

## USE OF SOCIAL MEDIA NETWORKS IN NEUROSURGERY

*El uso de redes sociales en Neurocirugía*EMIL ZHALMUKHAMEDOV <sup>1</sup><sup>1</sup>*Scientissimum Medical Group, USA***ABSTRACT**

Neurosurgery as a medical discipline has always been on the cutting edge of technology and the latest advancements. It's not a surprise why modern neurosurgeons actively utilize various social media platforms, in order to share the latest news or showcase interesting cases they face daily. From Twitter to LinkedIn neurosurgical professionals of the world share the knowledge and connect with each other in order to advance their skills to the next level. A thought-provoking content is constantly shared and spark many interesting conversations and contribute to the modern data of neurosurgical field.

**Keywords:** *Social Media, Neurosurgery, Graduate Medical Education (source: MeSH NLM)*

**RESUMEN**

La neurocirugía como disciplina médica siempre ha estado a la vanguardia de la tecnología y los últimos avances. No es una sorpresa por qué los neurocirujanos modernos utilizan activamente varias plataformas de redes sociales para compartir las últimas noticias o mostrar casos interesantes que enfrentan a diario. Desde Twitter hasta LinkedIn, los profesionales de neurocirugía del mundo comparten el conocimiento y se conectan entre sí para avanzar sus habilidades al siguiente nivel. Un contenido que invita a la reflexión se comparte constantemente y genera muchas conversaciones interesantes y contribuye a los datos modernos del campo neuroquirúrgico.

**Palabras Claves:** *Red social, Neurocirugía, Educación Médica de Postgrado. (fuente: DeCS Bireme)*

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**S**ocial media plays a huge role in everyday life, it's not a surprise why many neurosurgeons adapted these novel platforms to share knowledge and educate a general public about the benefits of certain neurosurgical procedures and philosophy. By utilizing this absolutely free platform, which only requires a simple internet connection, allows neurosurgeons in training as well as prominent thought leaders in the industry to open a door for conversation. Not only it was welcomed by many well-known academic neurosurgeons but also a general audience who is actively interested in the news related to neurosurgery. The concept of an unknown surgical technique in one country has become a known factor in another - thanks to social media, and those underserved and rural neurosurgery practices now can rely on this valuable feedback from the leaders in academic field of neurological surgery.

**METHODS**

We executed a summary research on social media accounts that are used by academic and private practice neurosurgeons and neurosurgical communities. Active and visible/non-private accounts were evaluated on the posted content and the engagement it received from the followers or exposed to it online audience. Our research utilized the latest marketing search engine strategies, in order to analyze available online data.

***Why social media deserves neurosurgical attention***

For many years physician scientists relied on printed journal publications and old-fashioned emails for communication and news sharing. While email is still preferred method of formal communication and journals are the source of the

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latest advancements; the modern physicians now use extended (beyond email) methods to showcase interesting cases or quickly exchange messages with their respective colleagues. This is where social media comes into a major play.

While performing a quantitative research on neurosurgeons using social media, it was interestingly noted that majority of neurosurgeons actively utilize Facebook <sup>1</sup>, followed by Instagram, LinkedIn, Twitter and YouTube as the main platforms. However, it was found that Instagram, Twitter and LinkedIn are the most active platforms where medical cases and educational materials were discussed the most. The mentioned above platforms are also top platforms utilized worldwide by a general population and allows users to share multimedia messages and generate traffic on chosen themes. These social media networks are free and allow anybody who has Internet connection to participate in the discussion. This advantage of free and open networking allows practicing and resident neurosurgeons from remote locations ask thought-provoking questions and participate in the given discussion. The ability to provide instant content sharing to the account followers, allows social media

to become a quick online and promotional tool for interesting cases in the medical education online.

Even an editor and chief of the Journal of Neurosurgery - James T. Rutka, MD, PhD, FAANS for example, utilizes all three platforms which are Twitter, Instagram and Facebook to engage neurosurgeons about the latest articles published online as well as to exchange the latest thoughts on neurosurgical matter with colleagues around the world <sup>2</sup>. He found social media to be of an incredible value to him personally and professionally.

