Letter to The Editor

Recent trends in Indocyanine Green Fluorescence Angiography in the field of Neurosurgery

To,

The Editor,

I am writing to bring to your attention the recent trends and advancements in the field of indocyanine green angiography (ICGA) in the context of neurosurgery. As a healthcare professional with a keen interest in surgical techniques, I believe that the information I am about to present holds significant value for your readership and the wider medical community.

Indocyanine green angiography has become an invaluable tool in modern neurosurgery, enabling surgeons to visualize blood flow dynamics and identify critical vascular structures during intricate procedures [1,2]. This non-invasive imaging technique involves the intravenous injection of indocyanine green dye, which fluoresces upon exposure to near-infrared light. By capturing real-time images, ICGA allows surgeons to make informed decisions and enhance patient outcomes.

In recent years, several notable trends have emerged in the application of ICGA in neurosurgical procedures. Firstly, ICGA has proven particularly useful in the resection of brain tumors, providing surgeons with precise information regarding tumor vascularity and enabling better differentiation between tumor tissue and healthy brain parenchyma. By facilitating more accurate tumor resection, ICGA has contributed to improved patient survival rates and reduced postoperative complications [3-5].

Additionally, ICGA has demonstrated significant utility in vascular neurosurgery. It aids in the identification and preservation of vital structures such as major arteries, veins, and vessels, reducing the risk of iatrogenic injury and associated complications. Moreover, ICGA enables the assessment of cerebral blood flow

and vascular patency during complex aneurysm surgeries, arteriovenous malformation resections, and bypass procedures. This real-time feedback allows surgeons to adjust their approach, ensuring optimal patient outcomes.

Furthermore, technological advancements have made ICGA more accessible and user-friendly in neurosurgery. Newer imaging systems offer enhanced image quality, faster acquisition times, and improved software algorithms for image analysis. These developments have facilitated the integration of ICGA into routine surgical practice, making it a valuable adjunct to traditional neurosurgical techniques.

It is important to note that while ICGA has revolutionized neurosurgery, certain challenges and limitations persist. The cost of equipment and consumables, as well as the need for specialized training, may pose barriers to widespread adoption. Furthermore, the interpretation of ICGA images requires expertise and familiarity with the technique, emphasizing the need for ongoing education and training for neurosurgeons.

Conclusion

In conclusion, the recent trends in indocyanine green angiography in neurosurgery have significantly enhanced surgical decision-making and patient outcomes. With its ability to provide real-time, high-resolution images of cerebral blood flow and vascular structures, ICGA has become an indispensable tool in various neurosurgical procedures. Further research and technological advancements will continue to refine this technique and expand its applications, ultimately benefiting patients worldwide.

I hope you find this information valuable for your esteemed journal, and I believe that disseminating these recent trends will contribute to the advancement of neurosurgery. Thank you for considering my submission.

References

1. Regillo CD. The present role of indocyanine green angiography in ophthalmology. Current opinion in ophthalmology. 1999 Jun 1;10(3):189-96.
2. HyvÄRinen LE, FLOWER RW. Indocyanine green fluorescence angiography. Acta ophthalmologica. 1980 Aug;58(4):528-38.
3. Herbort CP. Fluorescein and indocyanine green angiography for uveitis. Middle East African journal of ophthalmology. 2009 Oct;16(4):168.
4. Iwamoto M, Ueda K, Kawamura J. A narrative review of the usefulness of indocyanine green fluorescence angiography for perfusion assessment in colorectal surgery. Cancers. 2022 Nov 16;14(22):5623.
5. Liu DZ, Mathes DW, Zenn MR, Neligan PC. The application of indocyanine green fluorescence angiography in plastic surgery. Journal of reconstructive microsurgery. 2011 Jul;27(06):355-64.