepsy surgery	John Patrick F. Bebawy *(USA)*
1015-1030	Lecture 1.3 Airway management in neurosurgery: any difference?	Mohd Fahmi bin Lukman *(Malaysia)*
1030-1045	*Questions & Answers*	
1045-1100	*Break*	
Symposium 2 Chairperson: Fadhli Suhaimi bin Abdul Sukur		
1100-1115	Lecture 2.1 Decompressive craniectomy after stroke: what are the limits?	Goh Chin Hwee *(Malaysia)*
1115-1130	Lecture 2.2 TIVA vs volatiles: when and how does it matter?	Laila Ab Mukmin *(Malaysia)*
1130-1145	Lecture 2.3 Perioperative diabetes insipidus management in pituitary surgery	Maizatulhikma binti Md Miskan *(Malaysia)*
1145-1200	Lecture 2.4 The fever conundrum: dilemma in managing infections in neurological ICU	Mohamad Hasyizan Hassan *(Malaysia)*
1200-1230	*Questions & Answers*	
1230-1300	**Lunch symposium 1** *(MSD)* Chairperson: Naeema S. Masohood *Latest insights in postoperative nausea and vomiting management*	Speaker: Loh Pui San
1300-1415	*Break*	

1415-1445	**<u>Lunch symposium 2</u>** *(Aspen)* Chairperson: Zettie Akhtar Shuib *Use of remifentanil in ICU*	Speaker: Suneta Sulaiman
1445-1500	*Break*	
<u>Plenary 2</u> Chairperson: Leong Kok Weng		
1500-1530	Big data in perioperative neuroscience research: what, why and how?	Judith Dinsmore *(UK)*
1530-1545	*Break*	
<u>Symposium 3</u> Chairperson: Mohamad Hasyizan Hassan		
1545-1600	<u>Lecture 3.1</u> Anaesthetic considerations for intraoperative magnetic resonance imaging	Jeyaganesh Veerakumaran *(Malaysia)*
1600-1615	<u>Lecture 3.2</u> Awake craniotomy: managing intraoperative complications	Judith Dinsmore *(UK)*
1615-1630	<u>Lecture 3.3</u> Enhanced recovery in neurosurgery: the role of anaesthesiologist	Wan Aizat binti Wan Zakaria *(Malaysia)*
1630-1645	*Questions & Answers*	
1645	*End of day one*	

Symposium Programme

4 July 2021 (Sunday)		
Time	*Agenda*	*Speaker*
Plenary 3 Chairperson: Mohd Fahmi bin Lukman		
0900-0930	Strategies for improving outcomes after craniotomy	Deepak Sharma *(USA)*
0930-0945	*Break*	
Symposium 4 Chairperson: Wan Aizat binti Wan Zakaria		
0945-1000	Lecture 4.1 Depth of anaesthesia monitoring during neurosurgery: dilemma & options	Wan Mohd Nazaruddin bin Wan Hassan *(Malaysia)*
1000-1015	Lecture 4.2 Processed EEG signatures of anaesthetic agents	Deepak Sharma *(USA)*
1015-1030	Lecture 4.3 Endovascular treatment for acute stroke: an anaesthetic contribution to neurological recovery	Matthew Chan *(Hong Kong, China)*
1030-1045	*Questions & Answers*	
1045-1100	*Break*	
Plenary 4 Chairperson: Laila Ab Mukmin		
1100-1130	Perioperative stroke: the little big problem	Matthew Chan *(Hong Kong, China)*
1130-1145	*Break*	
Symposium 5 Chairperson: Maizatulhikma binti Md Miskan		
1145-1200	Lecture 5.1 Optimising intraoperative neurophysiological monitoring: anaesthetic considerations	Fadhli Suhaimi bin Abdul Sukur *(Malaysia)*
1200-1215	Lecture 5.2 Pain management post complex spinal surgery: current evidence	Naeema S. Masohood *(Malaysia)*
1215-1230	Lecture 5.3 Implications of novel oral anticoagulants in neuroanaesthesia	Zettie Akhtar Shuib *(Malaysia)*
1230-1245	*Questions & Answers*	
1245	*Adjourn*	

Symposium Abstracts

Plenary 1

John Patrick F. Bebawy (USA)

The perioperative use of adenosine: historical perspectives and current treatments

Adenosine is an established and important medication which serves a variety of useful purposes in the perioperative and hospital settings, owing to its effects on the heart. It is a mainstay of various diagnostic tests and ACLS, but has found greater use in neurosurgical interventions in recent years. The purpose of this plenary lecture is to describe the historical use of adenosine, within and without neurosurgery, to describe its function and disposition in the body, and to focus on recent advances of its use within neurosurgery, with particular attention to population-based dosing, safety, and therapeutic effects.

