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Aim: There has been an increase in Neurosurgical procedures for epilepsy treatment, with some degree of benefits, specifically when it comes to epilepsies that are partial or localisation-related. Mesial temporal sclerosis (MTS) and primary brain tumour, as well as vascular abnormalities and malformations of cortical development (MCDs) are the main pathological entities in lesional epilepsies. After surgery, discussion was held on the histopathology and elimination of seizure. Method: The patients were uncontrollable medically, and between July 1999 and April 2016 had to be admitted to the epilepsy surgery. Included among the preoperative evaluation protocol we performed are physical and neurological, as well as psychiatric, and neuropsychological examinations. We also performed scalp electroencephalogram (EEG), and not less than 0.5T magnetic resonance imaging (MRI). Intra operative electrocorticography (ECoG) was used to detectirritating lesion. Regular pathology was performed studies on resected specimens with further studies made on the hippocampus. Results: Our surgery experiences based on partial epilepsy cases numbering more than 487 revealed that in 27 cases primary brain tumour presence was the responsible pathology linked to the chronic intractable epilepsy. Elimination of seizures revealed that Class 1was seizure free in 22 cases. Class 2, on its part, revealed that not more than 2 seizures take place every year in 3 cases, and Class 3 revealed reduction in seizure frequency of above 75% in 2 cases. Conclusions: In long-lasting epilepsy cases, tumorous lesions presence should not be ignored, while the major purpose of surgery is seizure elimination and not just the removal of tumour. © 2018 Lahore Medical And Dental College. All rights reserved.

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# Plenary session

## Antimicrobial resistance formation: a global threat

### Andre van der Ven

Department of Internal Medicine, Radboud university medical center, Nijmegen, The Netherlands

For a long time, there has been great optimisms about the human capacity to fight infectious diseases. This optimism was driven by the result of different strategies to prevent and controls infectious diseases such as vaccinations, hygiene measurements and infection prevention control measurements. In addition, the development of different classes of antimicrobial agents made effective treatment also possible.



The original favorable results had a significant impact on healthcare and reduction of morbidity and mortality. The original optimism is however seriously tempered in recent years because of emergence antimicrobial resistance formation. Underlying reason is the massive and uncontrolled use of antimicrobial agents in humans and animals worldwide. UN Secretary-General Ban Ki-moon therefore stated that antimicrobial resistance poses "a fundamental, long-term threat to human health, sustainable food production and development." Furthermore, he mentioned that "It is not that it may happen in the future. It is a very present reality – in all parts of the world, in developing and developed countries; in rural and urban areas; in hospitals; on farms and in communities". Rational prescription of antimicrobial agents and infection control measurements are therefore urgently needed. Increased awareness, better diagnostic tools and antibiotic stewardship programs are an important tool in the fight against antimicrobial resistance formation which will be discussed during the presentation.





# SARS, Influenza, Ebola, MERS, Zika: what have we learned?

Ab Osterhaus

'TiHo-RIZ', Hannover, Germany

## ABSTRACT

Complex relationships between humans and animals have created an interface that allowed cross-species transmission, emergence and eventual evolution of a plethora of human pathogens. Until 1900, infectious diseases were the major cause of mortality of humankind, causing an estimated fifty percent of all deaths.



In the western world, this decreased to only a few percent, due to the implementation of public health measures and the introduction of vaccines and antimicrobial compounds. This prompted policymakers and scientists to speculate that soon human infectious diseases would be brought under control. Paradoxically, soon thereafter the world was confronted with an ever-increasing number of (re-)emerging infectious diseases, like AIDS, Avian flu, SARS, MERS, Ebola, and Zika spilling over from animal reservoirs. A complex mix of predisposing factors in our globalizing world, linked to major changes in our societal environment and global ecology, collectively created opportunities for viruses and other pathogens to infect and adapt to new animal and/or human hosts. This paved the way for the unprecedented spread of infections in humans and animals with dramatic consequences for public and animal health, animal welfare, food supply, economies, and biodiversity. It is important to realize that due to the complex and largely interactive nature of the predisposing factors, it is virtually impossible to predict what the next pathogen threat will be, from where it will come and when it will strike. However better understanding of the underlying processes may eventually lead to predictions that would improve our preparedness for outbreaks in humans and animals. Investment in a better understanding the human-animal interface will therefore offer a future head start in the never-ending battle against infectious diseases of humans. Importantly, the increased emergence of viral infections is largely paralleled by medical, veterinary, technological, and scientific progress, continuously spurred by our never-ending combat against pathogens. Especially the establishment of vaccine development platforms, widely applicable to both known and unknown viruses will further contribute to an R&D based response preparedness.