On other hand, we understand that neurological surgery, as a discipline, requires a lot of hard work and funds to push the boundaries further. Therefore, academic neurosurgeons are constantly looking for ways to fund the research or clinical trial, but end up being at the mercy of hospital funding or government politics; when they can easily utilize social media to create awareness <sup>3</sup> on the given disease with the general public, and showcase how their research can improve lives on a long run. Historically, a general population performed some of the successful medical education and treatment funding through crowd funding platforms such as Kickstarter or GoFundMe. After setting up

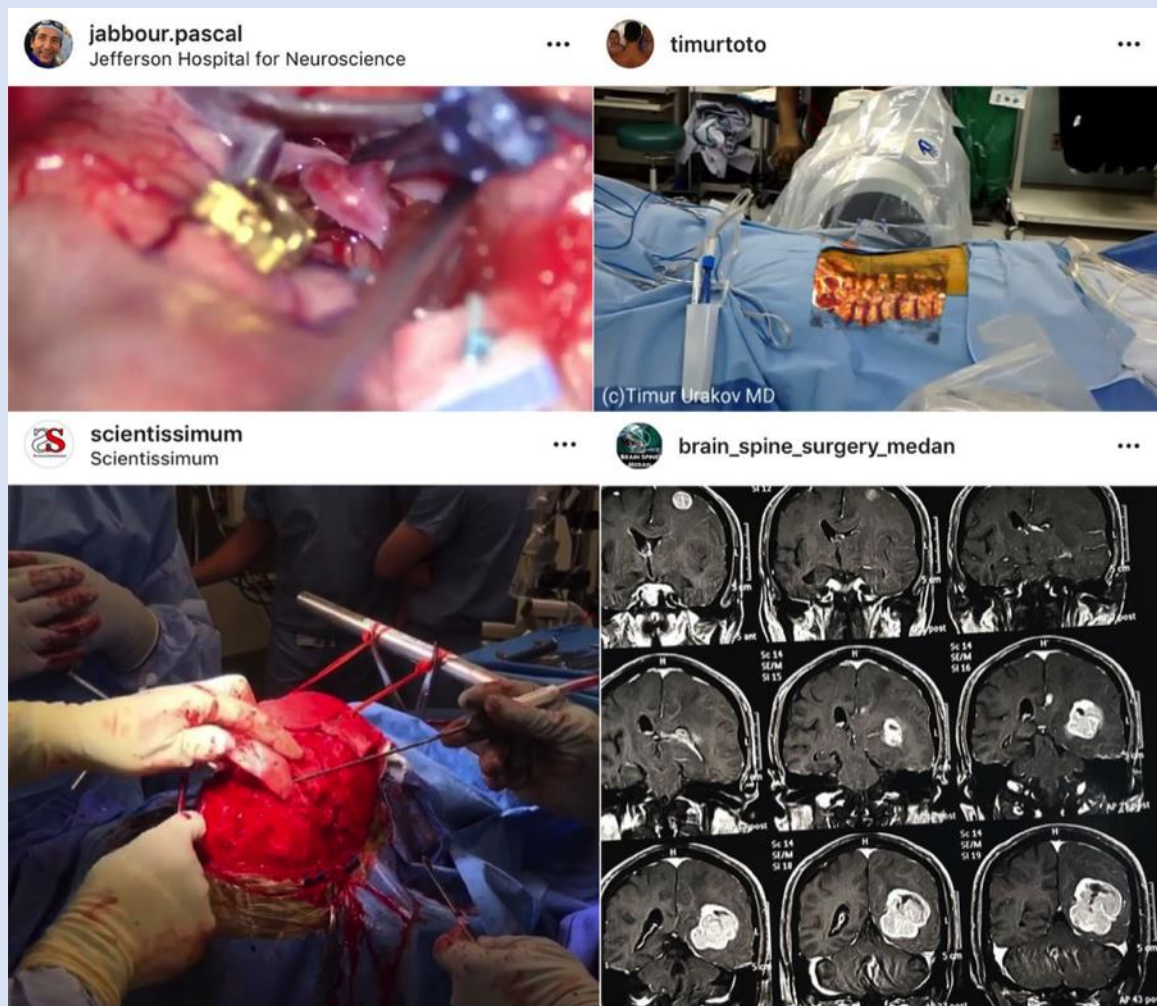


Fig 1: Examples of neurosurgery-based Instagram accounts

the initial campaign, it gets to be shared on social media for better traction of donation. This way social media could play another useful role in neurosurgery, not only in terms of funding, but also in educating general population while securing the needed funds for scientific research. Additionally, by contributing a content/data to the social media, neurosurgical community can build a much better branding and reputation for themselves online and potentially be on the same level of industry exposure as plastic surgery.

