Abstract

Analysis of data generated in course of patient care can provide evidence based solutions for unanswered questions encountered in day-to-day clinical practice. However, this data is often neither adequately documented nor scientifically analysed. At the Antiretroviral Therapy (ART) Centre, a human immunodeficiency virus (HIV) Clinic, at National Institute of TB and Respiratory Diseases, detailed patient data is recorded in structured patient charts. We analyzed data collected at this clinic over an eight year period for HIV cases with and without active tuberculosis (TB). To begin with, we undertook analysis of data from HIV infected TB (HIV-TB) patients who had paradoxical worsening of TB disease after initiation of HIV therapy due to the manifestation of a clinical entity known as TB associated immune reconstitution inflammatory syndrome (TB-IRIS). From our analysis, we identified TB-IRIS to be a frequent problem at our clinic and that meningeal TB-IRIS cases had high mortality, based on which information we made effective modification in treatment of such cases at our Centre. Following analysis of another dataset from the NITRD-ART Centre, we also demonstrated that abdominal TB is a frequent form of TB in HIV which can be easily diagnosed if a simple USG of the abdomen is ordered in HIV-TB suspects, thereby resulting in timely diagnosis and treatment of TB. We now understood the need for a universal TB test. For this we analyzed the data on tuberculin skin test (TST) from the NITRD-ART Centre as well as from global studies to assess its performance as such a test, which could be applicable for all forms of TB and all types of patient populations. Our rigorous statistical analysis of collated data led to development of a comprehensive statistical criterion for assessing the clinical reliability of a diagnostic test i.e. ‘Diagnostics of diagnostic test’ wherein the predictive values of a diagnostic test should 1) have absolute values of more than 80 %,
2) be independent of the country’s overall prevalence of disease where the test is performed, and 3) be correlated to and be higher than the test’s sensitivity/specificity. All three conditions need to be met for a test to be reliable across different clinical settings. Application of the above criterion to TST data, affirmed its clinical unreliability for active TB diagnosis. In addition, we could also develop analytical benchmarks for quantitative diagnosis of reliability of any diagnostic test used in clinical practice. By means of analysis of our clinical data, we were able to assess different diagnostic approaches and provide scientific evidence for better patient care decisions both at our Centre, as well as in general medical practice on a whole. This work has therefore, contributed towards reduction in disease related morbidity and mortality. We propose that more such analyses of data must be carried out in clinics and hospitals and that all clinicians must enhance their documentation and analytical skills.