Symposium 1

Leong Kok Weng (Malaysia)

Understanding cerebrovascular reactivity

Arterial partial pressure of carbon dioxide (PaCO2) is the most potent stimulus for cerebral blood flow (CBF), and its manipulation is commonplace in neuroanaesthesia. The ability of cerebral vasculature to alter its CBF, be it global or regional, differs under various neuropathological condition. This reactivity is known as cerebrovascular reactivity (CVR), and can be thought of as the “stress test” of the brain. Besides being a surrogate of cerebral autoregulation, CVR can also be used as a measurement of cerebrovascular reserve. Various methods for measurement of CVR have been published, the most reliable method thus far is measurement of the change in MRI blood oxygen-level dependent (ΔBOLD) signal, while patient is subjected to a hypercapnic challenge. Impaired CVR has been implicated in conditions such as worsening cognitive impairment in Alzheimer’s Disease, poorer outcome in multiple sclerosis, higher long-term dependency in moderate to severe traumatic brain injury, and higher risk of stroke in high-grade carotid artery disease. In the perioperative setting, CVR studies have been shown to play an important role in individualized care, especially in intracranial revascularization procedure such as carotid endarterectomy, carotid artery stenting, and extracranial-intracranial bypass (EC-IC bypass). In such procedures, baseline CVR data allow surgical and anaesthetic risk stratification, as well as enable the neuroanaesthetist to determine the patient-specific hemodynamic management and ventilatory goals (specifically, PaCO2 level to maintain perioperatively). Perioperative CVR study is the future standard of care for patients undergoing neurosurgical procedure, and will change the “one-size-fits-all” dogma.

Symposium 1

John Patrick F. Bebawy (USA)

Anaesthetic considerations for epilepsy surgery

Epilepsy is a complicated and challenging neurological disease, with a variety of manifestations and causes, and is the most prevalent neurological disease in the general population. Because of its extreme variability in manifestation and severity, there are many treatment modalities which exist for epilepsy, both by medical management and operative approach. The purpose of this symposium lecture is to briefly describe and review the salient points related to the perioperative management of epilepsy patients, with a particular focus on how intraoperative electrocorticography (ECoG) affects both the anesthetic regimen that is used and how these surgical patients may be “the same but different” from other neurosurgical patients in the considerations for anesthesia.

Symposium 1

Mohd Fahmi bin Lukman (Malaysia)
Airway management in neurosurgery: any difference?

Airway management in the neurosurgical patients is a challenging task. The mainstay of airway management is to achieve and maintaining a patent airway, but in neurosurgical patients, it is important to consider its impact on the central nervous system. The evolution of neurosurgical procedures, anaesthetic techniques, and airway devices provide countless clinical challenges. Neurosurgical patients may present with several disease processes, which must be considered in relation to anaesthetic as well as to airway management. The patient may present to be normal or with clinical symptoms of intracranial hypertension. The airway might be assessed as normal, but the patient's head is fixed in a frame. The patient may present with acromegaly and have a previous history of difficult intubation. The patient may present with cervical spine injury and the techniques normally employed to secure the airway might potentially cause spine movement and thereby risk causing secondary neurologic injury. These are just a few examples of challenges that could be encountered in neurosurgical patients. Hence, as a perioperative physician, understanding the patient's physiologic requirements and surgeon's plan are extremely important. The approach to airway control is a decision made by anaesthesiologist, but it must be in collaboration with surgeon.

In addition to airway assessment, a careful and thorough neurologic examination and communication with surgeon is invaluable before induction of anaesthesia. It is important for the practitioner to explore and become familiar with new airway devices and techniques. To render the safest care possible, vigilance is extremely important as many problems may occur intra and postoperatively.

