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Have Mercy on Doctors OH Patients: Medicine Is A Biological Science

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COMMENTARY

Recently we took part in a symposium on gender bias as one of the guest speakers and as a participant. The Chief Guest speaker was an International Nigerian Academician, a SAN (Senior Advocate of Nigeria, the Nigerian equivalent of the British Queen's Counsel) and a Professor of law in the USA. The moderator was a respectable Professor of law and eminent attorney. The chairman was a very top prominent elder legal practitioner and another SAN. Most of the other participants were from outside the medical profession.

The discussions incidentally brought to light (among other issues) the burning question of the "shortcomings" of medical diagnoses.

Most of the "disappointments" patients and their relatives get over the Practitioners' diagnoses come from the fact that it is often forgotten, or not quite fully realized, that medicine first of all deals with an extremely complex being, *Homo sapiens.* Secondly it is not a pure science but an applied science, more precisely a biological science. To put it simply, in biological sciences, two and two could give anything from zero to nine, not just four.

There are fortunately instances in medicine where two and two would usually give four: blood groups and genotypes (ABO, Rh factor, hemoglobin electrophoresis for haemoglobinopathies), the very late stages of most diseases to which we will come back later. There are however many more settings where the answer is not four. In clinical practice, we all know that a chronic anaemic patient can "tolerate" very low figures of haemoglobin that would, in acute situations, send many more patients to the mortuary. The quantity of alcohol necessary to inebriate a drinker differs considerably, subject again to whether the condition is acute or chronic but also to the person's alcohol dependence which in turn is determined by many factors (psychological, social, environmental and genetical) [1]. This paper will however deal only with some of those diagnostic difficulties encountered by doctors and which remind us of the fact that Medicine is a biological science.

One difficulty comes from the different clinical features a disease can take. Very few diseases will reveal themselves in the "typical form" taught during lectures in the medical schools. Each case will usually present as one of different numerous combinations of the signs of the "typical form". In addition, periodically, some patients will exhibit even more fully the complexity of *Homo sapiens* by coming up with symptoms and signs never seen previously [2]. This is demonstrated by the number of "one case reports" published regularly, not to talk of unreported instances. A good example of this group of difficulties is provided by acute appendicitis. Even though it represents the most common surgical emergency of the abdomen, the preoperative diagnosis of this frequent pathology can deceive any Surgeon with the overall rate of misdiagnosis ranging from 14% to 16% and even up to 40% in some series [3]. A further illustration comes from the un-ruptured ectopic pregnancy.[4]

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Another difficulty is created in the situation where the Practitioner does not have or cannot get all the elements necessary to work up to the diagnosis: correct and reliable information not obtainable from the patient or the relatives, necessary and indispensable investigations not available or practicable. A specific example of this group is the case of MUNCHAUSEN syndrome [4]. Other examples common in our developing

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countries come from settings where the interaction between diagnostic imperatives and resource limitations can influence the circumstances under which physicians find themselves practicing [5].

Regularly, recurrent open questions or silent interrogations like "Did you not see it from the X-ray? Did the blood test not show that?" emanate from patients and relations who are frequently surprised that, despite all the diagnostic equipments at their disposal, practitioners still sometimes fail to come up with a correct diagnosis. In reality, doctors had two fundamental problems: inability to always "open up" a patient, get a direct view and reach a diagnosis as well as not having a "spare parts workshop" to permit the replacement of non-functional human organs. Science and technology commendably filled the gap "partially" by developing very many techniques and equipments for providing "pictures" of inaccessible organs, structures and situations. However, the view is through medical imaging (X-rays, ultrasound, computerized tomography scans, magnetic resonance imaging, etc), endoscopies enhanced by laboratory investigations and findings. All these have helped enormously to improve medical diagnosis. Each method nonetheless carries its own distortions, artefacts, inconveniences and even risks and dangers for the invasive ones, not to talk of the availability, costs and margins of error with false positive and false negative results!. The association of diagnostic investigations evidently narrows the margins of error but also compounds the costs (an important factor in our poor resource environment) and eventual risks without usually eliminating the errors completely. The practitioner has to "juggle" between all these elements to decide which investigations to ask for and how to interpret and integrate the results in his diagnosis. Situations where the results of these investigations have been compared with the "direct view" of the lesions at surgery or autopsy [6] from time to time continuously remind all concerned of this basic fact. In addition, surveys in this "era of high-technology medicine" [7] have not shown either a decrease in the misdiagnosis of appendicitis or a reduction of unnecessary appendicectomies in the general population. They have also not revealed an improvement in the discrepancies between premortem and postmortem diagnoses [8]. Certain special problems in diagnosis can be put in this group of difficulties: diagnostic process error (sample mix-up or mislabelling) with resulting misdiagnosis, local factors such as variation in the quality of test performance and readings and wrong assessment of the limitations of each investigation [9].