### Visual networking platforms

As mentioned earlier from our quantitative research findings, majority of neurosurgical content is shared on Twitter, Instagram and LinkedIn. While each platform has its own benefits, online neurosurgical community tends to share the visual cases throughout them all. But among the visual social media posts particularly, Instagram takes the first place. The close-knit Instagram neurosurgical community is found to have cerebrovascular, followed by trauma, spine and tumor cases shared daily (**figure 1**). Interestingly, many of those accounts are actively followed by a general public and it serves as an excellent educational content for everyone. Since Instagram allows integration with other platforms, the mentioned above cases are certainly shared on Facebook and LinkedIn respectively. So, as you can see the same cases are reaching wider audience and even those who are not directly connected to Instagram's user account.

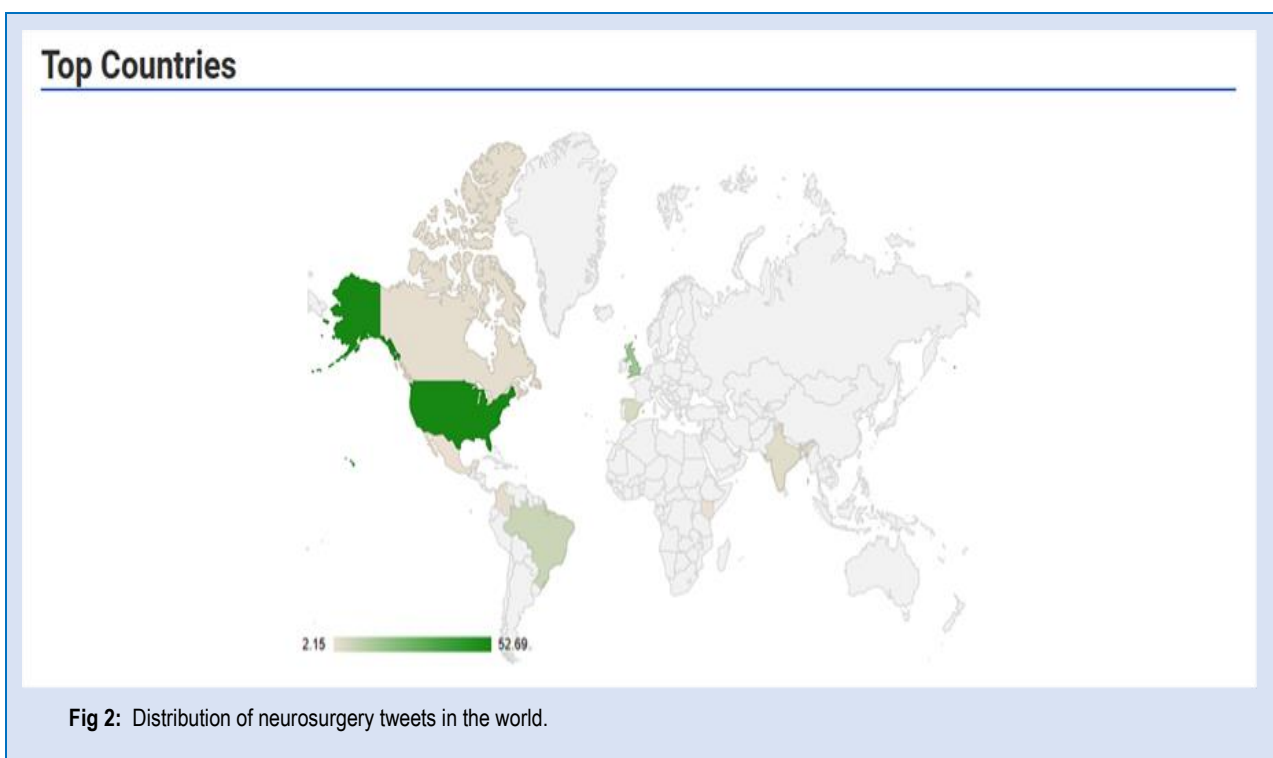
Among other visual platforms YouTube and Vimeo are the platforms where neurosurgical procedures are posted in more details but with less frequency than Instagram. This