Symposium 2

Goh Chin Hwee (Malaysia)
Decompressive craniectomy after stroke: what are the limits?

Malignant middle cerebral artery (MCA) ischaemic infarct constitutes 10-15% of stroke and is associated with a high mortality rate of up to 80% if treated conservatively. While the evidence of decompression craniectomy is sound and significantly reduces mortality rate and improves neurological outcome in patients less than 60 years old, many neurosurgeons are still stood irresolute to the idea of recommending hemicraniectomy for stroke patients. Simply, the fact that this surgery is a life-saving procedure to treat cerebral oedema or refractory intracranial hypertension, and it does not reverse the condition of stroke. Based on the current literature, this topic aims to address the crucial points that appear to limit decompression craniectomy. This includes the cut-off point for age, timing of surgery and site of ischaemic infarct. In addition, the technical nuances and limits like the size of craniectomy, midline decompression boundary, temporalis resection, lobectomy, duroplasty and cranioplasty are discussed. Alas, evidence-based recommendations are highlighted as a guide in making the decision for this cohort of patients

Symposium 2

Laila Ab Mukmin (Malaysia)

TIVA vs volatiles: when and how does it matter?

Introduction:
Maintenance of cerebral perfusion pressure (CPP), cerebral oxygenation and provision of optimal operative condition are the cornerstone of neuroanaesthesia. This abstract will focus on total intravenous anaesthesia (TIVA) with propofol and volatile induction/maintenance of anaesthesia (VIMA) and how they matter in neuroanaesthesia.

Preservation of autoregulation and vascular CO2 reactivity influence intracranial pressure (ICP). At equipotent doses and normocapnia, cerebral blood flow (CBF) and ICP were greatest with desflurane and least with sevoflurane in both animal and human study. Autoregulation was virtually intact with sevoflurane 1–1.2% at normocapnia. Propofol reduces CBF more than sevoflurane. Propofol might benefit patients with increased ICP as it decreases SjvO2, LCSFP, and increases CPP and COER. Sevoflurane increases SjvO2, lumbar CSF pressure (LCSFP) and CPP, and decreases cerebral O2 extraction Rate (COER), which might benefit patients at risk of cerebral hypoperfusion.
The use of intraoperative neurophysiological monitoring (IONM) such as somatosensory evoked potential (SSEP) and motor evoked potential (MEP) are becoming part of the standard neurosurgical protocol. All volatile agents suppressed Transcranial (TcMEP) and SSEP in dose dependent manner, most potent being isoflurane and sevoflurane. However, TIVA and 3% desflurane showed no significant different in effect on both SSEP and TcMEP.

Advances in minimally invasive and functional procedures require prompt awakening to facilitate neurological assessment and early detection of complications that require immediate intervention. Propofol, desflurane and sevoflurane were similar in terms of intraoperative haemodynamics, brain relaxation, time to eye opening, response to verbal commands, and extubation time.

Conclusion
The effects of propofol on ICP/CPP are more predictable than volatile agents and might be beneficial in intracranial hypertension. Sevoflurane might benefit patients at risk of cerebral hypoperfusion. The minimal effect of TIVA on IONM, smooth and rapid recovery with prevention of nausea and vomiting may propel the widespread use of TIVA in neuroanaesthesia.

Symposium 2

Maizatulhikma binti Md Miskan (Malaysia)

Perioperative diabetes insipidus management in pituitary surgery

In relation to the anatomic location of pituitary tumours, interventional intracranial pituitary surgery commonly complicated with perioperative disturbances in salt and water balances due to anterior and posterior pituitary dysfunction. Cranial diabetes insipidus, which can be transient or permanent, partial or complete is a treatable clinical condition that commonly develop perioperatively and can progress into a life-threatening medical emergency. The aim of this presentation is to review the perioperative management of electrolyte and fluid disorders related to cranial diabetes insipidus following pituitary surgery and to discuss the diagnostic and therapeutic challenges encountered by anaesthetist through a review of the relevant literature and published guidelines.