But by far the greatest difficulty is probably from situations where the practitioner's conclusion represents a classification into only two categories ("disease" or "no disease") after an evaluation of a continuum. It is like classifying people by their heights into only two categories: tall or short. In July 2007, the tallest man in the world stood at 2.36m and the shortest man at 73cm. Everybody will classify a man 2.36m as tall and the one of 73cm as short. In between these two heights there is a zone midway where classification into "tall" or "short" is difficult, subjective and discordant. This type of situation can, to some extent, explain how the interpretations of radiological images can vary between doctors [10] and why "one man's carcinoma in situ is another man's dysplasia" in the histological study of lesions of the uterine cervix [11].

Closely resembling this difficulty of classification into two categories is the difference the evolution of a disease can make in the diagnosis. Diseases can generally be compared to an imaginary tree which is like a 'normal' tree except that the stem and branches get bigger and bigger (instead of smaller) as they grow away from the roots. At the early part of most diseases (low down the tree), only a few symptoms and signs are present and are reduced in intensity. Diagnosis is then difficult and sometimes impossible. At the advanced stages, all or most of the signs are there and are more intense (higher up the tree with more and bigger branches). Diagnosis is then easier sometimes with little or no aid from the "advanced diagnostic techniques" which only come to confirm a clinically obvious situation. Between these two levels, diagnosis can be more or less difficult depending on many factors. In other words diagnosis becomes easier as the disease evolves.

"Adverse events and medical errors are an inevitable reality of health care" so "fallibility is therefore inherent to medical decisions" even though "physicians are trained to be very careful and to function at a high level of proficiency." The necessary and indispensable steps in arriving at a diagnosis can be influenced by apparently insignificant factors: interruption while talking to a patient or thinking about a diagnosis and thereby forgetting to ask a critical question or consider a critical diagnosis, the presence or absence of a high index of suspicion, intuition, heuristics, the patient's social class, income, ethnicity, gender and age [12]. These steps can also be influenced by more important factors: the doctor's area of specialization, personality, age, professional experience,

beliefs and perspectives. SCHIFF *et al*. 2005 [13] reported among their "vignettes" a case of diagnostic error where even after a careful review of all the aspects, including a contradictory pelvic ultrasound (read in emergency as consistent with ectopic pregnancy and reread the next day as normal), they were still not certain which of the two practitioners was "right" All these elements point to one fact: the elusive character of arriving at a medical diagnosis.

Fortunately, doctors are generally very level-headed, conscientious and highly intelligent professionals. This is partly (and arguably) by nature and partly (and certainly) by the very long, busy, stressful, difficult programme and training they undergo in the medical schools and teaching hospitals. This programme and training have also made medical studies unique among most other university courses. As a Professor of one of us (ACM) in the medical school used to put it, medical course is like a long tunnel with only two openings: at the beginning and at the end. After so many years in the university and medical school, the undergraduate either comes out as a doctor or goes back to the opening he entered from: there are no intermediate certificates! Every doctor can easily recall how he was comparatively busier in the university than most other fellow contemporaries in the other faculties. It is on record that most students' activists as far back as the 1930s were not from the medical school [14]. The undergraduates there are often so absorbed and engrossed with one curricular activity or the other [15] that they barely have time to engage in other endeavors. Doctors conscientious discharge of their duties is well testified to by the intense emotional responses (distress, self-doubt, confusion, fear, remorse, guilt, feelings of failure and depression, anger, shame and inadequacy) they go through after a medical error [16].

But they still remain human beings. They are therefore "fallible" [10] and will, from time to time, "inevitably" commit diagnostic errors for which they are liable to prosecution when these errors are eventually brought up before the competent jurisdictions and proven to be due to negligence, inadequacy or bad faith. However, the non-medical world should, in most of the cases and somewhere during and after the procedure, have in mind the peculiarities of the medical profession and perhaps look a little less critically on the practitioners' errors despite the verdicts of the jurisdictions which are strictly impersonal and impassive.

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