# Plenary session

# Drug discovery and personalised medicine for cancer: the impact of translational research

Johnson Stanslas

Pharmacotherapeutics Unit, Department of Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

The drug discovery and development today is a long and challenging process beginning with basic research that translates clinically into a medicine to benefit many patients some 10 - 15 years later. Disappointingly, almost 85% of preclinical anticancer agents entering clinical trials fail to demonstrate sufficient safety or efficacy to gain regulatory approval.



This high failure rate emphasises a weak understanding of the complexity of human cancer and the drawbacks of the predictive value of the current preclinical models, mainly due to ineffectiveness in mimicking the human conditions. Hence, there is a need for experimental systems that better replicate the diversity of human tumour biology in preclinical settings. Nevertheless, establishing the proof-of-concept in these settings requires increasing the stake for basic research to provide specific features for successful development of a medicine that meets the health needs of millions of patients. In order to achieve this, incorporation of translational research (TR) assures higher success of drugs in clinical trials. TR is a multidirectional and multidisciplinary integration of pre-clinical, clinical and population-based research, with a long term aim of improving the health of the public. Pharmacogenetics/pharmacogenomics (PGx) research, an integral component of TR, aims to evaluate the association between candidate gene polymorphisms with treatment outcome, holds enormous potential in transforming drug discovery and personalised medicine. Essentially, almost 5000 druggable genetic targets had been appropriately mapped and can both serve as nidus for drug development and predicting treatment outcome especially in tandem with the impact of the genetic polymorphism carried by patients. An overwhelming number of the commonly used preclinical tumour models do not mimic the human counterpart with respect to common mutations, genetic polymorphisms, tumour vascularisation, tumour microenvironment and metastatic spread. These factors have been implicated in failures to translate highly promising preclinical therapeutic findings into successful clinical trials. A battery of models especially for cell lines, genetically engineered organisms (GEO) and transplantation models like patient-derived xenografts (PDX) can reciprocate one another in re-enacting the heterogeneous characteristic of human tumour both histologically and molecularly. The consequence of such models like PDX, which truly reflect the histologic and mutational features of tumours in patients is a higher success rate of new drugs in clinical trials. Additionally, application of disease models harbouring commonly mutated proteins in humans that could serve as good drug targets would ensure a more successful translation of drug efficacy in humans. In this presentation, I will describe my group's efforts in incorporating TR for drug discovery and the development of personalised medicine (via PGx research) for cancer.





# Plenary session

# Targeted treatments in intellectual disabilities

## Randi Hagerman

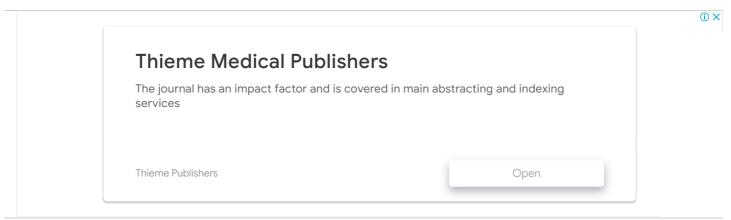
University of California at Davis Medical Center and MIND Institute, US

The Human Genome Project allowed the development of animal models for known genetic mutations that cause intellectual disability (ID). Subsequently targeted treatments have been developed that can rescue the neurobiological abnormalities in several animal models for ID and the translation of these treatments to patients with ID has been studied.