Symposium 2

Mohamad Hasyizan Hassan (Malaysia)

The fever conundrum: dilemma in managing infections in neurological ICU

Fever is one of the most common problems encountered in neurocritical care. Whilst management of fever is crucial to prevent secondary insult to the injured brain, administration of unnecessary antibiotic therapy exposes the patient to emergence of resistant strain organism. Fever increases the patient's morbidity and mortality and causing prolonged neurointensive care stay. Accurate diagnosis pertaining to the causes of fever and appropriate management is essential. Here we will discuss various infective and non-infective causes leading to fever and the appropriate approach and management of pyrexia in neurocritical care.

Lunch Symposium 1 (MSD)

Chairperson: Dr Naeema S. Masohood
(Neuroanaesthetic fellow, Hospital Kuala Lumpur)
Speaker: Associate Professor Dr Loh Pui San
(Consultant Anaesthesiologist, Universiti Malaya Medical Centre)

Latest Insights in Postoperative Nausea and Vomiting Management

Postoperative nausea and vomiting, PONV is one of the most unpleasant experiences during the postoperative period and has significant consequences for patient satisfaction, patient outcomes, and costs of care. Another consequence of PONV is the interference with recovery and postoperative rehabilitation, which can potentially delay recovery.

The significance of such a complex interplay among multiple pathophysiological mechanisms in PONV is the approach. It has to be multimodal and most definitely require appropriate prevention and prompt treatment. Several guidelines have been published on the management of PONV, with the most recent consensus guidelines published in 2020. As a guideline endorsed by 23 professional societies and organizations around the world, it provides recommendations on identifying high-risk patients, managing baseline PONV risks, choices for a multimodal prophylaxis, and rescue treatment of PONV as well as recommendations for institutional implementation of a PONV protocol.

In addition, the current guideline also focuses on the evidence for newer drugs [second-generation 5-hydroxytryptamine 3 (5-HT) receptor antagonists, neurokinin 1 (NK1) receptor antagonists, and dopamine antagonists], and PONV management as part of enhanced recovery pathways.

Lunch Symposium 2 (Aspen)

Chairperson: Dr Zettie Akhtar Shuib
(Neuroanaesthetic fellow, Hospital Pulau Pinang))
Speaker: Dato' Dr Suneta Sulaiman
(Consultant Intensivist/ Anaesthesiologist, Clinical Director of ICU Institut Jantung Negara)

Use of Remifentanil in ICU

Optimal sedation and analgesia are important factors in ICU management. Different patient pathology, associated morbidity, circulatory instability and pharmacodynamic changes in the critically ill patient further complicates the management. This makes precise control of depth of sedation harder to establish in this group of patients. Neuro ICU poses additional challenges with the need for quick and often frequent neurological assessment in between periods of sedation and rest. Moreover, the importance of adequate pain management is key in order to abolish stress triggers that leads to worst neurological outcomes. Hence, finding an appropriate pharmacological sedation and pain strategy is a key element that contributes to better clinical outcomes.

Remifentanil is a potent, selective μ-opioid receptor agonist, for the provision of analgesia in mechanically ventilated critically ill patients. Remifentanil has an onset of action of about 1 min and quickly achieves steady state. Unlike other opioids, it is rapidly metabolised by non-specific blood and tissue esterases to a clinically inactive metabolite. This results in an elimination half-life of less than 10 minutes, which is independent of the duration of drug infusion. These characteristics make Remifentanil very easy to titrate to effect and allow administration at higher doses without concerns of accumulation and unpredictable and/or delayed recovery.

Plenary 2

Judith Dinsmore (UK)

Big data in perioperative neuroscience research: what, why and how?

To date, neuroscience research has concentrated on developing technologies to measure, modulate and improve understanding of the brain. Our future will depend upon developing our ability to assess, manipulate and understand big data. Big data encompasses datasets whose size, complexity and nature exceed the scope of traditional methods of data collection and analysis. It is characterised by the 3 Vs volume, variety and velocity. Within neuroscience this includes archives of brain images, genomic sequences, real time data from monitoring systems, and electronic health records.

Whilst evidence based medicine (EBM) remains the gold standard, setting up clinical trials is increasingly challenging, and results are frequently inconclusive. In reality, there is little EBM support for many current interventions in neurocritical care. Big data offers many opportunities to improve outcomes. The ability to analyse multiple patient data points during the perioperative period or critical care stay provides real time data for observational clinical research. Institutional registries record patient details, clinical activity, and outcomes enabling quality improvement, the ability to benchmark care and reduce costs. National and international databases allow us to collect and analyse patient information providing useful repositories of patient information, medical conditions, procedural interventions and outcomes. This allows the sharing of learning especially knowledge of rare conditions and the development of scoring systems. Other advantages to the sharing of clinical data include larger sample sizes, speed of data collection and reduced research costs. Big data can be used to individualise patient care but also be widely shared improving global healthcare.