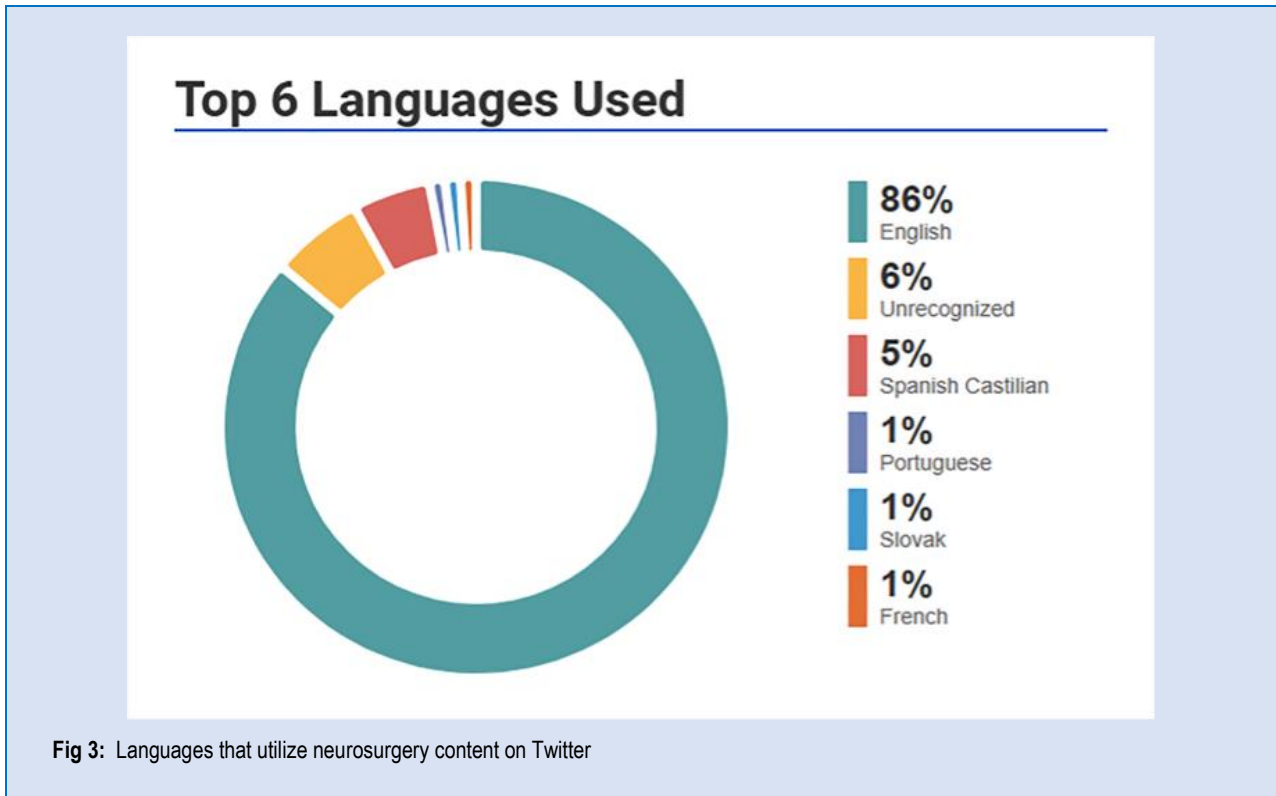
might directly correlate to the busy schedule of neurological surgeons and amount of time needed for the video upload.

### Informational and feed-based platforms

When it comes to traditional feed-based accounts, Facebook and Twitter takes a major place. The main structure of those accounts is built on idea of blogging and sharing the news with your friends and followers. While there is a blurred line between the definitions of blog-based social media networks, these platforms were originally created for the said purpose. Facebook neurosurgical users tend to be more personal there, as it most likely correlates to a personal online space and connection with family and friends, in compare to Instagram for example. When we observed behavior of those accounts, we noticed the length and quality of the posts were much greater on Facebook, as well as post share-ability and engagement.

In our observational research on Twitter, users were more straightforward about a given theme or issue. We discovered a great amount of conversation related to a healthcare in general and advocacy for better patient safety and transparency, as well as postings about unusual cases and news announcements. Neurosurgery Twitter users are very diverse, and the span of active accounts go from United States, Canada to Brazil and France (**figure 2, 3**). The recent controversial #ThisIsMyLane hashtag, which was targeted at National Rifle Association went viral (became very popular online), and majority of neurosurgical communities were very vocal about it with retweets (sharing the tweet message) and comments; as gunshot wound cases are something neurosurgeons face on everyday basis in the emergency rooms.





Below we provided the top 5 topics on Facebook and Twitter.