Many neurobiological commonalities have been found across several types of ID including several forms of ASD suggesting that a targeted treatment developed for one disorder may help several other disorders. For instance, an imbalance between excitatory and inhibitory pathways is seen in ASD, Fragile X syndrome (FXS), SHANK 3 mutations, Angelman Syndrome and Rett Syndrome. Often this imbalance can be related to GABA deficits but also upregulation of the glutamate systems is also seen. Deficits in FMRP levels in the brain can not only be seen in FXS but are also present in Schizophrenia, ASD, Major Depression and Bipolar Disorder so that targeted treatments that improve also the neurobiology when FMRP is deficient may be helpful for all of these disorders. Fragile X syndrome has led the way in the use of targeted treatments for ID and results from mGluR5 antagonists and GABA agonists including arbaclofen and ganaxolone will be presented. The IGF-1 analogue, Trofinetide has been helpful in Fragile X syndrome and also in Rett syndrome. A new GABA A agonist, Gaboxadol, is currently in trials in Angelman syndrome and trials will start in Fragile X syndrome in early 2018. Minocycline which lowers MMP9 has been helpful in a controlled trial in Fragile X syndrome and limited studies have been done in Angelman syndrome. Low dose sertraline which boosts BDNF has been beneficial in young children with Fragile X syndrome and it is now in a controlled trial for idiopathic ASD. Metformin is a newly recognized targeted treatment that appears to be beneficial in FXS with open label studies. Part of the difficulty in translating benefits from the mouse model to patients is that outcome measures have not been quantitative for benefit to the CNS and behavioral questionnaires are often biased because the families want to see a beneficial effect in their children. New outcome measures will be highlighted including event related potentials (ERPs), eye tracking studies with the Tobii eyetracker, cognitive measures with the NIH toolbox and molecular biomarkers and these outcome measures will help to confirm benefits from new targeted treatment studies. Realization that the earlier the intervention the better, in terms of reversing neurobiological abnormalities, has been emphasized in recent trials, so that brain development can progress without deficits as long as the medication is safe in young children. In addition, combining a targeted treatment with an intensive educational endeavor, such as parent implemented language intervention (PILI) may add a synergistic effect to further improve development. The FX-LEARN study which combines AFQ056 with PILI for children ages 3 to 6yo with Fragile X syndrome is an example of such a trial. The future looks bright for targeted treatments for ID.





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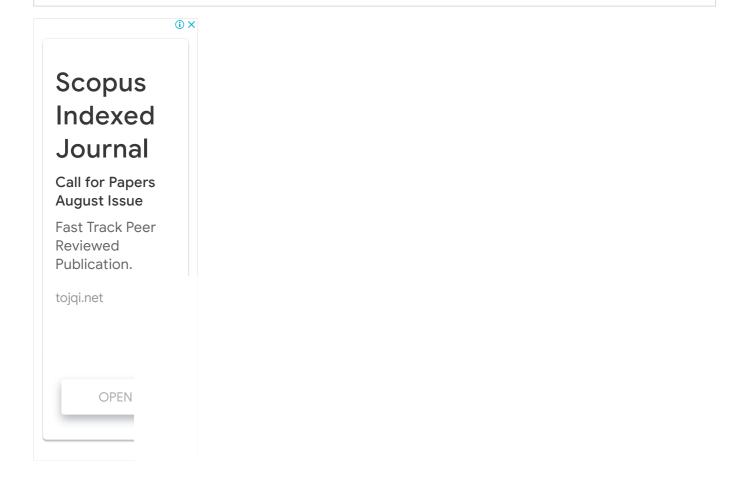
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DD 1-04

# Inhibition of ubiquitin proteasome system by local anesthetics pilsicainide and lidocaine

Udin Bahrudin<sup>1,\*</sup>, Masaki Unno<sup>2</sup>, Kazuya Nishio<sup>3</sup>, Pipin Ardhianto<sup>1</sup>, Agung Aji Prasetyo<sup>4</sup>, Yukio Morimoto<sup>5</sup>, Ichiro Hisatome<sup>6</sup>

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**Background:** Local anesthetics (LAs) inhibit degradation of proteins, however the mechanisms remain elusive. Purpose of this study was to investigate the inhibition effect of the clinically used LAs pilsicainide and lidocaineon the ubiquitin proteasome system.

**Methods**: *In vitro* study was done in COS-7 cells,MNK45 gastric cancer cells (p53<sup>+/+</sup>), and Kato III cells (p53<sup>-/-</sup>), while *in vivo* study was performed in mice. Measurement of 20S proteasomal activity and ligand binding assaywere conducted using assay kits. Western blot analysis and immunoprecipitation were done to measure the levels of proteins. Docking simulation of compounds of 20S proteasome was done using the Autodock program package.

**Results:** LAs pilsicainide and lidocaine bound directly to the 20S proteasome and inhibited its activity. Molecular dynamic calculation indicated that these LAs were bound to the  $\beta$ 5 subunit of the 20S proteasome, and not to the other active subunits,  $\beta$ 1 and  $\beta$ 2. Consistently, pilsicainide inhibited only chymotrypsin-like activity, whereas it did not inhibit the caspase-like and trypsin-like activities. In addition, the aromatic ring of these LAs was critical for inhibiting the proteasome. These LAs stabilized p53 and suppressed proliferation of p53-positive but not of p53-negative cancer cells.

