
ABSTRACTS

High resolution CT in miliary tuberculosis of the lung : Correlation with Pulmonary Function Tests and Gas Exchange Parameters in North Indian patients

S.N.J. Pipavath, S.K. Sharma, S. Sinha, S. Mukhopadhyay and M.S. Gulati. *Indian J Med Res* 2007; **126**: 193-198.

High resolution computed tomography (HRCT) scans are known to be helpful in early diagnosis and management of patients with miliary tuberculosis (MTB). We made an attempt in this study to identify patterns of pulmonary MTB on HRCT and to correlate the HRCT disease extent with pulmonary function tests (PFT) and gas exchange analysis (GEA). A total of 16 non-HIV patients with MTB underwent HRCT of the chest, PFT and GEA. All the investigations in these patients were completed within 20 days of presentation. Evidence of TB was diagnosed by biopsy from lymph nodes (3/16), organ biopsy [skin, liver, bone marrow and lung (transbronchial) (6/16)]. In one patient, fundoscopy revealed choroid tubercles. In six patients, diagnosis was confirmed by clinical/radiological improvement following anti-tuberculosis therapy. Radiological patterns of involvement on HRCT of the lungs were studied and disease extent was estimated in each case by consensus between two radiologists using specially devised visual scoring system. Disease extent was correlated with PFT and GEA. Spearman rank correlation was used for statistical analysis.

Findings on HRCT in MTB included miliary nodularity (16/16), alveolar lesions such as ground glass attenuation and/or consolidation (5/16), lymphadenopathy (8/16), peribronchovascular interstitial thickening (1/16), emphysema (1/16), pleural pathology (2/16), and pericardial effusion (2/16). A significant correlation was noted between disease extent score and forced vital capacity (FVC) ($r = -0.76$; $P=0.003$), forced expiratory volume in one second (FEV_1) ($r = -0.74$; $P = 0.005$), total lung

capacity (TLC) ($r = -0.66$; $P = 0.037$), oxygen saturation in arterial blood (SaO_2) ($r = -0.69$, $P = 0.01$), diffusion capacity of the lung (DLco) ($r = -0.8$; $P = 0.02$). Our findings showed that HRCT reliably diagnosed MTB, and thus could help in predicting derangement of pulmonary function tests and GEA in these patients.

Sputum Conversion at the end of intensive phase of Category I treatment of Pulmonary Tuberculosis patients with Diabetes Mellitus or HIV infection: An analysis of risk factors

V.V. Banu Rekha, Rani Balasubramanian, Soumya Swaminathan, Rajeswari Ramachandran, Fathima Rahman, V. Sundaram, K. Thyagarajan, N. Selvakumar, A.R. Adhilakshmi, Sheik Iliayas and P.R. Narayanan. *Indian J Med Res* 2007; **126**: 452-458.

New smear-positive pulmonary tuberculosis (PTB) patients in the Revised National Tuberculosis Control Programme (RNTCP) are treated with a six-month short-course chemotherapy (SCC) regimen irrespective of co-morbid conditions. We undertook this retrospective analysis to compare sputum conversion rates (smear, culture) at the end of intensive phase (IP) of Category-I regimen among patients admitted to concurrent controlled clinical trials: pulmonary tuberculosis alone (PTB) or with type 2 diabetes mellitus (DM-TB) or HIV infection (HIV-TB), and to identify the risk factors influencing sputum conversion.

In this retrospective analysis sputum conversion rates at the end of intensive phase (IP) in three concurrent studies undertaken among PTB, DM-TB and HIV-TB patients, during 1998 - 2002 at the Tuberculosis Research Centre (TRC), Chennai, were compared. Sputum smears were examined by fluorescent microscopy. HIV infected patients did not receive anti-retroviral treatment (ART). Patients with DM were treated with oral hypoglycaemic drugs or insulin (sc). The study population included 98, 92 and 88 patients in the PTB, DM-TB and HIV-TB studies. At the end of IP,

the smear conversion (58, 61, and 62%) and culture conversion (86, 88 and 92%) rates were similar in the three groups respectively. The variables associated with lack of sputum smear or culture conversion were age >45 yr, higher pre-treatment smear and culture grading, and extent of the radiographic involvement.

Comparative study of Bactec MGIT 960 AST and conventional proportion method using Ogawa medium for the drug susceptibility testing of *Mycobacterium Tuberculosis* to Isoniazid.

