SHORT COMMUNICATION

RADIOLOGY EDUCATION AND PAREIDOLIA: A LITERARY CRITICISM

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Introduction

Pareidolia is the tendency for perception to ascribe a meaningful interpretation to an ambiguous stimuli, typically visual, such that one perceives an object, pattern, or meaning when none exists. Pareidolia and patternicity are two techniques that medical educators occasionally instruct medical students and resident physicians (doctors-in-training) to utilize to learn to identify human anatomy on radiology imaging examinations. Assessing radiographs (X-ray radiographs) of the human vertebral spine is one example. Pareidolia is utilized to teach medical trainees how to check for spinal fractures and spinal malignancies, according to Patrick Foye, M.D., professor of physical medicine and rehabilitation at Rutgers University, New Jersey Medical School (cancers). Normal bony anatomic landmarks on spinal radiographs resemble an owl's face. (The spinous process and spinal pedicles resemble an owl's beak and eyes, respectively.) However, the radiographic image alters so that the owl's eye now seems to be missing or closed, which is known as the "winking owl sign," when malignancy erodes the bony spinal pedicle. On a spinal x-ray, the "Scottie dog sign" is another typical pattern. In a paper titled "Baby Yoda: Pareidolia and Patternicity in Sacral MRI and CT Scans" from a medical journal, Foye once more contribution to the existing knowledge on this subject in 2021. He described a novel technique for viewing the sacrum on CT scans and MRI magnetic resonance imaging images (computed tomography scans). He observed that in some image slices, the human sacral anatomy resembles the face of "Baby Yoda," a made-up character from the television series The Mandalorian (also known as Grogu). The sacral canal resembles Baby Yoda's mouth, while the sacral foramina, which are sacral holes for leaving nerves, resemble Baby Yoda's eyes.

There is a published book called Neuroradiology Signs by Dr. Ho which mainly focus on signs in radiology scans which basically another word for pareidolia and patternicity.[1] All different signs like molar tooth sign of midbrain affected byjoubert syndrome, moose head sign of corpus callosum affected by dysgenesis, racing car sign of corpus callosum affected by agenesis, etc. Pareidolia makes it easy for a radiology resident to know how to different diseases appearances by using these signs.

There are many occasions where these signs do not follow the classic pareidolia and patternicity. For example, a published paper did not show the classic mount fuji sign of pneumocephalus.[2] The classic sign did not appear like in the classical way. Patterns and pareidolia could lead to a wrong diagnosis, for inexperienced medical professionals.

Human nature can lead to illusion and started imagining patterns that do not exist due to the tendency of humans to make a pattern from a random stimuli. This method of teaching metaphorical signs can make the interpreter see patterns that do not exist. This is like medical student syndrome when the medical student start studying different disease then start apply it on him/herself. Similarly, if you read about a rare medical condition that appears in a certain way on radiology examination and you became really interested in this condition and you started looking in all your patients scans to find this condition, your brain might trick you to imagine the disease in all of your patient in hope you find one which will lead you for wrong diagnosis certainly. For example, if you read a paper about eagle syndrome which is calcified

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stylohyoid ligament, then when you see a long styloid process you might think that s it! This case must be an eagle syndrome patient! But the measurements and the criteria differ by stating that styloid process to 3.2 cm is normal length, not an elongated process. The whole thing started by the interpreter obsession with a medical condition and the interpreter wish to find this condition in his/her patients. Pareidolia in such cases, will make it worse for sure!

In a study that was done to assess the usefulness of radiology signs in teaching, it showed the group who did not tough radiology signs scored a 9% less correct answers than the group who were taught the radiology metaphorical signs. The issue is that 9% of the group who did not taught the metaphorical signs already mentioned the radiology signs in their answers. So the study result is not accurate.[3]

Conclusion

Pareidolia can lead to subjective opinions and lack of a well-established criteria for diagnoses. The huge amount of radiology signs could lead to confusion rather than a good approach of teaching and learning. Many classical signs do not appear in their classical appearance in many patients. Therefore; the student need to be informed that sometimes the signs maybe look in the same way, a little bit different, or totally opposite to the classical sign.

References

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