Diagnostic errors

Diagnostic greed: using pictures to highlight diagnostic errors

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Illustrating diagnostic greed and other diagnostic errors using pictures

More than 30 years ago, Maurice Pappworth cautioned against the sin of “diagnostic greed”. “Overwhelming evidence is not essential for correct diagnosis, and the absence of some expected symptom or sign often does not invalidate an otherwise reasonable diagnosis.”¹

Many junior clinicians have difficulty formulating a differential diagnosis after history-taking and clinical examination. The sin of diagnostic greed is common. There is little difficulty diagnosing acute pulmonary embolism if a patient is a returned air traveller and has pleuritic chest pain, haemoptysis, hypoxaemia and an ECG showing S₁Q₃T₃. Likewise, coeliac disease is easily diagnosed if a child has chronic diarrhoea, failure to thrive, iron deficiency anaemia and the itchy rash of dermatitis herpetiformis. However, such “full-house” clinical presentations are rare.

The pictures in fig 1 are helpful in illustrating diagnostic greed and other diagnostic errors. The pictures show two steaks, one on top of the other. The lower steak represents the template of the classic disease. The upper steak represents the patient’s clinical presentation.

Panel A shows a perfect fit between the upper and lower steaks. A clinician who demands this before making a diagnosis is committing the sin of greed. The classic presentation in many diseases are not only uncommon (for example, <10% of patients with renal cell carcinoma have the classic triad of flank pain, haematuria and a palpable abdominal mass²), in some cases the classic presentation is a clinical myth that exists only because it has been named. As described eloquently by Richard Asher, using Pel Ebstein fever as an example, “the bestowal of a name upon a concept, whether real or imaginary, brings it into clinical existence”.^{3,4}

Panel B shows the common diagnostic error of premature closure^{5,6}—sticking to a favoured diagnosis despite mounting inconsistent features. Pappworth called this the “crime of Procrustes” after the robber Procrustes who tied his victims to his bed, cutting off their limbs if they were too tall and stretching them if they were too short.⁷ The modern name for this diagnostic error may be called “fitting square pegs into round holes”.⁸

Panel C shows the everyday clinical situation where patients have some features consistent with a particular disease

but not all the “essential” features. An example is adult cystic fibrosis. Such patients may have recurrent sino-pulmonary infection and no other cystic fibrosis features.⁹ In these cases, laboratory tests (a sweat chloride level) to refute or confirm the diagnosis is indicated if the probability of the diagnosis is above the testing threshold but below the treating threshold.¹⁰

The concept of diagnostic greed also teaches junior clinicians the parsimony of investigations. When the diagnosis is already secure (that is, above the treating threshold), there is no need to order more “confirmatory” tests to fill in the rest of the upper steak in panel C. Ordering more tests which are known to be abnormal in certain diagnoses when the diagnosis is in no doubt have been called the “ah hah” tests, and are used merely to advertise the cleverness of the clinician.¹¹

The art of diagnosis can only be mastered after much practice, patience and time. The role of a diagnostician is arguably the most important function of a physician; for diseases cannot be treated optimally unless they are diagnosed correctly. These pictures are helpful in highlighting some aspects in diagnostic reasoning.

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Figure 1 Pictures illustrating diagnostic greed and other diagnostic errors. The lower steak represents the classic presentation of the disease. The upper steak represents the patient’s clinical presentation. See text for full explanation. Reproduced from: SG Pauker, GA Gorry, JP Kassirer, WB Schwartz. Towards the simulation of clinical cognition taking a present illness by computer. *Am J Med* 1976;**60**:981–96, with permission from Elsevier. Author’s comment: The original article is about the use of computers to help diagnose diseases and has no mention about diagnostic greed.

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