

SANS NEWSLETTER



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The broad aim of this newsletter is to advance the science of neurological surgery and enhance patient's safety

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General Announcement of a Change in The Numbering System

To help our readers keep track of content, the decision was made to label our newsletter with volume and issue numbers.

Do you want to find new professional development opportunities, learn about the latest neurosurgical trends, or connect better with colleagues, SANS Annual Meetings can be a worthwhile experience. The SANS staff have been tirelessly planning the Annual Meeting this March. The SANS Board has decided to organise our 15th annual meeting virtually.

The meeting theme iSANS: Stay Connected serves to highlight how to cope-up with the advancement of internet technology, time, and environment.

Please save the date for our virtual iSANS Annual Meeting.

We wish you an excellent iSANS!

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Issue's Message

Welcome to the first 2021 issue of SANS Newsletter, which gives you a sneak preview of what's coming at the 15th SANS Annual Meeting.

Neurosurgery in Saudi Arabia section features a contribution from Professor Abdulrahman Al-Anazi, who gives a personal perspective of the beginning of Saudi Association of Neurological Surgery (SANS).

In this issue we are delighted to introduce Professor Zain Al Abedeen Jamjoom's article. He shares with us his valuable experience in the initiation of SANS.

New in this issue is the "Interview with a Neurosurgeon" where authors answer some questions related to neurosurgery and their lives in general.

Our Co-editor Professor Abdulhakim B. Jamjoom discusses neuroscience research in Saudi Arabia.

In the Resident's Corner, Dr. Rothaina Saeedi shares with us her experience during COVID-19. Dr. Awn Alessa also describes his exam experience in the Saudi Board examination.

Finally, we spotlight one of our members Dr. Ibrahim Al-Luwimi. The goal of this section is to help SANS members feel more connected by learning more about each other.

As always, we welcome your contributions and topic suggestions on this and future issues of SANS Newsletter. Please click [HERE](#) to contact us about submitting your contribution.



We are glad to announce that SANS Newsletter will issue **Certificates of Contributions** for residents. The final decision on what gets published and who earns a certificate is with the editorial board members.



SANS NEWSLETTER

LEARN MORE ABOUT WHAT'S HAPPENING IN OUR FIRST VOLUME OF OUR NEWSLETTER!

Yeah it is February! What perfect timing for reviewing all we have done over the past year. Last year around this time, we published the first issue of the Newsletter. SANS and its 2020 Annual Meeting were the main theme of the first two issues. In the August issue of SANS, we introduced SANS Academy YouTube Channel and residents webinars. In the last issue of 2020, we have launched new sections: Neurosurgery in Saudi Arabia, Neurosurgery Training and Resident's Corner.

So as we go forward in 2021, we will accomplish much more!

A LOOK AT OUR YEAR | 2020

01.



FEBRUARY 2020 >

This issue explores the story of SANS and presents its activities from 2014 to 2019

02.



MAY 2020 >

This issue was mainly about the 14th SANS Annual Meeting, which held in Riyadh on February 29 - March 1, 2020

03.



AUGUST 2020 >

This issue discusses the Post-COVID-19 Era.

04.



NOVEMBER 2020 >

As our first volume completed, we have launched new sections to take this newsletter up to the next level.



A PREVIEW OF THE 2021 SANS ANNUAL MEETING

iSANS: Stay Connected

“

Our mission is to make sure that this virtual conference achieves its goals to the highest level of standards

The letter “i” as a prefix, reflects the use of internet-based curriculum in the progression of medical education as the result of COVID-19 pandemic.

15th Annual Meeting President Dr.Khalid Siddiqui, Chairman of Scientific Committee Dr. Mohammed Bafaquh, and the SANS staff have been dedicatedly planning the Annual Meeting this March. The theme of this year’s meeting is iSANS: Stay connected.

In response to our current reality, the 15th SANS Annual Meeting will be conducted in a virtual online format.



Please scan the QR code to receive more information about this upcoming meeting

NEUROSURGERY IN SAUDI ARABIA

THE BEGINNING OF AN ASSOCIATION FOR ALL NEUROSURGEONS IN SAUDI ARABIA: A Personal Perspective



By Professor Abdulrahman Al-Anazi
 Imam Abdulrahman Bin Faisal University
 King Fahd Hospital of the University | KFHU
 Al Khobar, Saudi Arabia

Why SANS: What's behind the need for SANS?

Saudi Arabia represents a tremendous advance in the field of neurosurgery. In fact, the neurosurgical services are much more advanced than other countries which have their own surgical societies. We have neurosurgical units, departments and centres, which are fully equipped to the standard of the most prestigious international centres. Furthermore, There are so many experts in the field (Saudis and non-Saudis) working in the Kingdom who were graduated from different programs all over the world. In term of research and training, our facilities are among the most advanced research centres. There are two prestigious neurosurgery training programs. In 1987, King

Faisal University (KFU) Fellowship in Neurosurgery was officially launched to be the first Neurosurgery Post-graduate Training Program in Saudi Arabia. This fellowship is well known for more than 30 years. Another well known training program is the Saudi Board which was founded in 1995.

In light of all these, there was a desperate need for SANS.

In the Beginning

Personally, as a Saudi neurosurgeon, chairman of the Department of Neurosurgery at the College of Medicine at Imam Abdulrahman Bin Faisal University, and chairman of Neurosurgery at King Fahd Hospital of the University, having our own Saudi Neurosurgical Society was a big dream. In 2003, I

submitted a request to the university to establish a scientific neurosurgical society. I recalled that one of the requirements was to submit a list of fifty neurosurgeons working in the Kingdom, and It was a challenging task to do. Nevertheless, I prepared the list and sent it with other additional requirements to establish a neurosurgical society. The request was fully supported by the department of neurosurgery at the College of Medicine. Meanwhile, King Faisal University established a Neuroscience society. As a result, the ministry of higher education did not proceed with our request. The decision to establish similar societies at the same time is not one to take lightly.

A second Attempt

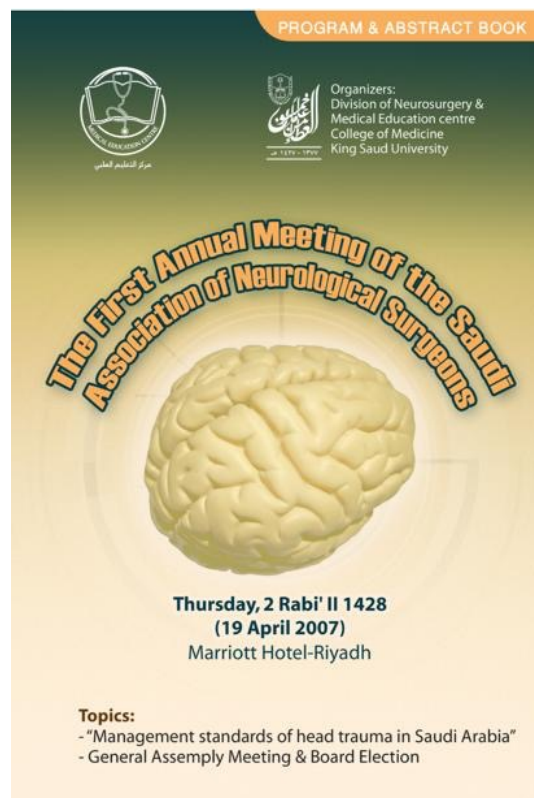
I was on a mission to move our wish of having a neurosurgical society into reality.