Satoshi Mitarai et al. *Kekkaku* 2007; **82**: 449-454

The aim was to evaluate the accuracy of drug susceptibility testing to Isoniazid with BACTEC MGIT 960 (MGIT AST) comparing with the standard proportion method using Ogawa medium. A total of 1,109 *M. tuberculosis* strains, which were selected from the collection of RYOKEN drug resistance survey in 2002, were selected and subjected to the susceptibility testing to Isoniazid using MGIT AST and 1% Ogawa standard methods. The results from MGIT AST were compared with the judicial diagnosis by Ogawa. The sensitivity to detect drug resistance, the specificity for susceptible strain, the efficiency of overall agreement, and kappa co-efficient were calculated to evaluate the performance. The treatment process, outcome and prognosis were analysed for the patients on whom the tests showed discrepant results.

Compared with the judicial results, the sensitivity, specificity, efficiency, and kappa co-efficient of MGIT AST were 100%, 97.1%, 97.3%, and 0.798, respectively. The strains, which showed discrepant results between MGIT AST and Ogawa, were all susceptible by Ogawa and resistant by MGIT AST. A total of 11 out of 30 discrepant cases were followed clinically and no relapse cases were identified, irrespective of the modification of the treatment regimen. As for the proportion of primary INH drug resistance in the present study, it was 5.3% with MGIT AST but was 2.7% with Ogawa, and the difference was statistically significant ($p= 0.005$).

The discrepancies on the results of drug susceptibility testing of *M. tuberculosis* strains to Isoniazid between MGIT AST and 1% Ogawa proportion method have been reported. In the present study, the sensitivity, specificity, and overall efficiency of MGIT AST on the prevalent strains in Japan were all beyond 95%, and considered sufficient as the anti-tuberculosis drug susceptibility testing (AST), though 2.7% of discrepancy was observed: Even for the discrepant cases, there was no difference in the treatment outcome and prognosis. Thus, MGIT AST was confirmed as a reliable AST method comparable to Ogawa standard. However, MGIT AST might increase the proportion of INH resistance if it was used as a major AST method, compared with Ogawa.

Features of Bronchial Tuberculosis

Atusuhisa Tamura et al. *Kekkaku* 2007; **82**: 647-654

The aim of this study was to clarify the features of bronchial tuberculosis. We analyzed the clinico-pathological data from 103 out of 4467 (2.3%) cases of culture positive tuberculosis admitted from 1993 to 2004 in which bronchial tuberculosis was confirmed by bronchofiberscopy.

There were 62 women and 41 men, and 53 of them were less than 50 years old. The most common symptom, namely cough, was observed in 70 cases, while 79 cases showed III 1 to III 2 on roentgenographic examination, and 81 cases were smear-positive for acid-fast bacilli in the sputum. Regarding the bronchofiberscopic findings, ulcers were detected in 60 cases, and the major site of bronchial tuberculosis was in the left main bronchus (35 cases). The number of cases in which the time span from the onset of symptoms to diagnosis took over three months was 29, and 26 of them were "doctor's delay" cases which had a history of medical consultation resulting in diagnosis and treatment of other diseases, such as bronchial asthma (seven cases). There were 41 cases in which the second bronchofiberscopic findings have been reviewed, and regardless of the length of the span from the onset to diagnosis, the first bronchofiberscopy mostly revealed ulcer within one month after the start of treatment for tuberculosis,

and three months after the start of treatment, many patients developed fibrous scars. Between 1999 to 2004, the first bronchofiberscopies were usually performed within two weeks to one month after the start of the treatment in contrast to the cases admitted between 1993 to 1998 in which bronchofibroscopy was mainly performed before the start of the treatment. However, there were no differences in the findings due to the timing of bronchofiberscopy.

The clinical characteristics of bronchial tuberculosis have not changed, and the delay of diagnosis of bronchial tuberculosis due to doctor's delay also continues to be an important issue today. In patients showing positive sputum smear for mycobacteria, the timing of brohchofiber-scopy, although required upon medical examination, is considered to be more appropriately performed from two weeks to one month after the start of treatment from the view point of nosocomial tuberculosis infection control strategy.

Essay Competition For Medical Students-2008

The Tuberculosis Association of India awards every year a cash prize of Rs. 500/- to a final year medical student in India for an original essay on tuberculosis. The subject selected for the year 2008 competition is '**Smoking and Tuberculosis**'. The essay should be written in English, typed double spaced, on foolscap size paper and should not exceed 15 pages (approximately 3,000 words, including tables, diagrams, etc.). Four copies of the typescript should be forwarded through the Dean or Principal of a College/University to reach the Secretary-General, Tuberculosis Association of India, 3 Red Cross Road, New Delhi-110 001, before 30th June, 2008 along with a certificate that the author is a final year medical student.