**Conclusion:** Local anesthetics pilsicainide and lidocaine inhibit ubiquitin proteasome systemby binding of their aromatic ring to the  $\beta$ 5 subunit of the 20S proteasome, and thus reduced chymotrypsin-like activity, stabilize p53 and suppress proliferation of cells.

Keywords: Local anesthetics, 20S proteasome, chymotrypsin-like, p53,cell proliferation





Drug Discovery Oral Presentation

DD 1-05

# The dose dependence analysis of the water fraction of *Merremia mammosa* (*Lour.*) extract on diabetic wound healing enhancement

Ancah Caesarina Novi Marchianti<sup>1</sup>, Evi Umayah Ulfa<sup>2</sup>, Elly Nurus Sakinah<sup>3</sup>

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\*Corresponding email address: ancah@unej.ac.id

## ABSTRACT

**Introduction:**Diabetic wounds or ulcers happened in Indonesia's hospitalized diabetes patients range from 17.3 to 32.9%. The high cost of treatment, the high risk of amputation and the difficulty of handling diabetic wounds, make it necessary to look for alternative medicine derived from plants e.g. *Merremia mammosa (Mm)*. This study aimed to analyze the potential dose of the water fraction of *Mm (Lour.)* extract on diabetic wound healing enhancement.

**Method:** This study used fifty-seven male wistar rats that were made diabetic by intraperitoneal injection of 40 mg/kg body weight streptozotocin. Rats divided into six groups equally, which consist of positive control (gentamicin 0.1%), negative control (aquadest) and water fraction of Mm(Lour.) extract dose 12.5 mg, 25 mg, 50 mg and 100 mg. Wound was made by Morton method and treatment applied on the wound every other day for 21 days. Wound healing process were observed by percent wound healing and histopathological changings on day 0, 3, 10 and 25, representing each healing phase.

**Results:**The percentage of reduction in wound size comparison at day 10 showed no significant different when compared with positive control started from dose 50 mg. This result is consistent with the histopathological changings parameter (angiogenesis, macrophage, fibroblast and collagen density).

**Conclusion:**Water fraction of *Mm (Lour.)* extract was dose-dependently enhanced the process of wound healing in diabetic rat model and the most effective dose was 100 mg, which looks similar with positive control. Therefore, it is potential to be developed further as a topical drug.

Keywords: Merremia mammosa (Lour), wound healing, diabetic ulcers





Drug Discovery Oral Presentation

DD 1-06

# Supplementation of Freeze-Dried Strawberry Powder Reduced Malondialdehyde (MDA) Levels and Improved Testes Histology of Diet-Induced Obesity in Male Rat

Nur Rohmah Suwandi<sup>1,2,\*</sup>, Rozzana Mohd Said<sup>1</sup>, Hamzah Fansuri Hassan<sup>1</sup>

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## ABSTRACT

Obesity leads to metabolic complications which one of their mediations is associated with oxidative stress. In turn, this contributes to testicular damage. Antioxidant supplementation is considered as effective method to prevent and manage oxidative stress. Strawberry contains high amount of antioxidants. To evaluate antioxidative effect of strawberry in testicular tissue of died-induced obesity in male rat,Wistar rats (n=7) as a control group (standard diet) and obese male Wistar rats (n=28) were randomly divided into a High Fat Diet (HFD) group, and HFD supplemented with 1.25 %, 3.4 % and 6 % strawberry powder (HFSP). After 12 weeks rats were euthanized and testes were dissected and homogenized for MDA levels examination usingTBARS Assay Kit,and hematoxylin-eosin-stained for histopathological examination. Results show that supplementation of 3.4 % and 6 % strawberry powderexhibited high antioxidative effects on testes tissue against obesity induced by reduction of MDA level. The pathological changes in the testicular tissue characterized by short seminiferous tubules and seminiferous epithelial height,atrophic, and distorted seminiferous tubules and destroyed basement membranein rat induced by HFD were much reduced by strawberry powder supplementation.