I think that we have reached this stage in neurosurgery to take the Saudi neurosurgeons to the next level, and that the time is ripe for comprehensive consideration of having our own society. Contacts had been established, and I discussed with Professor Khalaf Al Moutaery the idea of establishing the society through the Saudi Commission. His multiple professional careers included clinical neurosurgeon, General, program director of the Saudi board, and chairman of the department of neurosurgery at Riyadh Military Hospital (RMH). He agreed to support the concept of a Saudi neurosurgical society as a vehicle to develop the neurosurgery community in Saudi Arabia. However, the mission was not proceeding smoothly.

Time To Shine: Founding and first Annual Meeting

Professor Zain Alabedeen Jamjoom, who was the head of the Neurosurgery Division at King Saud University and

the program director of the Saudi board, proposed the association. The association was born in 2007, with the great effort and enthusiasm of Professor Zain Alabedeen Jamjoom.



The First Annual Meeting of the Saudi Association of Neurological Surgery was held at Marriott Hotel, Riyadh on 19th April, 2007.

69 neurosurgeons and others working in the field of neurosurgery attended this meeting. Many members were then enrolled in the initial phases of the development of the association. The first general assembly was conducted, and the members

of the first board were elected.

Professor Zain Alabedeen Jamjoom was elected president. Professor Khalaf Al Moutaery became the vice president. Dr. Maher Hassounah took over as secretary general, and Dr. Essam Elgamal was the treasurer. The Committee comprised Professor Waleed Rida Murshid, Professor Abdulhakim Jamjoom, Professor Saleh Baesa, Professor Sherif Elwatidy, Dr. Mahmoud Al Yamany and me (Abdulrahman Al-Anazi).

Neurosurgery in Saudi Arabia has grown significantly, and the establishment of SANS was a dream come true for all neurosurgeons working in the Kingdom of Saudi Arabia. SANS was born of a vision to develop neurosurgical methods and enhance the quality of patient care.

Previous SANS Presidents

- 2007– 2013 Professor Zain Alabedeen Jamjoom
- 2013– Present Dr. Amro Al-Habib

NEUROSURGERY IN SAUDI ARABIA

A Letter From Professor Zain Al Abedeen Jamjoom

The SANS Newsletter Editorial Board invited Professor Zain Al-Abedeen Jamjoom, Past Professor of Neurosurgery at King Saud University, Riyadh and Past President of the Saudi Association of Neurological Surgery to describe his experience in the initiation of the Saudi Association of Neurological Surgery. We are grateful for his prompt valuable response.

Dear Colleagues

I would like to thank the SANS Newsletter Editorial Board for inviting me to share my experience in the launching of the Saudi Association of Neurological Surgery (SANS).

I would like to thank Professor Abdulrahman Al-Anazi for the article and for his tremendous efforts in supporting SANS over the years. Clearly in the past, several major Saudi institutions had been making concurrent efforts at establishing an association for neurosurgeons in Saudi Arabia. In addition to the attempts made by the Imam Abdulrahman Bin Faisal University group as stated in Professor Al-Anazi's article, the late Professor Khalaf Al-Moutaery, who was the CEO of Riyadh Military Hospital, made a substantial professional and personal endeavors at initiating an association. Unfortunately, all these tries were not fruitful. I will focus on my experience at King Saud University (KSU), Riyadh. Our first attempt at establishing a Saudi association goes back as far as 1988. At the time due to the shortage of neurosurgeons in Saudi Arabia, Dr Bassim Yacoub, Head of Neurology and myself, Head of Neurosurgery at KSU, submitted a request to the Medical College to start a Saudi Neuroscience Association. Another attempt at establishing a Saudi Neuroscience Association was made in 1991. Both tries did not materialize. The situation remained in a stalemate due to the lack of bylaws governing professional bodies in Saudi Arabia as well the absence of guidelines that regulated the supervising authorities.

However, in 2000 a Royal Approval was granted and the executive rules and regulations for professional bodies in Saudi Arabia became well defined. By then the number of neurosurgeons had increased in Saudi Arabia so my colleagues at KSU and I submitted a request for our university to be the supervising authority for SANS. The official approval for SANS came in 2006 and first general assembly and inauguration meeting was hosted by KSU in 2007.

I think it would be fair to say that the first attempts at initiating a Saudi association was probably made at KSU. It is also fair to say that the continuing persistence and the right timing in submitting the association formation request were the reasons for KSU becoming SANS supervising authority. However, this is history and what matters now is that as Saudi neurosurgeons, we should be proud that we have a strong active association comparable to those in advanced countries. Furthermore, the gratitude and appreciation should extend beyond the founding group to include the new generation of young neurosurgeons who through enthusiasm, commitment, hard work and loyalty had elevated SANS to a higher new level. On the behalf of the older generation, I would like to thank them and extend to them my best wishes. I also wish our beloved SANS success, longevity, and prosperity.

Professor Zain Al-Abedeen Jamjoom

NEUROSURGERY IN SAUDI ARABIA

“Do You Like Working Here?”

A Foreigner's Perspective on Neurosurgery in Saudi Arabia

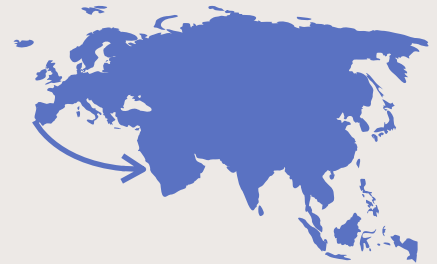


By David O. Pereira Carpio, MD

Consultant Spine Neurosurgeon

Neurosurgical Oncology

Porto & Azores, Portugal



Working in the Kingdom of Saudi Arabia (KSA) has been by far one of my richest experiences. The Saudi labour law is pretty fair, and I immersed myself in a multi-culture work environment.

Located at the Eastern Province, the Royal Commission Hospital (RCH) “provides the community of Jubail Industrial City with comprehensive, quality health service in a safe, patient-centred environment.”

I was proposed to join the team at the RCH to relaunch the neurosurgical department. Under the direction of two neurosurgeons, Dr. Nabeel S. Alshafai and Dr. Aly Bokhary, the department had flourished. Dr. Alshafai is an enthusiastic Saudi and Canadian board certified neurosurgeon, and Dr. Aly Bokhary, is an experienced consultant neurosurgeon. He had spent several years at the RCH before our arrival.

All together, we started pushing hard to expand capacity in response to the most common situations involving the head, spine and peripheral nerves. The volume of work including surgeries, clinic visits and academic activities was increased.

During my time in Jubail Industrial City, I acted as a Neuroscience rounds coordinator and auditor of the neurosurgical department. Before Ramadan 2018, Dr. Alshafai led the team that set up an international successful course entitled “Comprehensive Fundamental Neurosurgery Review.” In addition, two extremely hard-working young neurosurgeons, Dr. Khalil S. Al-Qadasi and Dr. Wafa Aldulais, were hired to fulfil the new born department's needs. They were united through the common denominator of friendship and professionalism.

Even though I had to come back home a couple of months ahead of schedule, I can honestly describe my experience in KSA as a spectacular professional one. Furthermore, Having many new good friends who I'm still in contact with and exploring such beautiful ancient culture makes me a privileged person.

Looking forward to seeing you all in the future, Inshallah!

Shukran.



If you would like to share your experience working in Saudi Arabia, email us **here** to submit your writing

CLINICAL NEUROSCIENCE RESEARCH IN SAUDI ARABIA



By Abdulhakim B. Jamjoom FRCS(SN)

Professor of Neurosurgery

King Khalid National Guards Hospital and

King Saud bin Abdulaziz University for Health Sciences

Jeddah, Saudi Arabia

1) Where Do We Currently Stand?

