



Some Words About Doctors, Diagnostic Tests, Patients and Research

Victor Lage de Araujo*

Laboratory Medicine and Evidence Based Healthcare, United Kingdom (UK)

***Corresponding Author:** Victor Lage De Araujo, Laboratory Medicine and Evidence Based Healthcare, United Kingdom (UK).

Received: October 16, 2019; **Published:** November 05, 2019

DOI: 10.31080/ASMI.2019.02.0426

Everybody goes to the doctor some time for diagnosing and coping with some disease. What not all people - Including patients and physicians - are aware of is that the process of diagnosis starts when the patient enters the Doctor's office. Any patient is at first anonymous and unknown to the doctor - until entering the Doctors' room; and then, the Doctor starts observing and making questions.

Any doctor should be at first both neutral and nonchalant towards his patients - Until they are there, asking for help, and the Doctor immediately starts thinking ("what is the facies and physical appearance of the patient? Does he/she look like someone stoic, or present a high degree of anxiety about health and sickness? What does it suggest?") and then questioning and challenging. ("what about your pain? When did it start? What alleviates or worsens it?"). Immediately after that, the "good doctor" [1]. positions the patient and then starts probing and touching. All that process we call anamnesis, and physical examination is often guided by years of training and studying. We are generally unaware of the facts that each physician is a practising scientist and his patients - his subjects of studies. During the consultation, he keeps making a series of mental hypothesis and testing them, until he reaches what we call a clinical picture - a state where he believes he knows enough to practice some intervention for the better of the patient. Moreover, besides medical science, he must be a true artisan, skilled in a series of immaterial techniques such as touching, hearing and seeing unique phenomena.

Most physicians look at their patients through learned binoculars to construct a so-called clinical picture [2]. During the first years of Medical School, they first learn the basic sciences in deep - such as Biochemistry (the chemistry of life), Biophysics (including, but not limited, to the physics of the movement), Physiology (the way the healthy body and metabolism works), Pathophysiology (the ways of a sick patients' body), Pharmacology (how the known medicines are absorbed, distributed, secreted and may thus be practical to treat a given condition). After that, they must learn to recognise - at a glance -, at least the most often diseases and condi-

tions. He obtains that first impression in an almost effortless and unaware sequence of tests.

Nevertheless, what is a diagnostic test? We can define it as an exam designed to determine the presence of some condition [3]. According to that definition, therefore, the first diagnostic test a given doctor performs on any patient is simple observation. Following that, the anamnesis (i.e., remembering) consists of a series of questions (tests) design to recapture (or diagnose) all or most aspects of the patient's condition. The clinical examination is again a series of (physical) tests, such as touching the patient's skin, making thorax and abdominal examination (with or without some instrumentation). Only after that, the Doctor reaches the mental clinical picture - consisting of the most probable conditions, sickness and their causes. He can then intervene and observe the results. Alternatively, he can order a set of complementary exams to reinforce his diagnostic hypothesis.

That may be the most important ever physician will learn: the science of Medical Semiotics (i.e. the study of signs and symptoms and their interpretation into a health or disease state).

We must understand some features of that science:

- That it starts at the doctor's office.
- That it is dependent on the characteristics of the tests (including the Doctors' craft if we are to consider that he is always the first to start making tests).
- Furthermore, that those tests and methods suffer continuous transformation and their use must be relearned. Science is continually creating new kinds of exams; new diseases appear and old ones suffer transformation.

The technocratic view of Medicine we nowadays witness was not always the same. It was ultimately born at the times when people believed only the four Hippocratic Humours [4] ruled all healthy and sickness conditions (Figure 1).

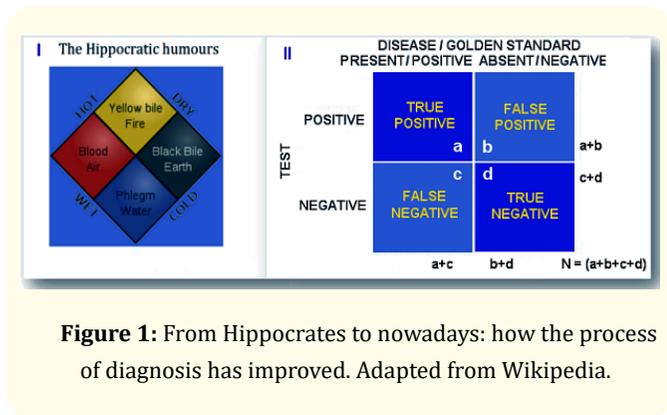


Figure 1: From Hippocrates to nowadays: how the process of diagnosis has improved. Adapted from Wikipedia.

It is only through the comparison of known standards that each disease is better recognised and diagnosed. One must continually compare the known diseases from the past to the people found indeed healthy. This process was born with Hippocrates (or even before him), then enhanced and perfected as, at the first time, some epidemiologist ever constructed a simple 2 X 2 table, from which the probability of disease could be evaluated, based upon present and past statistical data [5]. With that simple analysis, finally, the diseases could be studied from a statistical standpoint: because one could then evaluate to some precision the probability of the diseases. Thus, the study of such data allows us to calculate the fixed characteristics of a given exam: Sensitivity, Specificity and Accuracy. And for each patient, it is now possible to determine reference values for a given exam – those associated with the probabilities of health and disease (Ferreira, 2008) – then epidemiologically and individually evaluate the (positive and negative) Predictive Value, meaning the probability of a given condition to be present – ultimately, related to the accuracy of the exams and to the pre-test risk of the patient [5].

From the standpoint of diseases, we compare patients with any unequivocal disease to those doubtlessly healthy and determine their signs and symptoms. From the standpoint of laboratory and other complementary exams, we must compare the results of a test when referring to an absolute standard, the so-called golden standard (Figure 1-II) Meanwhile, medicine and laboratory are not watertight sciences – or else we should be still diagnosing our patients by their humours. Instead, there is a constant evolution, as we learn from the errors of the past and the industry makes newer and even better and more precise complementary exams.

Where does that leave us, Doctors and patients?

1. For themselves, all patients should learn about self-care and how to consider their own disease processes [6-8].
2. Doctors must never forget that the comprehensiveness and accuracy on the interrogation of their patients are para-

mount if they are to make the best of the myriad of available diagnostic exams. They must train their skills and do a careful history and examination, then also keep up with the increasing amount of science, while being able to sift the wheat from the chaff.

3. Finally, all laboratory professionals must be bound to dedicate their time and resources to produce the best exams in terms of sensitivity, specificity, accuracy and actual clinical value. We could call that process Medical Research, and we are all part of it.

Bibliography

1. IMDB. "The Good Doctor". TV series. (2017).
2. Groopman J. "How Doctors Think". Houghton Mifflin Company. Boston, New York. Kindle Edition (2007).
3. SPINE-health. Diagnostic test or Diagnostic Study Definition (2019).
4. ThoughtCo. Hippocratic Method and The Four Humours (2019).
5. Kawamura T. "Interpretação de um Teste sob a visão Epidemiológica. Eficiência de um teste". *Arquivos Brasileiros de Cardiologia* 79.4 (2002): 437-441.
6. Groopman J and Hartzband P. "Your Medical Mind: How to decide What is Right for You". The Penguin Press. New York Kindle Edition (2011).
7. Encyclopaedia Britannica. "Hippocrates". Greek physician (2019).
8. Wikipedia. The four humours and their qualities (2019).

Volume 2 Issue 12 December 2019

© All rights are reserved by Victor Lage de Araujo.