

Role of Clinical Cardiology in Modern Medicine

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“Is clinical examination dead?” thus asked Kinesh Patel, a junior doctor in a views section published in BMJ back in 2013.¹ Patel argued ‘clinical examination is redundant in an age of readily available investigation. It is no longer acceptable to use only clinical examination to screen for conditions because the miss rate is just too high.’ But Lisa Sander’s book, ‘Diagnosis’ gives frightening examples of the mismanagement of patients who had been well investigated but not well examined.² In cardiology the auscultation of heart sounds and the different murmurs have been a ritualistic part of both undergraduate and post graduate curriculum. But in modern medicine the array of sophisticated imaging technologies made people to practice clinical cardiology less.

On this background consider the following story. A young 28 year old doctor was a known patient of chronic rheumatic heart disease with mild mitral regurgitation (MR) who had been well treated. She was asymptomatic throughout the pregnancy and developed severe shortness of breath in the last week of her pregnancy. She was diagnosed to have acute LVF with reduced ejection fraction and severe MR. Echocardiography done a week after delivery revealed the same features. Two cardiologists opined that she should undergo mitral valve replacement immediately. The third cardiologist took a different view and advised to treat conservatively, as he diagnosed it as a case of peripartum cardiomyopathy. Over the next 6 months there was gradual reduction of LV size, improvement of LVEF and regression of MR severity. By 6 months she was back to her original status of mild MR & hence proved the third cardiologist absolutely correct. This is an

example of ‘clinical acumen’ winning over investigational findings. The apparent clue was ‘asymptomatic course throughout the pregnancy with sudden deterioration only in last week of pregnancy’ and dilated LV with severe MR but no feature of recurrence of rheumatic fever. So clinical cardiology, which encompasses good history & thorough clinical examination supplicated by investigation should not be discarded out of hand.

Taking an accurate medical history followed by a physical examination including inspection, palpation, and indirect auscultation was the practice of Pharaonic doctors. Later, Hippocrates (5th century B.C.) and his disciples adapted these procedures for bedside examination and during the following two millennia medical practice remained essentially unchanged. However, by the 18th century, physical examination was largely abandoned and medicine relied primarily on subjective opinion.³

Interest in the physical examination re-appeared after the pioneering work of G.B. Morgagni (1682-1771) who demonstrated for the first time the gross pathological changes by disease in the body organs. This stimulated some clinicians to correlate the ante-mortem symptoms and clinical signs with the post-mortem findings. Later J.N. Corvisart (1775-1821) and H. Laennec (1781-1826) were the greatest pioneers who re-introduced the examination principles employed by the Pharaonic doctors 3000 years earlier, but now based on more objective knowledge. Laennec introduced the ‘aural stethoscope’, the first technological aid in bedside diagnosis, which augmented the sense of hearing and help in detection of bruits, heart sounds, and murmurs.³

In 1947 Platt claimed that in most cases diagnosis can be made with the history alone.⁴ In 1975 Hampton and co-workers found that the diagnosis predicted after taking history agreed with the accepted diagnosis two months after initial visit in 82% cases. Physical examination led to the diagnosis in 9% and the laboratory investigations led to proper diagnosis in other 9%.⁵

For detection of common valvular lesions such as aortic stenosis and mitral regurgitation, the accuracy of clinical diagnosis by cardiologists or internists was found 76.1% vs. 64.7% for all types of lesion. However it was only 57% vs. 48% for mild lesion and 82.4% vs. 76% for moderate to severe lesion.⁶ Similarly both cardiologists and general practitioner had high sensitivity (89%) but poor specificity (46%) in predicting left ventricular systolic dysfunction in patients attending a hospital heart failure clinic.⁷ In a similar study specificity was improved to 76% with addition of ECG.⁸ Clinical examination can also detect the peripheral arterial disease with a high degree of accuracy (93.8%) compared with the ABI using the cut-off of 0.90 or lower.⁹

There are valid objections to overreliance on history and physical examination. Patients may be poor historians, confused or too unstable to provide meaningful information. Likewise 'Kappa' (which is an index that describes the level of agreement beyond that expected by chance alone and can be thought of a chance-corrected proportional agreement) of most of the clinical signs is not more than modest, and sensitivity and specificity problems abound.¹⁰

In the cardiological practice, diseases such as small to moderate pericardial effusion, ventricular dysfunction, some cardiomyopathies, silent valvular diseases and mass lesions (vegetations and myxoma) all of which are regularly encountered in our daily experiences, are elusive to physical examination even when performed by experienced clinicians. These conditions are readily diagnosed by a routine echo Doppler examination with additional information.¹¹ Studies have shown that 30% major and 69% minor pathologies are missed.^{3,11}

In an era worshipping the high technologies, in particular the sophisticated imaging techniques

are often (wrongly) perceived as faultless, precise and final.¹² But results may be false positive or false negative, and in such cases a lack of basic understanding of the presenting complaints may result in instituting wrong treatment plan.¹³

Failure of eliciting proper medical history can cause a physician inadvertently to discontinue important medications, prescribe an incorrect dose of chronic medications, duplicate a low yield diagnostic test, neglect an earlier directive or disrupt plans made by previous clinicians.¹⁴ However the skill involved in taking a patient's history is taught in medical school but is seldom reinforced in continuing medical education courses.^{15, 16}

Integrating physical examination into clinical case demands high levels of knowledge, behaviors and skills that are loosely termed clinical acumen. These skills include applied anatomy, clinical physiology, bedside manner, oral communication, problem solving or diagnostic reasoning, technical proficiency and judgment. Increasing use of technological aids to diagnosis (TADS) have led to decline in the use of this clinical acumen.¹⁷ A superficial history missing many key findings, cutting the patient's story short within seconds, frequent adoption of a 'computer centered' rather than the 'patient centered' approach, the cursory examination of patients through their cloths all these has become prevalent today and may become widespread in the foreseeable future.¹⁸

Besides the diagnostic value, physical diagnosis and history taking contribute to patient satisfaction, comfort and trust and may even have therapeutic value.¹⁹⁻²¹ History and examination alone are truly holistic, covering the whole body as well as the mind and the intangible socioeconomic factors. This is especially important, in that, most visits in primary care are motivated primarily by psychosocial, not biomedical problems.¹⁷ The physician's interest, empathy and commitment are sensed by the patient who responds with trust, hope and compliance. Even the most sophisticated imaging apparatus cannot provide support, encouragement or hope.¹⁷

In some conditions like patient's home and remote places, except physical examination no other test is available. History and examination based clinical evaluation are self-sufficient, applicable within minutes of onset of a symptom and when combined with a focused, judicious selection of tests and their interpretation can translate into satisfactory outcome for both patients and the physician.

In resource constrained settings where many cannot afford simple medical tests, the essence of detailed history taking and physical examination should be emphasized. This will prevent unnecessary investigations, referral and treatment.

In our country more and more technologies are introduced in the field of cardiology. We should also develop and maintain the skill of clinical cardiology. This can only be done by educating the next generation of physicians properly. Teaching the skill of cardiac auscultation during the residency training by lecture unsupported by practical demonstration heart sounds and murmurs can hardly improve proficiency. Bedside demonstration and teaching of both history taking and physical examination can help to prepare the junior doctors to gain confidence in their own abilities. The ability to gather information and derive conclusion through talk and touch can never be over emphasized.

As Oyedokun et al states "technology may serve as an expansion of a doctor's core clinical duties and not be regarded as a replacement".²²

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