Citation-based bibliometrics are increasingly utilized in the evaluation of global scientific productivity and worldwide ranking for universities and countries. It is accepted that they can affect the prestige of journals as well as the careers, funding and reputation of researchers, and institutions.

SCImago Journal & Country Rank (SJR) web site was used to determine Saudi Arabia's productivity and worldwide ranking in clinical neuroscience during 1996 - 2019. The data was interpreted in the context of five country specific characteristics. The findings were as follows:

Bibliometric Indicator	KSA Productivity	KSA Worldwide Ranking
Total Citable Documents	2122	38
Total Cites	25225	40
Cites Per Documents	10.95	139
Country Specific Characteristic	KSA Score	KSA Worldwide Ranking
Population (2018)	33,702,756	23
GDP per Capita (2015)	\$23,538	26
Percentage of GDP spent on R & D (2015)	0.82%	41- 42
Number of Neuroscience Journals in SJR (2018)	1	22- 31
Number of Universities in Top 500 (2018)	4	22- 28

Conclusions: The steady increase in Saudi Arabia's clinical neuroscience total documents is encouraging. Allowing for its country characteristics, Saudi Arabia's performance in clinical neuroscience may be considered below expectations. The relatively small total cites number and low cites per document rank would suggest that:

- ***We need to look at ways to improve the quality of our research***
- ***We need to make our research more visible to improve citation numbers***

2) How to Improve Our Citation Numbers?

Factor	Target aspect	Measures to increase article citations
Article-Related	Study Quality	Aim for a quality research such as systematic reviews, meta-analysis and research study that is, as much as possible, prospective, randomized, controlled, blinded, with good sample size and reporting positive results.
	Study Topic	Choose a novel topic, wide in scope and had not been addressed well in the literature.
	Article Manuscript	Make your manuscript clear, readable, of adequate length and addressing a distinctly formulated question. The practical implications of the findings should be discussed well.
	Article Accessibility/ Visibility	Publish your article in open access, online journals and where the article is indexed in numerous databases. The most downloaded papers achieve the highest citations. Try to present your research in scientific meetings and social media to increase its visibility.
Journal-Related	Journal IF	Try and publish your article in the highest IF journal possible.
	Journal Scope	Go for the more general journals as they have more readers and wider circulation. Go for international and multidisciplinary journals.
Author-Related	National/ International Collaboration	Try and make your research collaborative (national multi-centre, multi-national or multi-disciplinary). The more countries, organizations and disciplines produce the article, the more it gets cited.
	Funding and Grants	Try and get funding for your research. Research that has received funding gets more citations.
	Authors Affiliation Reputation and country	Prestigious international institutions, well known authors who are prominent in their field and advanced countries with strong scientific background produce quality research that receives more citations. Explore collaboration opportunities.
	Self-Citation	Use self-citation to make your other publications more visible while maintaining appropriateness. Some consider self-citation a gaming tactic with unproven impact.

NEUROSURGICAL GUIDELINES

2020 UPDATE OF THE DECOMPRESSIVE CRANIECTOMY RECOMMENDATIONS FOR SEVERE TRAUMATIC BRAIN INJURY

Developed from the Guidelines for the Management for Severe Traumatic Brain Injury
Neurosurgery, Volume 87, Issue 3, September 2020, Pages 427-434 ([here](#))

By Dr. Yaser Babgi

King Fahad Medical City | KFMC
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High intracranial pressure (ICP) management is a crucial part of the head injury treatment protocol.

This topic is subjected to a lot of debate, and different studies are conducted trying to reach a consensus for the best protocol. Although decompressive craniectomy was incorporated into the treatment of high ICP for years, its clinical benefit still debatable.

After the last published guidelines by the brain trauma foundation in 2017, two large clinical trials were published (RESCUEicp & new outcome data from DECRA).

This necessitates releasing a new update to the existent evidence.

These studies were designed for studying secondary Decompressive Craniectomy for treatment of the refractory high ICP.

Early refractory ICP elevation means ICP more than 20 mm Hg for 15 min over a 1-hour period despite doing tier 1 treatment within the first 72 hours of care (DECRA).

Late refractory ICP elevation means ICP more than 25 mm Hg for 1-12 hours that is refractory to 2 tiers of treatment within 10 days of admission.

Updated Recommendation - Level IIA:

1. NEW-Secondary DC performed for late refractory ICP elevation is recommended to improve mortality and favorable outcomes.
2. NEW-Secondary DC performed for early refractory ICP elevation is not recommended to improve mortality and favorable outcomes.
3. NEW-Secondary DC performed as a treatment for either early or late refractory ICP elevation, is suggested to reduce ICP and intensive care duration. However, the relationship between these effects and a favorable outcome is uncertain.
4. RESTATED-A large frontotemporoparietal DC (not less than 12 × 15 cm or 15 cm in diameter) is recommended over a small frontotemporoparietal DC for reduced mortality and improved neurological outcomes in patients with severe TBI.

PUBLIC EDUCATION

COVID-19 VACCINATION

COVID-19 Vaccination Campaign

The vaccination campaign began on December 17, 2020. Priority given to the most vulnerable groups in the society.



COVID-19 Vaccine

The Ministry of Health (MOH) in Saudi Arabia began a coronavirus campaign. Only vaccines that meet strict standards of safety, quality and effectiveness will be used. Vaccines must undergo extensive testing for its safety and efficiency. Most common side effects of a vaccine are identified in studies prior vaccine approval. The whole world witnessed global cooperation against COVID-19.

Clinical trials are conducted to determine COVID-19 vaccine effectiveness under real-world conditions before it is approved for use

How do vaccines work?

Vaccines reduce the risk of getting a disease by helping the immune system to recognise the invading virus. Vaccines are safe and do not cause the disease or put you at risk of its complications. They are the only way to eradicate disease - if Allah wills - and protect ourselves and those around us from serious illness.

Based on a phased strategic plan to limit the impact the COVID-19 on our community, Ministry of Health (MOH) announced a three-phase Covid-19 vaccination programme. Each phase has targeted groups.

The First Phase:

- People who are 65 and older
- Those with an immune deficiency or taking immunosuppressive drugs
- Those with two or more of the following chronic disease: asthma, diabetes, chronic Kidney disease, chronic heart disease, and those with a history of a previous stroke
- People who are obese and have BMI over 40

The Second Phase:

- People who are 50 and older
- Health practitioners

The Third Phase:

- All citizens and residents that want to take the vaccine

Side Effects

Any vaccine may cause side effects. Most of these are mild and temporary. Common Side effects may include:

- Fatigue and having a headache
- Fever
- Muscle pain and general feeling of illness
- Pain or redness at the injection site

How do I get the Covid-19 Vaccine ?

Download "Sehhaty" application and Fill-out the registration and eligibility assessment survey. You will be notified electronically according to your eligibility and priority.

We wish you continued good health and well-being

Resource: The Ministry of Health (MOH)



نبذة عن لقاح كوفيد-19

أعلنت وزارة الصحة السعودية عن بدء مرحلة التحصين ضد فيروس كورونا من خلال اعتمادها لأحد اللقاحات (الطعيم) المعتمدة بعد العديد من التجارب السريرية للتأكد من فعاليتها. تخضع اللقاحات لرقابة شديدة صارمة في اختبار مدى فعاليتها أو مدى أعراضها الجانبية. ولأول مرة تتكاتف جهود العالم بأكمله في فتح الميزانيات المالية اللازمة لدعم التجارب السريرية المتعلقة باللقاح للتأكد من سلامته قبل البدء في توزيعه.



