
ABSTRACTS

High risk of tuberculosis in health care workers in Romania

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The objective was to assess whether health care workers (HCWs) have a higher risk of acquiring tuberculosis (TB) than the general population, and if TB incidence varies between departments, to develop adequate infection control measures. All records of TB cases among HCWs were reviewed by cross-checking laboratory and medical records (retrospectively, 1971-1996; prospectively 1997-2003, following the implementation of the first World Health Organization pilot project in Romania). Annual TB incidence rates among HCWs were calculated and compared with those of the general population; relative and attributable risk with 95% confidence intervals (CI) were calculated. Fifty TB cases were diagnosed in HCWs; 42% were nurses, 24% ancillary staff, 12% physicians, 10% laboratory staff, 10% administrative staff and 2% radiology technicians. The mean incidence of TB in Romania during the study period was 96.8 per 100,000 persons/year (95% CI 83.5-110.1); the mean incidence among HCWs was 942.8/100,000 persons/year (95% CI 726.3-1159.3, $P < 0.001$); comparing the two previous absolute risks, the mean relative risk was 11 (95% CI 8-14) and the attributable risk 846.

Assessment and evaluation of contact as a risk factor for tuberculosis in rural Africa

A.C Crampin, S. Floyd, B.M Ngwira, V. Mwinuka, J.N. Mwaungulu, K. Branson, P.E.M. Fine and J.R. Glynn. *Int J Tub Lung Dis* 2008; **12**: 612-18

The objective was to determine the effect of inaccurate recall on estimates of the proportion of tuberculosis (TB) cases attributable to contact

with identifiable prior cases. It was a case-control study of laboratory-confirmed TB cases and community controls, comparing family, household and area contacts identified from a data base of TB cases with those named at interview. Estimation of prior contact as a risk factor for TB and identified factors associated with being a named contact. Ninety-five per cent of named contacts were known TB cases. The proportion of total identified contacts who were named at interview was 75%, and was similar for cases and controls. Cases were twice as likely as controls to identify prior contacts. Adding data base information did not affect odd ratios, but increased the proportion of TB cases attributable to prior contact. Smear-positive, male and human immunodeficiency virus (HIV) negative TB patients were more likely to be named by subsequent cases. Identifiable recent contact with known smear-positive cases accounted for 12.5% of the TB burden.

A five-year follow-up study of Revised National Tuberculosis Control Programme of India at Lucknow.

S.K. Verma, Sanjay Kumar Verma, Surya Kant, Santosh Kumar and R. Prasad. *Ind J Chest Diseases & Allied Sciences* 2008; **50**: 195-97.

Revised National Tuberculosis Control Programme (RNTCP) was introduced in India in 1993, as a pilot project but the full-fledged programme was started in 1997. Since then, more than eight years have passed but to the best of our knowledge, no long-term follow-up study of patients at five years after completing treatment under DOTS is available. The objective was to determine the status of the tuberculosis (TB) patients after five years of completion of treatment under RNTCP. The study was carried out in Directly Observed Treatment, Short-course (DOTS) Centre, Department of Pulmonary Medicine, CSM Medical University, Lucknow. Patients of tuberculosis who were registered between October 1998 to October 1999

at the DOTS centre of CSM Medical University, Lucknow, were followed-up in their homes after five years of completion of treatment under DOTS strategy with the help of a health visitor. Outcome of 208 registered patients during the study period at the end of completion of their treatment' was: treatment success (cured+treatment completed)-187 (89.9%), default-11 (5.3%), death-9 (4.3%) and treatment failure-1 (0.4%). On follow-up at five years, only 80 (42.8%) patients were traced, while 68 (36.4%) patients had migrated to other places and for 39 (20.8%) patients addresses could not be traced. The follow-up status of 80 patients (Cat. I: 37, Cat. II: 15, Cat. III : 28) revealed that 73 (91.2%) were asymptomatic (Cat. I: 34, Cat. II: 12, Cat. III: 27), two had relapsed (one in Cat. I another in Cat. II) and five patients had died (Cat. I: 2, Cat. II: 2, Cat. III : 1). Treatment under RNTCP is effective as revealed by the results at five years follow-up.

