

RADIOLOGICAL DISCREPANCIES: “THE ONLY REAL MISTAKE IS THE ONE FROM WHICH WE LEARN NOTHING”.

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DOI: <http://doi.org/10.4038/sljr.v2i2.45>

Abstract

Medical errors seem to be inevitable despite all measures taken to avoid them. Radiology is no exception and is one of the specialities most liable to claims of medical negligence. The aetiology of radiological errors is multifactorial and fall into different patterns. Understanding these causes would help immensely to minimise the occurrences. This article focuses on the spectrum of diagnostic errors in Radiology and the importance of sharing the negative experiences in identifying the error traps and preventing repetition of the same mistake.

Key words: Radiological discrepancy, Error

Introduction

Error in radiology has been an issue recognised for many years¹. Radiological investigations remain available for many years after reporting and therefore are available for further scrutiny unlike many other medical investigations or examination findings².

Nearly 75% of all medical malpractice claims against radiologists are related to diagnostic errors³. Every radiologist worries about missing a diagnosis or erring

too heavily on the side of caution and giving a false-positive reading. Understanding the concepts behind the common mistakes will help to minimise the number of errors.

Understanding Error in Radiology

The Radiological errors are traditionally categorized as individual or system related and the individual specific causes can be divided in to perceptual and cognitive errors.

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Perceptual Errors

Perceptual or observational errors are by far the most common errors in Radiology accounting for 60-80% of radiological errors⁴. For a finding to be considered as a perceptual error it has to be sufficiently conspicuous, but not detected by the interpreting radiologist at the primary examination. The causes of this type of error are manifold and include poor conspicuity of a target lesion on the image, poor overall quality of a study making the radiologist not interested in examining and interpreting the well demonstrated abnormalities, reader fatigue, and rapid pace of performing investigation and reporting, and distractions¹. Satisfaction of search is another very important cause whereby the reader prematurely terminates the examination following detection of a single abnormality overlooking a second important finding which could be related or unrelated to the first finding. An additional source of error occurs from the influence a previous radiology report has over another radiologist. This type of perceptual error occurs because the radiologist reads the previous report before looking at the film. If the first radiologist missed the abnormality or it is visible in the second examination only, it is more likely to be missed. The corners of X-rays, last images of CT and MRI scans and scanograms are common sites of harbouring unseen pathology.

Cognitive or Interpretative Errors

A cognitive error occurs when an abnormality is positively identified but interpreted incorrectly resulting in a wrong diagnosis. This could be due to absent or misleading clinical information, lack of

knowledge and experience or cognitive bias.

Anchoring bias is relying on initial impression without changing it according to the subsequent findings. An example would be failure to recognise development of a mesothelioma in a patient known to have multiple pleural plaques. Corrective strategies would include avoiding early guesses, trying to disapprove the initial diagnosis rather than reconfirming it and obtaining second opinion when the findings appear to worsen.

The strong influence of the clinical information on the radiologist is called framing bias. Examining the images prior to reading the clinical information would help to minimise this type of errors.

Availability Bias is the tendency to make a diagnosis more likely if it readily comes to mind. Radiologists should be aware of the tendency to overestimate the prevalence of previously missed, rare and memorable cases.

Outcome bias is where the opinion is changed to allow a better diagnostic decision for the patient and Zebra retreat is hesitation to make a rare diagnosis despite the presence of adequate evidence due lack of self-confidence.

System Based Errors

System related causes include poor working conditions and facilities, poor techniques and protocols, excessive workload, distractions and unsatisfactory relationship with clinical colleagues.

Miscommunication is another major type of system based error where a finding is correctly identified and interpreted but the

report fails to reach the clinician in a timely manner. All the departments should have well recognised channels to deliver significant abnormal findings. There should be an agreement in the timescales and mode of communication depending on the urgency of the report. An urgent finding like a subarachnoid haemorrhage will need telephoning whereas a cancer report can be faxed, emailed or physically carried to the clinician within few days. However significant abnormal findings are preferably highlighted accordingly in the electronic system or coded in a different colour if hard copies are still in use.