كيف تعمل اللقاحات؟

تعمل اللقاحات على تقليل مخاطر الإصابة بالمرض من خلال مساعدة الجسم والجهاز المناعي على التعرف المسبق للفيروس المسبب لهذا المرض. ويعد اللقاح وسيلة آمنة لتحفيز الجهاز المناعي دون التسبب بحدوث المرض. فبالإضافة إلى الوسيلة الوحيدة والسبب الذي يؤخذ به - بعد إذن الله تعالى - ليساعدنا في حماية أنفسنا ومن حولنا في وجود الوباء العالمي (كورونا)

قسمت وزارة الصحة السعودية الفئات المستهدفة على مراحل وفقاً لمدى الحاجة الملحة لهذه الفئة لحمايتهم من الإصابة بكورونا وما يصاحبه من أعراض شديدة قد تتسبب بوفاتهم مبكراً.

المرحلة الأولى:

- كبار السن من عمر 65 سنة فما فوق
- الأشخاص الذين يعانون من أمراض مناعية أو نقص في المناعة
- من لديهم أكثر من مرض من الأمراض المزمنة: كالربو والسكري وأمراض الكلى المزمنة وأمراض القلب ومن لديهم إصابة مسبقاً بالجلطة الدماغية.
- الأشخاص الذين يعانون من سمنة مفرطة (كتلة الجسم لديهم 40)

المرحلة الثانية:

- الأشخاص من عمر 50 فما فوق
- الممارسين الصحيين (لتعرضهم للخطر بسبب طبيعة أعمالهم)
- للجميع

المرحلة الثالثة:

- الشعور بالتعب والصداع
- ارتفاع درجة حرارة الجسم
- آلام بالعقلات والشعور بالتوسع
- آلم في مكان الحقنة.

الأعراض الجانبية:

من الممكن أن تظهر بعض الأعراض الجانبية بعد أخذ اللقاح مثلها مثل الأعراض التي تظهر في التطعيمات الأخرى مثل:

كيف أحصل على اللقاح؟

من خلال تطبيق "محتي" بعد التسجيل قم بالتقدم بطلب أخذ اللقاح وحسب التقسيم سيتم التواصل معك بأقرب موعد. نسأل الله دوام الصحة والعافية.

المصدر: وزارة الصحة السعودية

THE EXPERT'S VOICE

An Interview with A Neurosurgeon Dr. Maher Hassounah

We had the pleasure of interviewing a prominent neurosurgeon in King Faisal Specialist Hospital and Research Centre: Dr. Maher Hassounah.

We are appreciative that Dr. Maher was able to take time out of his busy schedule to answer some questions related to neurosurgery and the profession in general. It is our pleasure to hear his perspectives on neurosurgery. Here's the interview:

SANS Newsletter (SN): What are you most proud of personally?

Maher Hassounah (MH): Besides being proud of my immediate family and their continued support and patience, there are several other matters to be proud of such as gaining the trust, gratefulness, and love of my patients through my work in King Faisal Specialist Hospital and Research Centre which I am very proud of. One pride that comes to the forefront is being involved in training and graduating several distinguished neurosurgeons.

(SN): Describe yourself using three words.

(MH): I would like it to describe myself only in one word: PERSEVERANT.

(SN): What are you passionate about?

(MH): I am a neurosurgeon who has an ardent love to neurosurgery and neurosciences.

(SN): How do you handle stressful situations?

(MH): The life of a neurosurgeon is a chain of stressful situations. Therefore, dealing with stress is a second nature to a neurosurgeon. My strategy in handling stressful situation is attaining the calm mode by deep breathing and believing that I can conquer it. Elaborate response will be delivered accordingly.

(SN): What are you known for?

(MH): Serenity, preciseness, and optimism.

(SN): Most overused phrase.

(MH): The residents tell me I use:

- “Biseer” that means “let it be”.

- “Ma luh mostaqbal” that means “has no future”. It is used when a small artery or vein is not serving a useful function and has been sacrificed during tumour surgery.
- “Ya abu alshabab” that means “chief of the youth”. It is used to take over the work from the resident during surgery when he or she is slowing down and showing no progression, or when I have to do the critical work.

(SN): What was the best advice anyone ever gave you?

(MH): Take the opportunity right away because if it is available today it might be hard to get tomorrow. The required work must be done adeptly. Nobody will sympathize with you for not efficiently and effectively completing your work.

(SN): If you were not a neurosurgeon, what career would you choose?

(MH): I like artistic and innovative careers. My choice will be architectural engineering and interior design.

(SN): How do you spend your spare time?

(MH): If not travelling, I fix few things at home, watch news and documentaries, and do some reading.

(SN): What's your favourite movie?

(MH): “Forrest Gump” which is the same name as the main character of the movie. Forrest Gump is a naive person who is by the influence of his mother was able to make great achievements. The character inspires us to stand up against all the odds. At the end, personal and humanity betterment will prevail.

Interview with Dr. Maher Hassounah 2/3

(SN): What attracted you to a neurosurgical practice?

(MH): Attraction to something originates from personal intrinsic attributes together with acquired experience. I have been intrigued with the unknown and intricate subjects. I found neuroscience intriguing. When I was in the medical school studying anatomy, the only cadaver organ I bought from the anatomy lab was the brain, buying a cadaver brain was possible at that time. I am intuitively inclined to manual work hence it is natural that I like surgery. I encountered great neurosurgeons during my medical school and early postgraduate period who made me like neurosurgery. All these factors steered me into the realm of neurosurgery.

(SN): Which neurosurgeon (living or deceased) most influenced your neurosurgical career?

(MH): Obviously, the neurosurgeon who most influenced my career is the one I learned the ABCs of neurosurgery from. When I first started, I was impressed by Professor Osama Almetfi meticulous craftsmanship and the good outcome of patients. I learned a lot from him and later from the great neurosurgeons during my training in Canada.

(SN): Can you tell us how your usual day looks like, and potentially share any productivity/efficiency advice?

(MH): I will answer part of this question. I guide the trainee to be more efficient in the operating room by rehearsing the operative steps and think ahead of the next step. I encourage the resident to analyse certain steps of a procedure, practice safer techniques and be more economic in time and cost. Resident innovation is always welcomed. The residents learn from me and I learn from them.

(SN): Neurosurgeons have a workaholic stereotype. Have you faced any challenges balancing your personal and professional life?

(MH): I was told at the beginning of my residency that neurosurgery should be my priority, then family and other issues in life come second. I think this is unfair to the family. We all try to make the balance between work and personal life, but bias towards work may occur. I admit that I did not have the time to experience the joy of watching my children growing and have quality time with my family. Suddenly, I found my little children became grown up adults.

(SN): Where did you do your medical residency? Describe your journey.

(MH): My neurosurgical training took place in Edmonton, Province of Alberta in Canada. When I arrived there, I was faced with three unprecedented challenges:

- The harsh cold weather. I arrived in Edmonton in January and the temperature was -27°C . After settling in the hotel, I walked out to explore the surroundings. Literally, after taking few steps in the street I felt that I cannot get the very cold air into my lungs and I had to return to the hotel. Little by little I started to adapt and deal with extreme coldness.
- To establish a living place and acquaint myself with the city and the new culture.
- The tough training that interfered with my commitment towards my small family. I was put on-call the 2nd day of starting the residency. I had not received any orientation and did not know the hospital system or even the way to the emergency room. The on-call throughout the residency was mostly in-house and was either one in three or every other day. The chief resident required to be second on-call daily including the weekends.