Big data is currently underutilised. There are many challenges ahead, in particular ethical and legal concerns. However, despite these hurdles and additional perceived problems there are many potential advantages.

Symposium 3

Jeyaganesh Veerakumaran (Malaysia)

Anaesthetic considerations for intraoperative magnetic resonance imaging

The pairing of MRI technology and neurosurgery has evolved over the past years to improve clinical outcome and survival rates for patient's brain tumours. The benefit and economic advantages to patients and institution is apparent. The accuracy produced by intraoperative MRI improves, gross total resection tumours and reduces surgical damage to the adjacent tissues or structures. Intraoperative MRI also provide information on function (functional imaging with fMRI) which is useful in epilepsy surgery and metabolism of the brain with MR spectroscopy. Even though it has been proven beneficial in many ways one should not fail to release that providing anaesthesia for neurosurgical cases itself is already being very challenging and now together with intraoperative MRI makes the anaesthesiologist work more demanding. The anaesthesiologist providing care in this setup now needs to be more trained, experienced, and vigilant.A good teamwork, communication, preprocedural planning and familiarity of the surrounding is important. Strict adherence to a prepared checklist by anaesthetists and surgeon is important. Continuous education and update of protocol and guidelines is important to improve overall staff awareness and knowledge.

Symposium 3

Judith Dinsmore (UK)
Awake craniotomy: managing intraoperative complications

The indications for awake craniotomy continue to increase and it has become a core skill for neuroanaesthetists. Its contemporary use began in the seventeenth century for the treatment of epilepsy but it is now routinely used for neuromodulation in conditions such as Parkinson's disease, tremor and dystonias. For lesions in eloquent cortex, it has become the gold standard when intraoperative functional guidance is required maximising tumour resection whilst minimising neurological deficits. In addition, its association with a lower requirement for high dependency care, shorter hospital stay and reduced costs, has led to suggestions that it could be used for the routine resection of tumours regardless of location.

Anaesthetic techniques have evolved along with surgical indications and the emergence of newer short-acting, easily titratable agents. Techniques fall into three main categories:
1. Local anaesthesia
2. Conscious sedation
3. Asleep – awake – asleep, with or without airway instrumentation

The procedure has been shown to be safe and well tolerated but the anaesthetic challenges are significant, and many complications have been described. The most commonly reported complications include seizures, pain, agitation, hyper or hypotension, respiratory depression or obstruction, nausea and vomiting and brain swelling. Studies have reviewed the safety of different techniques and complication rates but no one technique has proved to be superior. It is widely accepted that the optimal technique is dependent on individual patient factors, the procedure to be performed and local expertise or experience. Catastrophic complications are rare but complications can lead to failure of the awake craniotomy. Prevention of complications and careful patient selection are vital. Preparation, meticulous attention to detail and good communication are the keys to success

Symposium 3

Wan Aizat binti Wan Zakaria (Malaysia)

Enhanced recovery in neurosurgery: the role of anaesthesiologist

The key element of a successful ERAS programme is a dedicated multidisciplinary team approach in all the three perioperative stages.

The involvement of the anaesthesiologist is paramount during the preoperative period in preparing a physiologically optimised patient, intraoperatively by administering anaesthetic techniques that could maintain haemodynamic stability and minimise undesired side effects of anaesthesia, and postoperatively by ensuring early restoration of patient-specific homeostasis. The combination of these multimodal strategies, which apply evidence-based medicine is targeted to reduce postoperative complications, achieve early patient recovery, and therefore minimise overall hospital costs.