*The following topics prevailed on Facebook:*

- Medical Education
- Neuroanatomy and complex surgical approaches
- Neurosurgery blog/news sharing
- Family, lifestyle and vacation
- Medico-political concerns

*Twitter topics:*

- Departmental news
- Resident education and achievements
- Healthy lifestyle
- Healthcare transparency
- Patient education
- Conference-based tweeting
- Politics & general news

**Professional and connection-based networks**

We accounted one professional based network where neurosurgery was actively discussed - this network is LinkedIn. LinkedIn as a network was originally created to connect with other business professionals for business purposes, however, over some time from the existence of this platform, LinkedIn grew in a much larger size where medical community was very vocal as well. While performing our research, it was surprisingly noticed how

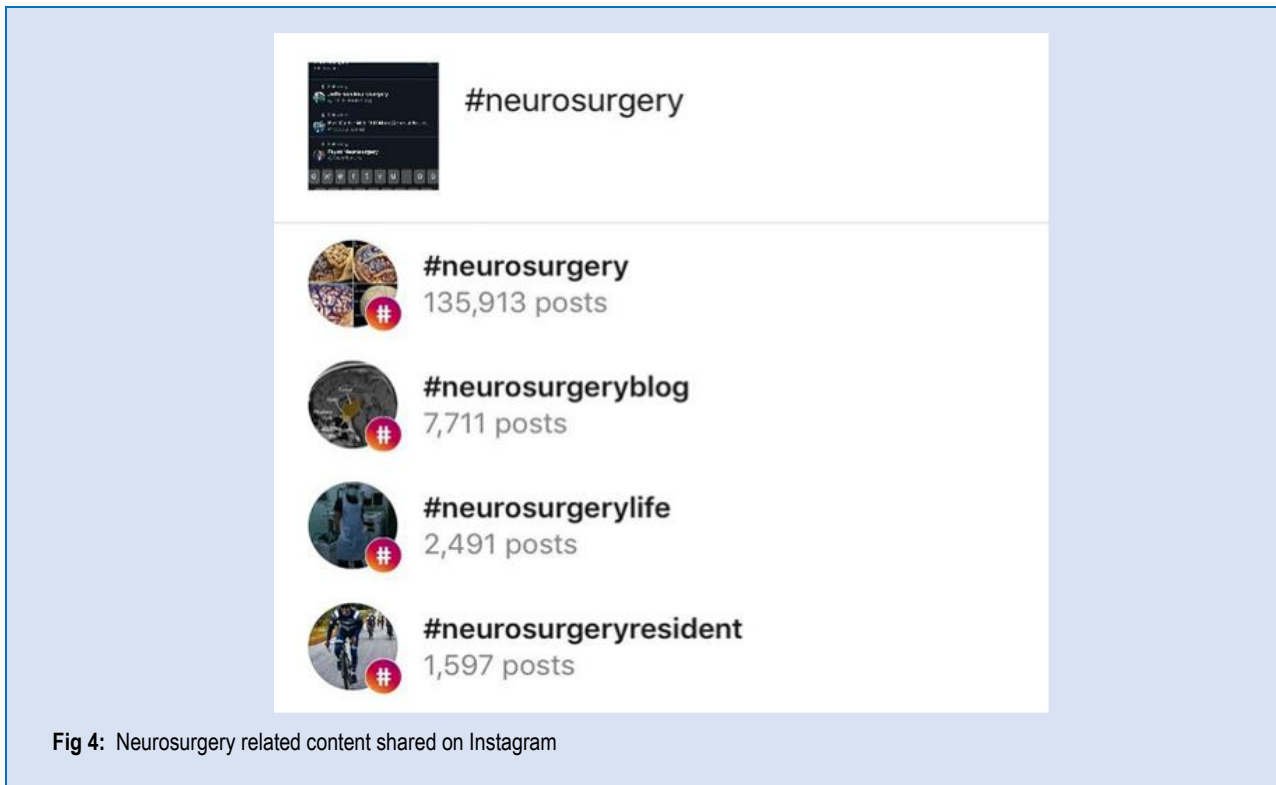
many neurosurgeons and their communities were active on this platform. This platform gives you a clear visibility of person’s credentials and medical institution he/she is affiliated with. Cerebrovascular followed by spine and patient advocacy cases dominate this network in terms of content, despite a very wide spectrum of neurosurgical fellows who are actively registered there. Besides of personal accounts, it was interesting to note activity of departmental and company-based accounts. These accounts share the latest news, participate in direct recruiting of physicians or engage in the patient advocacy content.