Let me tell you this story: I was taking an in-house call during the second month of training in Edmonton when my lonely wife phoned me telling she started to have labor pains. I asked her to take a taxi and come to the hospital and stay the night in the on-call room. Labor pains progressed and she delivered a beautiful girl early in the morning while I was seeing patients in the emergency room. I am incredibly grateful to my wife for taking care alone of our newborn girl and all other living issues while I was in training.

(SN): What was your first experience actually working on the brain surgically, and do you remember it, and what did you feel about it?

(MH): Before I went to Canada, I remember Professor John L. Fox let me do a posterior fossa pilocytic astrocytoma in the sitting position from A-Z while he was around giving me instructions from time to time. I felt this was a big achievement. It gave me a lot of confidence.

Professor Fox trained Professor Al Mefty in Richmond Virginia and later he worked with him in KFSHRC in early eighties of the last century.

(SN): Describe the biggest issue you see challenging your practice? What do you think the potential solution(s) is (are)?

(MH): We have to cope with the fast advancement in medical technology and keep up with the knowledge overload of molecular biology and genomics related to our specialty.

(SN): What is the majority of your surgical practice?

(MH): I do a lot of Neuro-Oncological surgeries.

(SN): Do you have a specific case that sticks with you?

(MH): Two cases of anaplastic oligodendroglioma affecting a judge and a famous Saudi Actor. There are several others.

(SN): How do you feel about taking responsibility for choices that you know will profoundly affect your patient's life?

(MH): I will give a decision that the patient and I are convinced about and it will be in the best interest for both of us. I comfortably take responsibility for any choice I judge to be right with the consideration of benefits exceed disadvantages.

(SN): You were involved in the process of establishing the Saudi Board Program in Neurosurgery, could you tell us more about it?

(MH): I was privileged to be one of the founding members of the Saudi Neurosurgery training program in 1995. Professor Khalaf Almutairy and Professor Zain Alabedeen Jamjoom were the initiators. The members were of different training backgrounds from different countries like Germany, United Kingdom and Canada. After few meetings, we came out with the Saudi model of a structured training program of 6 years that suites our need.

The remarkable outcome of this program is evident by the excellent graduates of Saudi Arabia, Gulf, and some other Arab countries. It is considered one of the best and strongest neurosurgical programs in the region.

(SN): Upon the occasion of the 10th Annual Meeting of the Saudi Association of Neurological Surgery in 2016, the SANS Medal was awarded to You. Could you tell us more about it?

(MH): Professor Ahmed Ammar, who has been playing a pivotal role in advancing neurosurgery in the Kingdom of Saudi Arabia, has been instrumental in making a committee to choose candidates for this honourable Medal. I am pleased and honoured to receive the SANS Medal in 2016. It was not a one-person award. I share the Medal with all the persons who contributed to shape my neurosurgical career from colleagues, residents, patients, and family.

(SN): What future do you envision in neurosurgery?

(MH): The collective effort, expertise, and enthusiasm of all neurosurgeons in the KSA will take neurosurgery to new heights. Saudi Arabia will become the haven of neurosurgery for patients and trainees. The wellness will spread.

(SN): What advice would you give to students who aspire to be in neurosurgery?

(MH): Neurosurgery is an exceptionally beautiful and interesting specialty. Students who want to choose neurosurgery as a specialty should make sure that they have the physical and mental stamina to endure the rigour of neurosurgery training and practice.

(SN): Is there anything you can tell us that might surprise people reading the article?

(MH): I am a survivor of an airplane crash in the north of Saudi Arabia when I was a child.



Dr. Maher Hassounah is a consultant neurosurgeon in King Faisal Specialist Hospital and Research Centre, Riyadh (KFSH&RC). Dr. Maher completed his residency training in Canada. He has been working in KFSH&RS since 1990.

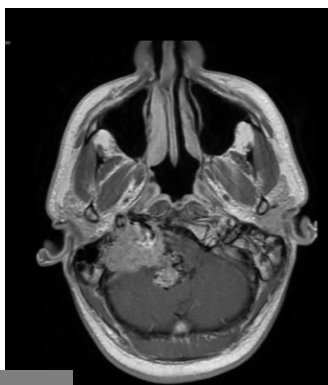
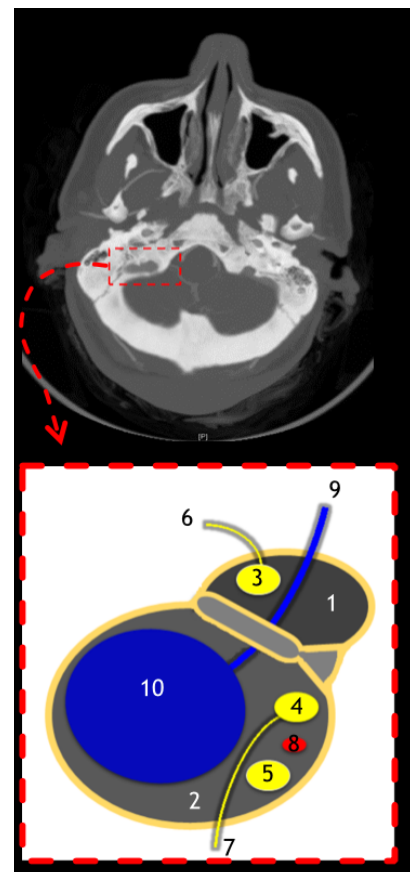
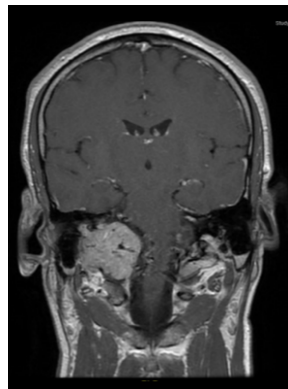
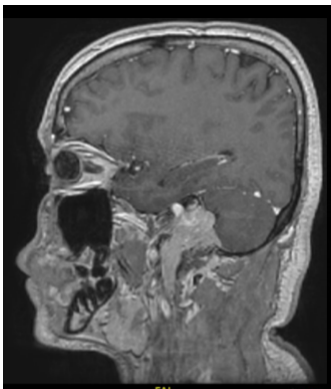
CLINICAL CHALLENGE



By Dr. Mohammed Bafaquh
King Fahad Medical City | KFMC
Riyadh

32-year-old male presented to the ER with clinical picture of Vernet syndrome.

- What is the typical clinical characteristic of Vernet syndrome?
- Describe the Image?
- List three differential diagnoses.
- List five possible management options for this patient.
- Name the labeled structures in the illustration.