**Keywords:** Strawberry, malondialdehyde, antioxidant, obesity, reproductive health, testes histology.



HN 1-07

# The return of a correctional tuberculosis nurse's professional values: a narrative study

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## ABSTRACT

Tuberculosis (TB) is a main health problem in penitentiary institution as TB reservoir whereas its incidence higher than in the community. Correctional nurses' values influence nursing care in prisons particularly in enhancing prisoners' TB treatment completion. Limited study revealed a detail process of a correctional nurse in regaining her professional values particularly. This paper presented a story of regaining a correctional TB nurse's professional values. The study method was a narrative study conducted in a prison in Jakarta, Indonesia through a dialogue with between the researcher and the participant. The procedure was conducted based on Paulo Freire's method by investigating the background of present values and questioning the participant how it differed from the previous one. The findings narrates a story of regaining a correctional nurse's professional values from her previous one to the present including previous perceptions about current situation of TB care in the prison, background of the previous nurse-prisoner relationship, consequences of the interaction, ideal situation of nurse-patient relationship and the consequence, and consciousness as a nurse. The study recommends a mechanism to support professional nursing values for correctional nurse in providing TB care.

Keywords: correctional nurse, narrative study, tuberculosis, professional value

# Brain Tumor cases most oftenly related to Chronic Epilepsy

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## ABSTRACT

**Aim:** There has been an increase in Neurosurgical procedures for epilepsy treatment, with some degree of benefits, specifically when it comes to epilepsies that are partial or localisation-related. Mesial temporal sclerosis (MTS) and primary brain tumour, as well as vascular abnormalities and malformations of cortical development (MCDs) are the main pathological entities in lesional epilepsies. After surgery, discussion was held on the histopathology and elimination of seizure.

**Method:** The patients were uncontrollable medically, and between July 1999 and April 2016 had to be admitted to the epilepsy surgery. Included among the preoperative evaluation protocol we performed are physical and neurological, as well as psychiatric, and neuropsychological examinations. We also performed scalp electroencephalogram (EEG), and not less than 0.5T magnetic resonance imaging (MRI). Intra operative electrocorticography (ECoG) was used to detectirritating lesion. Regular pathology was performed studies on resected specimens with further studies made on the hippocampus.

**Results:** Our surgery experiences based on partial epilepsy cases numbering more than 487 revealed that in 27 cases primary brain tumour presence was the responsible pathology linked to the chronic intractable epilepsy. Elimination of seizures revealed that Class 1was seizure free in 22 cases. Class 2, on its part, revealed that not more than 2 seizures take place every year in 3 cases, and Class 3 revealed reduction in seizure frequency of above 75% in 2 cases.

**Conclusions:** In long-lasting epilepsy cases, tumorous lesions presence should not be ignored, while the major purpose of surgery is seizure elimination and not just the removal of tumour.

**Keywords:** brain tumour, epilepsy, electroencephalography

## INTRODUCTION

The manifestation of seizures brought about by brain tumours comes often in the form of focal seizures by way of or short of secondary generalization, and close to one third of patients are resistant to antiepileptic medication treatment. Several possible reasons could account for such resistance to medication<sup>1</sup>. Several important roles that seizures play in the general wellbeing of individuals, especially in the life of patients whose primary brain tumoursare slow-growing abound<sup>2,3</sup>. The tumour-related epilepsypathogenesis have continued to be poorly understood, in spite of the fact that this subject is very important to the scientific area of neurology and neurosurgery, as well as in the field of neurooncology. The increased application of neurosurgical procedures for the epilepsytreatment has had beneficial effects. especially epilepsies that are partial or localizationrelated.The launching of magnetic resonance imaging (MRI) in epilepsy has very much influenced these recent advances<sup>4</sup>. Mesial temporal sclerosis (MTS) and primary brain tumour, as well as vascular anomaly and malformations of cortical development (MCDs) are all part of the major pathological entities in lesional epilepsies. Patients whose epilepsy is tumour related were all given referral due to the longlasting epilepsy and the histopathology, together with seizure elimination after discourse on surgery was undertaken.