Strategies for error reduction

Various efforts are being carried out in trying to reduce radiological errors. Most of these efforts have traditionally focused on intensive education of radiologists-in-training and retraining of practicing radiologists in continuing education. Adjusting working hours to minimise fatigue, having a “Duty Radiologist” or a “Hot Desk” to protect the reporting radiologists, computer assisted techniques (eg. Detecting lung nodules on CT), check lists and structured reporting and double reporting (e.g. Breast screening and MDT setting) are all common strategies in modern practice. It is well known that all these measures have helped to reduce the number of discrepancies but have proven to be insufficient and all radiologists still remain vulnerable to make mistakes.

Learning from discrepancy Meetings

Discrepancy meetings are found to be a very useful tool in learning the pattern of errors, and provide an insight to common errors traps. It is recommended that all

cases are anonymised and confidential feedback to the reporting radiologist is provided following the meeting and blame free and just culture is paramount. The discussion should be done in a sensitive and constructive manner as the reporter will only attempt to improve if he views such criticism as a positive experience.

Conclusion

Discrepancies continue to be an inevitable problem in diagnostic radiology. Understanding the causes behind and shared learning from previous mistakes undoubtedly would lead to a better outcome⁵.

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Figure 1: Perceptual or Observational error. The patient presented with sepsis of unknown origin. The large abscess containing air bubbles in the left hip and the insertion of psoas muscle overlooked in the initial examination. This is most likely because it is a “corner” uncommonly harbouring pathology and also overall image quality is significantly disturbed by the metallic artefacts from the hip prosthesis.

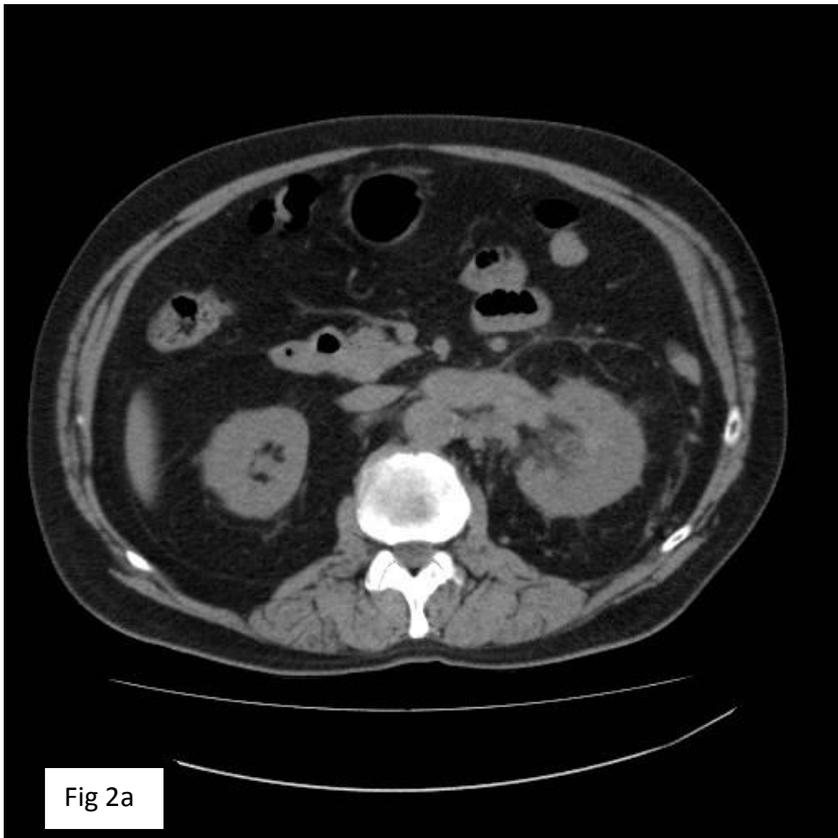


Fig 2a

Figure 2: Cognitive or Interpretational error. The clinical history provided was suggestive of an infection. A non contrast examination was performed due to poor renal function. The abnormal left kidney with perinephric stranding was identified, and erroneously interpreted as severe infection. The expansion of the left renal vein (Fig2a,b), distended left gonadal vein (black arrow) and neovascularisation overlooked in the initial examination, which could have helped to arrive at the correct diagnosis of tumour. Subsequent post contrast examination (fig 2c) is easier to interpret. Framing bias and the reduction in image detail due to lack of contrast are contributing factors.