RESIDENT'S CORNER

Residency During a Pandemic

Residents' reflections on COVID-19: A partial snapshot of the impact of COVID-19 on our trainees



Dr. Rothaina Jamal Saeedi

PGY-5 Neurosurgery Chief Resident
SCFHS, Western Region
KAUH
Jeddah, Saudi Arabia

On 2 March 2020 the first case of COVID-19 was reported in the Kingdom of Saudi Arabia. By March 14, the number of COVID-19 cases that confirmed locally had exceeded 100 cases. The Saudi government subsequently took aggressive steps to monitor the spread of the virus and keep the public safe. Saudi Arabia demonstrated one of the world's most successful responses to the COVID-19 pandemic. Being one of the largest referral centres in the region, King Abdulaziz University Hospital (KAUH) encountered an increase in the number of COVID-19 cases especially emergency cases that required urgent surgical intervention. With the infection being contagious and its high fatality rates as well as not knowing how to deal with the virus to begin with, we were plagued by a fear of the unknown. To overcome our insubstantial knowledge of the virus, KAUH developed multiple simulation scenarios and sessions for performing proper intubation, handling personal protective equipment (PPE), and dealing with COVID-19 patients. As a result of this pandemic, our emergency cases increased and elective surgeries were postponed. To ensure the safety of both our patients and medical staff during surgery, the full PEE gear is required; however, such requirement exhausts us and may limit our ability and performance. As a person with severe

asthma, COVID-19 is a big worry and I work hard to remain in compliance with my medications and PPEs. After all, I have endured difficult situations, and I have matured a lot. These difficulties include the overwhelming number of cases, finding time to study, attending academic presentations and scheduling on-calls. I have learnt to manage my health and my time more effectively. As a chief resident during the COVID-19 pandemic, I was responsible for any issues that my colleagues may have. For example, when some institutions closed due to the pandemic, our role was to redirect residents' rotations to other hospitals. Our concern is to ensure that this pandemic does not affect their training in any significant way. COVID-19 pandemic has given me an opportunity to practice my skills in leadership. I have an enormous responsibility, and I have encountered challenging obstacles that I have never faced before. I became more stronger and responsible. Fear, along with the threat of illness and death, is perhaps the most virulent part of COVID-19. Fear that our family members are at risk of getting infections is overwhelming, and it could cause panic.

But we also recognise the self-sacrifice and generosity of many. As John Maxwell claims "facing difficulties is inevitable, learning from them is optional."

**“facing difficulties is inevitable,
learning from them is optional**

– John C. Maxwell –

RESIDENT'S CORNER

THE SAUDI BOARD EXAMINATION 2020: MORE THAN JUST EXPERIENCE

By Dr. Awn Abdulmohsen Alessa



Every year trainees prepare for the board exam in Neurosurgery, and they struggle hard when it comes to the final assessments. Some of the exam preparations relate to mental preparation techniques. Others are more about study skills including how to set up an efficient study space.

During this year, COVID-19 pandemic is the biggest challenge facing every facility. Facilities teams work hard in order to reach their goals. The Saudi Commission for Health Specialties (SCFHS), for example, has taken all necessary and comprehensive precautionary measures to regulate trainee entry and exit procedures in a way that guarantees the safety of everyone. It was evident that written and clinical examinations went smoothly. Seats were

available, and seating arrangements were made in such a way that adequate distancing is maintained. These arrangements were more than enough to reassure the trainees. I did not feel that I was on the verge of fear due to the current situation.

SCFHS succeeded at directing our efforts toward the exam and nothing else. In fact, exam questions are trainees' biggest worry during the two-day test.

Honestly, I was reassured-due to the blessing of Allah-from the first moment I left the written exam. Regarding the clinical exam, it was not complicated in terms of introducing the questions. Everything was clear and straightforward. In addition, the types of questions were perfect which led to greater performance on the exam.

I personally think that it was an experience that should be repeated in future years. To put it simply, this positive experience with a high standard of efficiency made quite an impact on us.

Wish you all the best!

*Residents are welcome to share their experiences on issues related to Neurosurgery. You can reach us **here***

RESIDENT'S CORNER

CERTIFICATES OF PARTICIPATION

For Residents

Our editorial board members have issued Certificates of Contributions for residents, who contributed to our newsletter in November 2020 issue.

The contributions of our residents are a valuable fruit to the newsletter.

We have been in touch with our residents who share their COVID-19 experiences. We are grateful to all those who have told us how they cope during a pandemic.



In our previous issue, an error has occurred regarding the location of McGill university. It is located in Montreal, Canada.

CLINICAL CHALLENGE

The Answer

What is the typical clinical characteristic of Vernet syndrome?

- Paralysis of three cranial nerves (IX,X,XI).
- Signs and symptoms include: Dysphonia/hoarseness, soft palate dropping, deviation of the uvula towards the normal side, dysphagia, loss of sensory function from the posterior 1/3 of the tongue, decrease in the parotid gland secretion, loss of gag reflex, sternocleidomastoid and trapezius muscles paresis.

Describe the Image?

MRI: large mildly enhancing tumour centred in the jugular fossa filling the right pontomedullary cistern. The right transverse sinus is thin and attenuated. The right sigmoid sinus is infiltrated by the tumour.

Name the labeled structures in the illustration.

1. Pars Nervosa
2. Pars vascularis
3. Glossopharyngeal nerve
4. Vagus nerve
5. Spinal accessory nerve
6. Jacobson's nerve
7. Nerve of Arnold
8. Posterior meningeal artery
9. Inferior petrosal sinus
10. Internal jugular vein

Category: basic anatomy and pathology of the Jugular foramen.

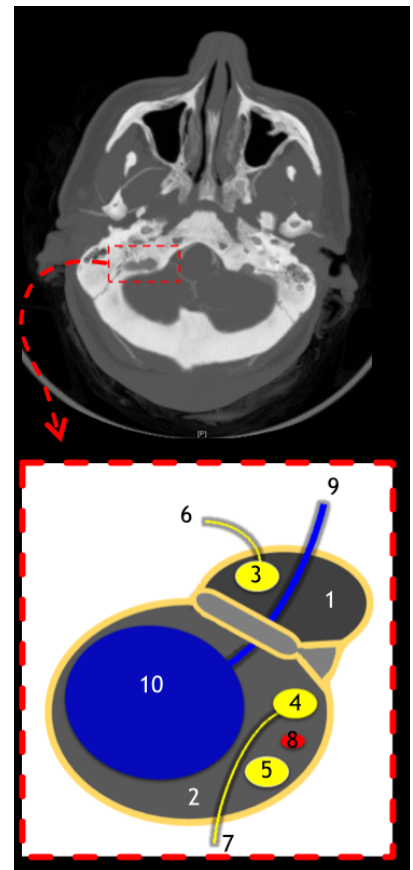
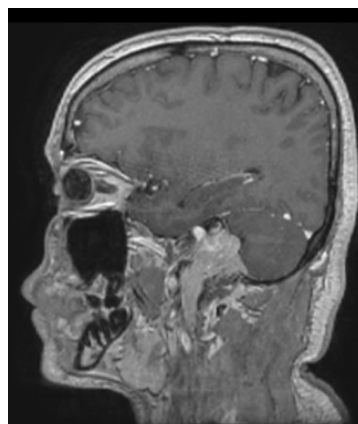
Level of difficulty: PGY-2

List three differential diagnoses.

- 1) Glomus jugulare paraganglioma
(The diagnosis)
- 2) Jugular schwannoma
- 3) Meningioma

List five possible management options for this patient.

- 1) Conservative treatment
- 2) Surgical intervention (e.g. far lateral approach)
- 3) Radiation therapy
- 4) Endovascular embolization (neoadjuvant therapy)
- 5) Combination of any two or three of the above



NEUROSURGERY COMMUNITY

RESIDENCY PROGRAM GRADUATES

CLASS OF 2020

Congratulations to our recently graduated Neurosurgery residents!
Thank you for your commitment to the health and wellbeing of others during such volatile times! We look forward to your future successes and contributions to the neurosurgery community.

We are proud to announce the graduates:



**Abdulaziz Oqalaa
Almubarak**



**Abdulaziz Abdullah
Almusa**



**Afnan Mahfouz
Samman**



**Ali Abdulrahim
Altalhy**



**Ammar Ahmed
Alaithan**



**Awn Abdulmohsen
Alessa**



**Basim Mohammed
A. Noor Elahi**



Faris Bahjat Yaghmoor



Thamer Saud Alfawaz



Turki Naif AlAnezi



Wael Saleh AlFaqaawy

THE FIRST GRADUATES OF THE SAUDI PAEDIATRIC NEUROSURGERY PROGRAMME

By Professor Ahmed Ammar

Imam Abdulrahman Bin Faisal University

King Fahd Hospital of the University | KFHU

Al Khobar, Saudi Arabia

This is the very first Paediatric Neurosurgery fellowship programme in all Gulf states, Arab countries and the whole Middle East.