Plenary 3

Deepak Sharma (USA)

Strategies for improving outcomes after craniotomy

Despite significant advances in anesthesia and neurosurgery, there is considerable room for further improvement in clinical outcomes. The efforts to improve outcomes after craniotomy should focus on (1) optimizing functional recovery with avoidance of neurological deficits / complications (2) reducing length of stay in the intensive care unit and the hospital (3) minimizing post-craniotomy pain (4) avoiding postoperative infections (5) avoiding perioperative cardiopulmonary complications and (6) avoiding readmission and re-operation. Some key strategies to improve outcomes include (1) preoperative optimization and pre-habilitation (2) use of minimally invasive surgical procedures where possible (3) judicious use of intraoperative neurophysiological monitoring and awake craniotomy (4) optimizing cerebral physiology including intracranial pressure, and cerebral perfusion pressure (5) optimizing systemic physiology (preventing "secondary insults") (6) anticipating and effectively managing crisis situations and (7) judicious use of multimodal analgesia for postoperative pain control (8) developing perioperative care pathways and dedicated neurocritical care units.
It is important to invest effort in developing multidisciplinary evidence-based guidelines and standardization of care to avoid unnecessary variation in care. In addition, data monitoring and data sharing are important to routinely examine process measures and their impact on patient outcomes. Further work is also needed to engage all stakeholders including patients to identify outcomes of central interest.

Symposium 4

Wan Mohd Nazaruddin bin Wan Hassan (Malaysia)

Depth of anaesthesia monitoring during neurosurgery: dilemma & options

The use of total intravenous anaesthesia (TIVA) technique is popular during neuroanaesthesia particularly when it involves the cases with intracranial hypertension. Even in some institution, TIVA is used as the main technique for all elective and emergency neurosurgery. When TIVA is used, the requirement of depth of anaesthesia (DOA) monitoring is highly recommended to prevent the risk of awareness. Even though target controlled infusion (TCI) method of TIVA gives an option in monitoring certain limit of plasma concentration of TCI common drugs, DOA monitoring is still highly recommended.

The dilemma of DOA monitoring during neuroanaesthesia is the close placement of the DOA monitoring sensor over the forehead with the surgical site and the position of Mayfield head skull pins. The position of the head during surgery also may interfere the sensor placement. All of these factors may lead to an interruption of the monitoring because of the risk of contamination with the antiseptic skin solution, blood or unintentional disconnection of the sensor by the surgeon during the surgery. The most tricky sensor placement is during bifrontal surgical incision where the surgeon is going to flip the scalp flap towards the forehead.

The potential solutions can be either choosing the type of DOA monitoring which has the design of sensor that can minimise the risk of contamination or by placing the sensor at the alternative sites other than the conventional forehead site. The design of the sensor of bispectral index, entropy or cerebral state index monitors may have different advantages from each other. The alternative placement at the occipital, post-auricular, auricular, infra-nasal and mandibular have been described in the literatures. The aim of this topic is to review the available literatures discussing on this issue.

Symposium 4

Deepak Sharma (USA)

Processed EEG signatures of anaesthetic agents

Despite the fact that the primary target site for anaesthetic medications is the brain, the monitoring of brain function under anaesthesia is currently limited. The effects of various anaesthetic agents on different aspects of brain function including electroencephalography (EEG), cerebral blood flow and cerebral oxygenation have been delineated. Yet, incorporation of this information in clinical practice is logistically challenging. With the advancing age of the population and growing concerns around perioperative change in neurocognitive function, there is renewed interest in intraoperative brain function monitoring. While monitoring raw EEG is impractical, a number of processed EEG monitors utilizing frontal montage are available. A common critique of processed EEG monitors is the use of the proprietary indices of “depth of anaesthesia”, the details of which are unknown to the clinicians. Nevertheless, it is important that the anaesthesiologists familiarize themselves with processed EEG signatures and spectral analysis of each anaesthetic agent. Anaesthetic agents, acting through their unique actions and on different sites of the central nervous system induce specific, dose-dependent changes in EEG which can be translated to unique signatures in the spectrogram. Spectral analysis is a user-friendly way to visualize frequency distribution of EEG signal and drug-induced oscillations that allows the clinician to track the EEG signatures of anaesthetics. While processed EEG monitoring has its’ own limitations, this knowledge is expected to assist anaesthesiologists in titrating the dose of hypnotic drugs avoiding overdosing as well as underdosing and respective adverse effects. In addition, there is growing recognitive of various EEG trajectories during emergence from anaesthesia which may predict cognitive complications.