## MATERIAL AND METHOD

Between July 1999 and April 2016, the patients were admitted to the epilepsy surgery. These epilepsy patients become surgical candidates if they are seen as medically intractable or if the seizures they had are considered to be lesion related. We utilised scalp electroencephalogram (EEG) with invasive recordings that are limited, in carrying out our evaluation. EEGs were attached to patients during their sleeping and waking moments. Physical and psychiatric neurological, as well as and neuropsychological examinations were among the preoperative evaluation protocol we conducted. Every patient has had not less than 0.5T magnetic resonance imaging (MRI) scans conducted in axial and coronal, as well as sagittal planes, slices of 5mm at T1, T2, and fluid attenuated inversion recovery classifications. (FLAIR) the Wechsler Adult Intelligence Scale were used for the standard

neuropsychological tests for the past two years. The conducting of the Wada test or intracarotidamobarbital procedure was only on selected cases. The patients received referral for surgery if concordant data were revealed in all preoperative investigations, in the absence of which, they were either scheduled to be either re-evaluated or were recommended to undergo other alternative treatments

The removal of tumour alone is not a guarantee of good result in seizure control. This is based on the assumption that neurons surrounding the tumour make up the epileptogenic zone. Nonetheless, the same argument can also be raised in the case of irritating lesion removal. Intra operative Electro Corticography (EcoG)(picture 1) was utilised in detecting Irritating lesion. The recording of intra operative Electro Corticography (EcoG) used a series of electrodes spaced evenly andembedded in the silicone plastic's "strips" or "grids". The sizes ofgrids and strips are standard and pre-set, but it is possible to have them trimmed for the purpose of accommodating thesize and shape of the cortical surface that is exposed. Every diameter of the contact electrode is standard at 5 mm. The distance between the electrodes is also standard at 1 cm. The standard monitoring time is 5minutes and can run up to 30 minutes while having longer recordings possess increased sensitivity in the detection of uncommon happenings. Identification of abnormal signal can be made in the operating room by way of visual observations by an epileptologist. There are variations when it comes to the recordings of preresection and post-resection ECoG usage. The aim of performing the two is for the identification/ confirmation of seizure foci, as well as in determining the degree of resection. Monitoring and analysis of rate and location, together with the period of beginning of the observed spikes are made. Surgeons are given encouragement for minimisation of the residual tumour volume whenever it is deemed possible.

Standard pathology studies were carried out on resected specimens and further studies were also carried out on the hippocampus.

There was maintenance of AED medication, postoperatively, for a period from six months to one year in every patient, which was later reduced with the patient's consent. Re-evaluation of EEG recordings was made after a period of 6 months and every year.

## RESULTS

The experiences we acquired based on more than 467 surgery cases of partial epilepsy revealed

primary brain tumourpresence as the responsible pathology relative to 27 casesin long-lasting intractable epilepsy of which 11 and 16 were wuth females and males respectively (Table 1). They were made up of 10 cases and 17 cases of vascular hamartomas and Cortical DevelopmentsMalformations or Cortical Dysplasias respectively (picture 2). Their ages range from 14-41years old averaging 24.3±7.17 years. The ages at the first epilepsy seizure was from 2-30 years old, averaging 7.7±4.70 years. The time period of epilepsy was from 1-16 years, averaging 7.7±4.70 years. Electro encephalography was utilised to make evaluations in all cases intra-operatively. The studies Histopathology revealed 9 cases to be in Dysembroplastic Neuroepithelial Tumour (DNT), and 7 cases to be Ganglioglioma, while 2 cases were Pilocytic Astrocytoma and 3 cases (2 of them revealing later changes in malignancy) of Low Grade Diffuse Astrocytoma. There were also 2 cases of Tuberous Sclerosis Complex and 2 cases ofEpidermoid, as well as a case ofPleomorphic Xanthoastrocytoma (Table 2).Seizure Eliminations revealed that 22 cases in Class 1 were Seizure Free and 3 cases in Class 2 were having 2 or less seizures every year while 2 cases in Class 3 had more than75% reduction in the frequency of seizures (Table 3).

Table 1.	Demografic brain	i tumor with e	pilepsy	/ cases

Female	11
Male	6
age The average age at the first epilepsy seizure The duration of having epilepsy	24.3±7.17 (14-41) years 14.0±7.13 (2-30) years 7.7±4.70 (1-16) years

Table 2. Patological finding

Dysembroplastic Neuroepithelial Tumor	
(DNT)	9
Ganglioglioma	7
Pilocytic Astrocytoma	2
Low Grade Diffuse Astrocytoma (2 of them	
showed malignant changes later),	3
Tuberous Sclerosis Complex	2
Epidermoid	2
Pleomorphic Xanthoastrocytoma	1

Table 3. Seizure elimination

Class 1 (Seizure Free)	22(81%)
Class 2 (not more than 2 seizures per	
year)	3(11%)
Class 3 (decrease of seizure frequency	
more than 75%)	2 (8%)

Picture 1. Intra operative EEG recording. Electode paced upon the assumed area decided by extra cranial EEG

corelated to MRI Finding. (A)Intra operative EEG recording, irritative zone marked by green line. (B) Blue line resection area.

