Acta Scientific Orthopaedics (ISSN: 2581-8635)

Volume 6 Issue 2 February 2023

Short Communication

The Appropriate use of Imaging in Spinal Conditions

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DOI: 10.31080/ASOR.2023.06.0676

Received: December 27, 2022

Published: January 10, 2023

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'The map is not the territory'.....Korzybski [1].

'Models do not replace skill or knowledge; they augment and inform it. Knowing their limitations is essential'.... Mark Bessoudo [2].

I chose the above two quotations; as it is essential for understanding imaging of the spine, especially MRIs. The MRI does not replace skill and clinical interpretation of degenerative conditions of the spine; and we must avoid an over reliance of spine imaging to establish a diagnosis.

In the Orthopaedic literature there are significant reports which refer to the variability of spine imaging reporting. This has a very major impact on the medico-legal aspects of clinical practise.

Most important of the issues are the reporting incidental spine MRI findings in the absence of spine symptoms (false positive). In fact, the diagnostic accuracy is improved when a correlation between symptoms and imaging are made [3]. Therefore clinical examination takes precedence over an image report that has not considered the presenting symptoms.

In a study using standardized evaluation criteria, significant variability in the inter-rater and intra-rater reporting was observed in assessments of MRI in a degenerative condition of the lumbar spine [4]. This validates the fact that clinicians must be aware of the pitfalls in using imaging exclusively to establish a spinal diagnosis.

A study evaluating actionable MRI spines showed that out of 5365 outpatient MRI Lumbar spines; 93% were deemed appropriate requests by the American College of Radiology, however only 13% were actionable [5]. This suggests that even appropriate request for MRI lumbar spines may not lead to any action; the proportion of lumbar MRIs that lead to clinical management effects are small. More needs to be done to understand how to effectively use this ubiquitous technology and investigation. The major implication is that there will be incidental findings in an MRI which may be acted on, this scenario opens to unnecessary treatment.

Perhaps the most interesting study to date was where a patient was seen in 10 MRI centres for a lumbar spine MRI over 3 weeks. Very interestingly, 49 distinct findings were reported in relation to the presence of a pathology at a specific motion segment. The conclusion of the study was that there was poor overall agreement on interpretive findings. The true positive rate (sensitivity) was 56.4% and the miss rate (false negative) was 43.6% [6]. Do we really know how to use the MRI spine effectively?

The last thing I wish to discuss briefly; is the value of the plain humble radiograph in spine imaging. We teach our medical students and trainees that the first test to do in a back pain is a plain radiograph of the spine in 2 views. A study from Sweden evaluating 140,000 lumbar spine radiographs conclude that the plain radiograph is unreliable for diagnostic accuracy and of negligible value for patients with low back pain. The authors have suggested a limited MRI of the spine may be more useful with strict criteria applied to its usage [7].

Conclusion

In conclusion, I have presented some evidence which in my opinion should reemphasise the importance of clinical examination, and rational interpretation of the MRI spine; to avoid the over reporting of incidental findings and its consequent over treatment of spinal conditions. Also, the not often discussed false negative (or symptomatic pathology in the absence of MRI findings); should also be topmost on our minds when interpreting spine MRIs. Perhaps the way forward is a rational use of limited spine MRI scans to be reported by clinical radiologists only after they examine the clinical subject to increase efficacy of the reports. This will be superior than a plain radiograph of the spine; and the fact a clinical examination of the subject is done by the reporter of the spine MRI reduces the likely hood of incidental findings being treated.

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