The first final examination was held at The Saudi Commission for Health Specialties (SCFHS), Riyadh on January 23, 2021.

Sincere congratulations to the graduates, and we are proud to announce them:

1. Dr. Mariam Hamed ALLehaibi from Makkah
2. Dr. Abdullah Husain AlRamadan from the Eastern Province
3. Dr. Ahmad Muhammad Al-Shenkiti from Madina



2. Dr. Essam Al Shail (chairman of the scientific committee)
3. Dr. Maher Hassounah
4. Dr. Ikhlas Altweijri
5. Dr. Amal Al Yahia
6. Dr. Ibrahim Al Ahmed



Examination Committee

We would like to extend our thanks to the examiners team:

1. Professor Ahmed Ammar (Chairman of the examination committee)

“

January 23, 2021 is a date not like any other dates. It will be remembered and recognised as the day of the first final examination of the Saudi Paediatric Neurosurgery Fellowship Program.

– Professor Ahmed Ammar –

IN THE SPOTLIGHT

Dr. Ibrahim Al-Luwimi was the first candidate for King Faisal University (KFU) Fellowship Program (1986 - 1994)

Let's get to know a bit more about him

Dr. Ibrahim Alluwimi obtained MBBS degree from Imam Abdulrahman Bin Faisal University in 1985. He was the first candidate for King Faisal University (KFU) Fellowship Programme (1986 - 1994). The programme was officially accepted as the First fellowship programme in Saudi Arabia, with the great effort of Professor Chowdary, Professor Abdel Wahab Ibrahim and Professor Ahmed Ammar. Professor Khalaf Al Moutaery - May Allah have mercy on him - and Dr. Ed Sequeira were a positive force in every way throughout the entire process.

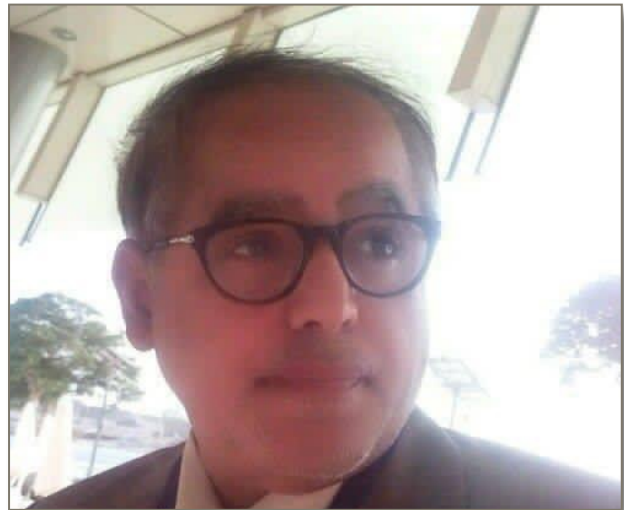
This fellowship was in collaboration with King Faisal Specialist Hospital and Research Centre (KFSH&RC) and Riyadh Military Hospital (RMH). Dr. Alluwimi's thesis was on "Clinical and Epidemiological study of CNS tumours in the Eastern province of Saudi Arabia 1982-1991."

The hospitals involved in the study were King Fahd Hospital of University (KFHU), Dammam Central Hospital (DCH), Qatif General Hospital and King Fahd Hofuf Hospital (KFHH).

He then undertook further training in Functional Neurosurgery and Skull Base Surgery. He undertook a clinical training with Dr. Marc Sindou at the University of Lyon in Lyon, France.

At the inception of his career, Dr. Alluwimi was a demonstrator in the department of Neurosurgery at King Fahd Hospital of the University (KFHU). He also served as Locum Senior Registrar at King Faisal Specialist Hospital in Riyadh and Riyadh Military Hospital between 1994 and 2005.

His clinical experiences include craniospinal trauma, Paediatric neurosurgery, spinal neurosurgery, skull base and functional neurosurgery.



Aside from general neurosurgical practice, he fulfils an active role in teaching both undergraduate and postgraduate students. In addition, he has been an organiser of numerous post-graduate academic activities in the department.

In 2017, Dr. Alluwimi earned a master's degree in human anatomy from Imam Abdulrahman Bin Faisal University. His research subject was "The anatomical variation of sciatic nerve from origin till branching in popliteal fossa and the variants of its major divisions. Including anatomical variants of popliteal vessels: MRI study in Saudi population"

The subject was chosen because there was not any cadaveric study on Saudi population, and by only radiology, doctors could look at the anatomical variants of any part in the human body. He was sponsored by the Saudi Association of Neurological Surgery to present his research paper at the WFNS Special Meeting in China in 2019.

Dr. Alluwimi has presented his work entitled "Epidemiological study of CNS tumour in Eastern province of Saudi Arabia" at the 13th SANS Annual Meeting in 2019.

His official retirement was in 2018, though he continued working in the department of Anatomy at Imam Abdulrahman Bin Faisal University. He has taken an active part in teaching neuroanatomy to undergraduate, postgraduate and Forensic training students.

He brings a wealth of knowledge and experience in his many years of working in neurosurgery.

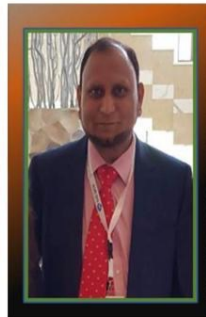
OBITUARY



By Dr. Othman AlHammad

King Faisal Specialist Hospital and Research Centre | KFSH&RC

Riyadh



Dr. Anwar Ul Haq

With saddened heart, we mourn our colleague Dr. Anwar Ul Haq, who passed away on January 24, 2021.

Dr. Ul Haq served in the department of Neuroscience in KFSH&RC as assistant consultant for more than thirteen years. He was exceptionally helpful and hard worker. We lost a kind conscientious physician and surgeon.

We pass our sympathy and condolences to Dr. Ul Haq's family, friends and colleagues. May Allah bless his soul in Heaven.

Let's include him in our prayers.

WHEN BREATH BECOMES AIR: A YOUNG NEUROSURGEON'S JOURNEY THROUGH ILLNESS - A REVIEW

When Breath Becomes Air Paul Kalanithi, MD
Penguin Random House
UK
2016

By Atika Al Sudairy

This touching memoir, about the author's journey as a neurosurgeon and patient in the last year of his life, was published in 2016. An extremely powerful journey of a young neurosurgeon, from his medical school days to the end of his residency when he had to face the painful truth after being diagnosed with terminal lung cancer. The title really helps define the plot, only those who know how to breathe will learn how to live life to the fullest.

Let me preface this book with an analogy. This book is like a train ride. The train is continuously on the move. At some places it moves at snail's pace and at other places faster. You see the author's path like you're watching trees pass by in the window, and all you can really do is sitting and wondering if it could also happen to you.

Kalanithi explores the meaning of life by looking through a lens of literature, philosophy and the beautiful structure of the human brain. These are winning combination to face the mysterious stage of our lives, Death. He was on a mission to search about what makes human life meaningful.

Before becoming a neurosurgeon, Dr. Kalanithi had completed degrees in Literature and Biology. He considered these majors as a tool to find his answers about life. Somehow, these majors did not quench his everlasting thirst for knowledge. Then he realised that to find his answers, he should explore the core of human identity, our brain. Here when his journey in

neurosurgery started. He chose neurosurgery to escape the trap of materialism, and find the heart of matter, life-death decisions.