Α



В

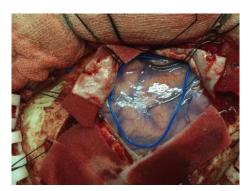
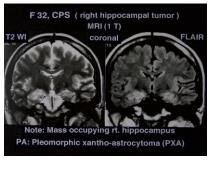
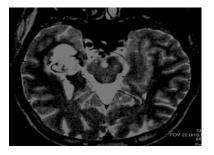
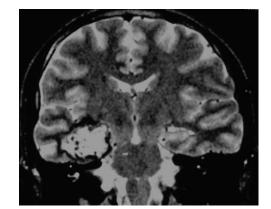


Fig.2: .A. Magnetic resonance imaging(MRI) showed mass occupyin g right hippocampus on 32 years old female present with complex partial seizure. 2.B. DNT showed at inferior temporal gyrus on 14 years old male present with compleks partial seizure.

### A. F 23, mass occupying right hippocampus

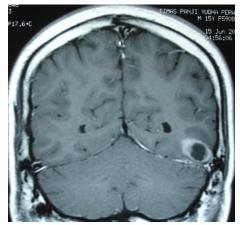






B. M 14, DNT at inferior temporal gyrus





## DISCUSSION

It is common for patients suffering from low-grade tumours like dysembryoblastic neuroepithelial tumours (DNETs) and gangliogliomas (GGs), together with oligodendrogliomas (OGs) to have seizures. These are identical to the series in our cases where cortical developmentmalformation happened to be the most frequent tumour. There is lowerepilepsyincidencein high-grade brain tumours like glioblastoma multiformes (GBMs) and metastatic tumours. There is the likelihood of seizure developmentpathogenesis being different from brain tumours having histology that is different<sup>5,6</sup>. Developmental tumours are made up of welldifferentiated cells that have the ability of releasing neurotransmitters and other modulators involved in epileptogenesis7. There is the possibility of these tumours being linked to cortexstructural epileptogenic abnormalities. There is also the possibility of subcortical network vital for electrical transmission suffering damage by the fast-growing high-grade brain tumours' highly infiltrative growth <sup>8</sup> while there has been suggestion of slow-growing tumours, inducing cortical regions' partial differentiation, resulting in the hypersensitivity of denervation<sup>7,9</sup> and the production of an epileptogenic milieu. Furthermore, there is the possibility of changes taking place in gliosis, and chronic inflammatory within the peri-tumoral regions leasing to epileptic seizures. It is possible for Brain tumours that have identical grade but differ in histology to have seizure incidences that are different.<sup>10</sup> In addition, not all patients having identical localization and histology suffer from seizures<sup>5</sup>. Such is a strong suggestion of the possibility of genetic factors playing a part in thedevelopment of tumour and tumour-related epilepsy.

The endothelial cells and astrocytes are all part of the cellular components of the blood-brain barrier (BBB). Others include pericytes and neurons, together with junctional complexes. These junctional complexes are made up of the transmembrane junctional proteins that include occlude in and claudins, together with junctional adhesion molecules which are formed as part of thecellular components of the BBB.11 Studies of humans and animals have given suggestion of perturbations in neurovascular integrity and BBB breakdown resulting in neuronal hyper-synchronisation and epileptiform activity. Reduction in transmembrane junctional proteinsexpression<sup>12</sup> and heiahtened vascular endothelial growth factor (VEGF )release13 are all relevant molecular changes in brain tumours affecting the structure and function of BBB.VEGF diffusion into the peri-tumoral brain has the possibility of aggravating the edema which surrounds the lesion. There were endothelial tight cell junctions'structural defectssurrounding human gliomas which were reported by Stewart et al.<sup>14</sup> There is suggestion by a more current study on the possibility of this being arbitrated through the transformation of the growth factor  $\beta$  (TGF- $\beta$ ) receptor. This leads to its stimulation thereby resulting in extracellular potassiumactivity which depends on accumulation and N-methyl-Daspartate (NMDA) receptor-arbitrated neuronal hyper-excitabilityfacilitation. It is also dependent on ultimate epileptiform activity. One other study demonstrated<sup>16</sup> the likelihood of epileptogenesis becoming reduced by TGF- $\beta$  receptors blockade taking place in a living organism.