Symposium 4

Matthew Chan (Hong Kong, China)

Endovascular treatment for acute stroke: an anaesthetic contribution to neurological recovery

Endovascular treatment with clot retrieval improves outcome of acute ischemic stroke.[1] There is however significant concern as how these procedures should be performed. Earlier observational studies suggested that general anaesthesia worsen postoperative outcome compared with sedation alone,[2] but subsequent randomized controlled trials showed a better recovery with general anaesthesia.[3] This talk will evaluate the risk and benefits of general anaesthesia versus sedation during endovascular treatment for stroke and will discuss the latest guideline from the Society for Neuroscience in Anesthesiology and Critical Care.[4]

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Plenary 4

Matthew Chan (Hong Kong, China)

Perioperative stroke: the little big problem

Perioperative stroke occurs in one in a thousand patients having noncardiac surgery.1 While an incidence of 0.1% is generally of little clinical concern, the consequence of perioperative stroke is devastating, resulting in a mortality rate of > 30% within the first month of surgery and over half patients requiring long-term rehabilitation. This talk will discuss the incidence, mechanisms, risk factors and potential prophylactic therapy for perioperative stroke.

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Symposium 5

Fadhli Suhaimi bin Abdul Sukur (Malaysia)

Optimising intraoperative neurophysiological monitoring: anaesthetic considerations

Intraoperative neurophysiological monitoring (IONM) gives near-real-time assessment of neuronal pathway during surgery. Its purpose is to promptly detect a decline in neuronal function and prevent permanent neurological injury by initiate immediate appropriate interventions to treat the reversible causes. A good real-time communication between the stakeholders is required to avoid false positive findings, hence providing optimal IONM. Choice of anaesthesia depends on type of surgery that required specific evoke potential (EP) or combination of it. Motor-evoked potential is the most vulnerable towards anaesthetic regime and total intravenous anaesthesia provides more consistent and reliable signal compared to inhalational. Titration of anaesthetic regimes are required over the course of long surgery because amplitude of signal may gradually decline. Cerebral functioning monitoring can be used as adjuncts to perform awareness monitoring in cases where minimizing anaesthetic is required to enhance signal intraoperative without causing awareness. Drugs such as ketamine, lignocaine and dexmedetomidine can be used as adjunct to reduce propofol's depressant effect on EPs. While avoiding neuromuscular blocking agents, nitrous oxide and benzodiazepines provide better signals. Keeping haemodynamic stability, appropriate transfusion strategies, avoidance hypoxia and hypothermia leads to optimal acquisition and interpretation of EPs under anaesthesia. The utility of this monitoring modality is most reliant on the anaesthesiologist, as signals are exquisitely sensitive to anaesthetic regimen and haemostatic derangement. Anaesthesia care should be tailored in such a way that mitigates a risk of new postoperative neurological deficits during the various phases of surgery and integrates with the planned IONM strategy to optimize conditions for the chosen monitoring modalities.

Symposium 5

Naeema S. Masohood (Malaysia)

Pain management post complex spinal surgery: current evidence

Complex spine surgery is associated with significant postoperative pain. This is complicated by the fact that a considerable number of patients presenting for spine surgery may be on long term analgesics for pre-existing pain. Effective pain management has been shown to correlate with improved outcomes including early ambulation and early discharge. The aim of this review is to evaluate the current evidence and provide recommendations for optimal peri-operative pain management in patients undergoing complex spine surgery. In general, multimodal analgesics are recommended as the mainstay of pain management. Interventions and analgesics which are not recommended will also be highlighted in this review.

Symposium 5

Zettie Akhtar Shuib (Malaysia)

Implications of novel oral anticoagulants in neuroanaesthesia

The use of direct oral anticoagulants (DOAC) is becoming more popular due to its advantages over older agents such as predictable pharmacokinetics, fewer drug interactions and reduced risk of bleeding. These patients may also present for neurosurgical procedures and treatment for example tumour debulking and traumatic brain injury in which they require specific considerations and preparations due to the use of DOAC. This talk will provide a summary of the current evidence and major international guidelines pertaining to the perioperative management of these drugs in both elective and emergency intracranial surgeries. It highlights emerging therapies, including specific antidotes, as well as areas where the evidence based is likely to improve in the future.

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