The most interesting and thought-provoking part of this book is when he explained how things are from being a doctor and patient at the same time. When doctors write about their experience of illness, it does make you understand patients so much better.

He describes the true concept of doctor-patient relationship. The author touches on this when asking himself about the patient on the table.

“Before operating on a patient's brain, I realised, I must first understand his mind: his identity, his values, what makes his life worth living.”

Kalanithi's language goes to the reader's heart; it's a quintessentially neurosurgeon voice, and a beautiful one. His book is simply an ongoing reminder for us to examine questions such as what are my values? Are my actions in alignment with these values?

When Breath Becomes Air is much more than a memoir: it is a profound reflection on the human quest for a meaningful experience.

Despite his painful story, it's a pleasure to accompany the author on his emotional journey.

Upon finishing this book, something inside you will have changed. One last thing, breathe deeply when you read his last and only message to his baby girl. It is the last words in the book!

SANS ACADEMIC ACTIVITIES

10TH SPINE UPDATE

10th Spine Update was held on the 18th and 19th of December 2020. This event is a triumph of Spine Update continuity as an annual event in spine education completing a decade of continued success. It is also a continuation of successful and ongoing collaboration between the Saudi Spine Society (SSS) and the Saudi Association of Neurological Surgery (SANS).

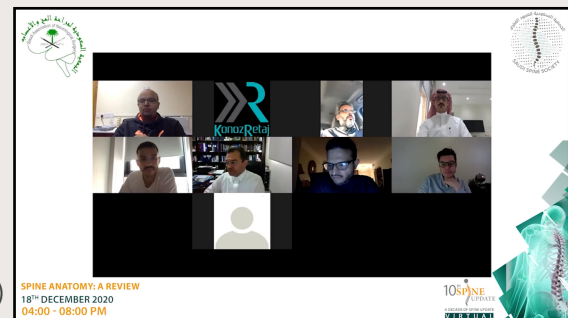
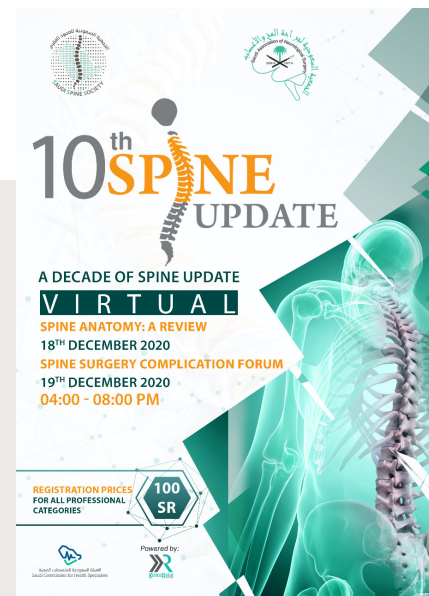
The event began at 4 pm on 18th of December 2020, with a welcoming address by the event's chairman, Dr. Amro Al-Habib. The day was dedicated to clinically relevant spine anatomy. The second day was dedicated to an interactive case forum under the theme of "Spine Complications and their management"

The case forum involved interactive case discussions that span different Spine complications and their management.

The event was conducted by a number of well-trained experts in the field from different institutions national and international wide. Over 180 national and international participants attended the event via Zoom platform.

At the end of the event the supervising committee with the lead of Dr. Amro Al-Habib thanked all attendees for their attendance and every person who contributed to the success of the Spine Update. Along with the current COVID-19 pandemic circumstances, the Spine Update was carried out in a virtual format.

The two-day event has been accredited by the Saudi Commission for Health Specialties (SCFHS)



NEUROGRAPHIA COMPETITION

Submission Deadline:
Wednesday 3rd of March 2021

All submissions should be made via email to email address:
neurographia@gmail.com

The winning Illustrations will be published in the following
SANS newsletter.

Certificates will be issued by the SANS NeuroGraphia Committee.
Prizes will be awarded which will be announced for during the conference

For more information, please visit our website [here](#)



NEUROGRAPHIA

Saudi Association of Neurological Surgery
Neuroscience Art Competition 2021

A picture is worth a thousand words!

NeuroGraphia Committee

Dr. Mohammed Bafaquh
King Fahad Medical City

Dr. Abdulrahman J Sabbagh
King Abdulaziz University

Dr. Tariq Aljared
National Guard Health Affairs

NeuroGraphia with the Saudi Association of Neurological Surgery presents Neuroscience art competition that will take place at the 15th Annual SANS Conference on March 2021.

This competition is aiming toward creating illustrations that help portray, demonstrate and deliver neurosurgical sciences in the best way possible.

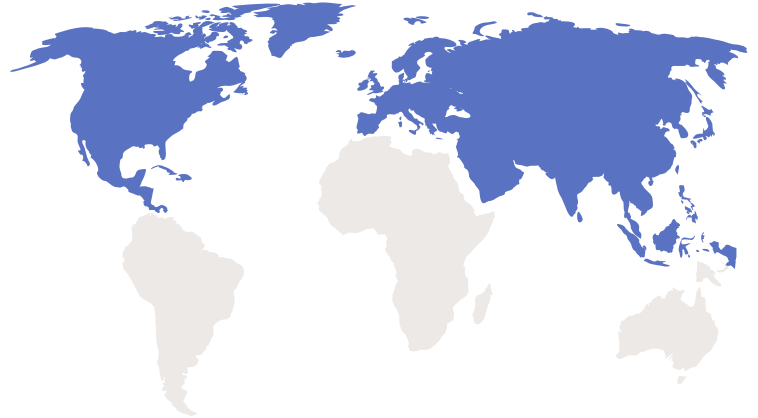
The illustrations are expected to address any area that is involved with neurosurgery including any topic from the basic sciences, histology, anatomy, physiology, as well as clinical, functional and endovascular, microsurgical anatomy and surgical approaches in addition to any new idea that helps neurosurgeons have a better understanding towards topics that would help them be better at what they do.

Eligibility:

This competition is targeting all those who are interested in neurosurgical sciences and arts; such as medical students, interns, residents and board certified neurosurgeons as well as those who are in health allied specialties. Those who are interested in the artistic side from any disciplines are also welcomed to join the art competition.

UPCOMING EVENTS

Add these important dates to your calendar and plan to be a part of it.



- **15th Annual Meeting of The Saudi Association of Neurological Surgery, Virtual**
(iSANS: Stay Connected) Mar.18-20,2021 [Learn more](#)
- **2021 AANS Annual Scientific Meeting: Stronger Together-Vancouver:** Aug.14-18, 2021 [Learn more](#)
- **XVII WFNS World Congress of Neurosurgery - Bogota, Colombia:** Aug.29-Sep.3, 2021 [Learn more](#)
- **2021 EANS Congress- Hamburg, Germany:** Oct. 03-07, 2021 [Learn more](#)
- **2021 CNS Annual Meeting: Vision for the Future-Austin, Texas:** Oct.16-20, 2021 [Learn more](#)

NEWSLETTER

Volume 2

Issue 1

SANS

Saudi Arabia

For more information ,you can reach us at:



SANS.newsletter@sans.org.sa



@SansMed



<http://www.sans.org.sa>



Let's help you to make a difference in the neurological surgery field, whatever your interest, you can help further our mission by supporting our newsletter in submitting

articles and reviewing research. We always strive to make our newsletter more than just a newsletter by being informative and using them to serve the field of Neurological Surgery. We are always open to any ideas that will help us improve our newsletter.