Summing up these results suggests the possibility of BBB pathological disruptioni n brain tumour patients contributing to seizure activity. Defining the possibility of the degree to which BBB disturbances result in seizure induction is difficult. Nonetheless, there is a general consideration that the likely causes of seizures are tumours like LGGs that lead to BBB disturbances, although they do not succeed in the destruction of the subcortical network.

On the basis of the assumption that the tumour constituting the epileptogenic zone is surrounded by neurons, removal of the tumour alone is never a guarantee that the results of seizure control will come out well.Nonetheless, it is possible to argue on the ability of microenvironment returning to normal and the surrounding neurons ceasing to discharge abnormally if there is removal of irritating lesion. Lesionectomy alone produced very good results for majority of surgical series where paediatric patients were involved.<sup>17, 18</sup> Nonetheless, studies on adult patients revealed the possibility of gross total resection or even extended lesionectomy greatly improving seizure prognosis.<sup>10, 19</sup> This is in line with the findings we made of extended lesionectomy having the ability of improving seizure free after surgery. Shorterseizure history and lesspermanent secondary changes opportunity like hippocampal sclerosis can be attributed as a possible reason for the better lesionectomy results in children. Surgeons are, in general, given encouragement in seeing to it that the residual tutor volume is minimised whenever possible.

The traditional AEDs efficacy like valproic acid and carbamazepine (CBZ) have not (VPA) undergone anyrandomized clinical trials evaluation in patients suffering from brain tumours. Also not undergonerandomized clinical trials arephenytoin (PHT) and phenobarbital (PB). Drawing any firm conclusions based on available studies is difficult. Therefore, the basis for the decision regarding AEDs to be administered to patients suffering from brain tumours is mainly on the preference of the individual rather than on clinical evidence.Nonetheless, a quantitative and formal epidemiological study design of 12 informative studies made by Glantz and et al.20 on the investigation conducted on prophylactic anticonvulsants use such as PHT or PB or VPA in patients who have primary and metastatic brain tumours revealed the absence of efficacy in the prevention of the first seizure or in the reduction of the initial seizures'frequency. The report of Temkin also revealed that no evidence exists on the possibility of long-term treatment with PHT and CBZ providing protection against late seizures.<sup>20</sup> There are questions that still beg for answers on whether or not a traditional AED choice should be based entirely on their side effect profile.

There is a belief of VPA inhibition of epileptic discharges through the stabilisation of neuronal membranes and improvement of GABA transmission. It has the ability of inducing apoptosis and growth arrest, as well as cell diversity of tumour cells through histone deacetylaseinhibition.<sup>22</sup> A current study revealed thatautophagy in glioma cells is induced by VPA with such action being independent of apoptosis.<sup>23</sup> There is indication regarding the study of Weller et al. on the VPA potential anti-tumour activity in patients suffering from GBM who required an AED at the time of temozolomide-based chemoradiotherapy.<sup>24</sup> The fact of tumoral and peritumoral factors contributing to the tumour-related epilepsypathogenesis suggesting of VPA being taken into consideration as a first line therapy in the treatment of tumour-related epilepsy.

## CONCLUSIONS

The use of neurological surgery in the treatment of epilepsy has gone up, and such treatment does come with lots of benefits, precisely when it comes to partial or localisation- related epilepsies. Tumorous lesions presence must never be ignored when it long-lasting cases comes to of epilepsy. Developmental tumours are made up of welldifferentiated cells that have the ability of releasing neurotransmitters and other modulators involved in epileptogenesis. There is the possibility of these being linked cortex tumours to structural epileptogenic abnormalities. Seizures are common among patients with low-grade tumours like dysembryoblastic neuroepithelial tumours (DNETs) and gangliogliomas (GGs). together with oligodendrogliomas (OGs).Well-differentiated cells that have the ability of releasing neurotransmitters and other modulators involved in epileptogenesis make up the developmental tumours. There is the possibility of these tumours being linked to cortex structural epileptogenic abnormalities. There is the possibility for Brain tumours having identical grade but different in histology to have seizure incidences that are different.Tumour removal alone is not a guarantee of good result will be obtained in seizure control. The removal of tumours, therefore, must never be the major purpose for patients to undergo surgery but for the elimination of seizures.

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