**RESULTS**

During our research on neurosurgical accounts within social media networks - Twitter, Instagram, LinkedIn, Facebook and YouTube (the order is from largest to the lowest content) were the most active accounts with neurosurgery related content (**figure 4**). Throughout these platforms majority of the cases were noted on cerebrovascular, trauma, spine and tumor-based cases. A little prevalence of stereotactic as well as pediatric procedures was noted on either platform.

**DISCUSSION**

As more advanced neurosurgical techniques are being developed on a daily basis, it’s becoming a necessity for neurosurgeons to be on the cutting edge of shared knowledge. To keep up with the shared academic articles and novel techniques, it’s simply not enough to check a single source online, that’s why majority of academic as well as private based neurosurgeons turned to become avid users



of these 5 major social media platforms. Social media accounts that majority of neurosurgeons are connected to, strongly based on their interest, therefore their social media feed is summarized with the industry related information.

which allows them to be updated throughout the day and with minimum time spent.

The ability to see advancements in neurosurgical arena, as well as become aware of the latest medical news, it simply takes couple of minutes and a single scroll on your mobile screen. This mobile adoptability and flexibility in times, is what made social media such a useful tool in medicine. However, there are certainly limitations on what could be shared (HIPAA Compliance) 4, the length of shared article (restriction on the word count) and how a target audience understands the details of shared information. Further research studies are suggested, in order to interpret perception of information from the social media and what information neurosurgeons are looking for the most.

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## Disclosures

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

## Informed Consent

Informed consent was obtained from all individual participants included in this study.

## Authors Contributions

*Conception and design:* Zhalmukhamedov E. *Drafting the article:* Zhalmukhamedov E. *Critically revising the article:* Zhalmukhamedov E. *Reviewed submitted version of manuscript:* Zhalmukhamedov E. *Approved the final version of the manuscript on behalf of all authors:* Zhalmukhamedov E.

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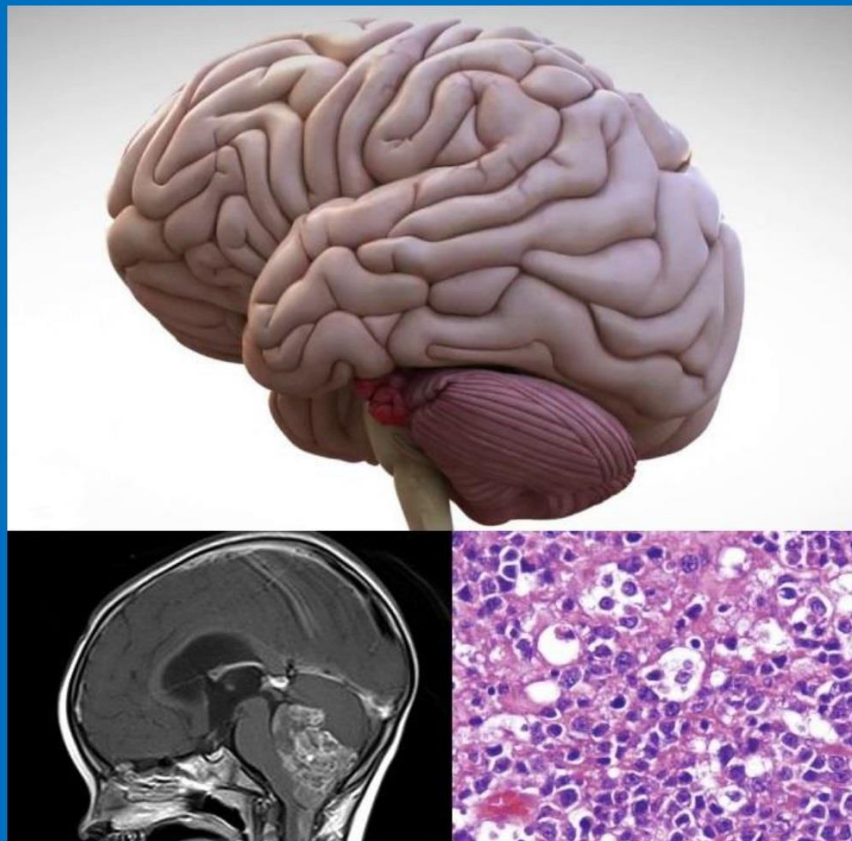
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