Evaluation of drug resistance in pulmonary tuberculosis patients at Sureyyapasa Chest Diseases Hospital, Istanbul, Turkey

T. Karagoz, P. Pazarli, O.Y. Mocin, D Duman, G. Duman, C Salturk and O. Unal. *Int J Tub Lung Dis* 2008; **12**: 631-35

The objective was to determine levels of *Mycobacterium tuberculosis* resistance to first-line drugs in patients with pulmonary tuberculosis (PTB). Between 1st January and 31st December 2005, all hospitalised PTB patients with culture-positive *M. tuberculosis* specimens and corresponding drug susceptibility tests (DST) for isoniazid (INH), rifampicin (RMP), streptomycin (SM) and ethambutol, routinely performed for every tuberculosis (TB) case at our centre, were included. Of a total of 1513 cases, 1277 (84.4%) were new and 236 (15.6%) were previously treated cases. Of the 1513 isolates, 290 (19%) were resistant to at least one of the drugs tested. Resistance among new and previously treated cases was 16.3% (209 of 1277) and 34.3% (81/236) respectively. Any SM resistance and any INH resistance were the most common drug resistance in new cases, while any RMP resistance was the most common drug resistance in previously treated cases. Multidrug resistance was detected in 3.2% ($n = 41$) of new

cases and in 13.5% ($n = 32$) of previously treated cases.

Rapid drug susceptibility testing of mycobacteria by culture on a highly porous ceramic support

C.J. Ingham, A.B. Ayad, K. Nolsen, and B. Mulder. *Int J Tub Lung Dis* 2008; **12**: 645-50

Phenotypic, culture-based methods for drug susceptibility testing (DST) of *Mycobacterium tuberculosis* are relatively simple and may be particularly appropriate for resource-limited settings where tuberculosis (TB) is most prevalent. However, these methods can be slow and generate significant amounts of infectious waste. Low-cost digital imaging and a unique porous ceramic support for cell culture (Anopore) may offer opportunities to improve this situation. Objective was to test a rapid DST method based on fluorescence microscopy of mycobacteria grown for a few generations on Anopore. Mycobacteria were cultured with and without drugs, and the resulting microcolonies were heat-killed and stained with the fluorogenic dye Syto1. Microscopy, image-capture with a charge-coupled device camera and digital processing were used to quantify the inhibition of growth by drugs. Rapid DST for rifampicin and isoniazid was performed for clinical isolates. Mycobacteria could be cultured, killed, stained and imaged on Anopore. For DST, the Anopore method gave an accurate result in three days. This is an unprecedented speed for culture-based DST for this group of organisms and results in minimal infectious waste (<20,000 colony forming units). Analysis of mycobacteria by fluorescence and electron microscopy on Anopore also opens up research possibilities.

Manifestations of Pulmonary Tuberculosis in the elderly: A prospective observational study from North India

Dheeraj Gupta, Navneet Singh, Ravinder Kumar and Surinder K. Jindal. *Ind J Chest Diseases & Allied Sciences* 2008; **50**: 263-67.

There is scarcity of published literature on manifestations of pulmonary tuberculosis (PTB) among elderly patients in India. The aim of the present study was to compare the clinical,

radiological and laboratory manifestations of PTB among young and elderly patients.

This prospective study involved 100 human immuno-deficiency virus (HIV) negative patients with PTB. The demographic, clinical, radiological and laboratory manifestations were compared between young (n=50; under 60 years of age) and elderly (n=50; aged 60 years and above) with PTB. Elderly patients, in comparison to younger patients, tended to be heavier smokers and had more comorbidities (40% vs 8%; $p < 0.05$). They presented more frequently with constitutional symptoms (except fever) and less frequently with respiratory symptoms. The mean duration of symptoms and rate of sputum smear-positivity for acid-fast bacilli was similar in both groups. Both the groups were similar with respect to physical examination and chest radiograph findings. Median values of erythrocyte sedimentation rate and total leukocyte count were significantly higher and lower respectively in the elderly patients. The presentation of PTB in elderly patients differs from that of younger patients by the predominance of constitutional rather than respiratory symptoms. A high index of suspicion is required to make a timely diagnosis of tuberculosis in the elderly.

Rapid diagnosis of *Mycobacterium tuberculosis* meningitis by enumeration of cerebrospinal fluid antigen-specific T-cells

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The objective was to determine whether interferon-gamma (IFN- γ) secreting *Mycobacterium tuberculosis* antigen-specific T-cells are present in the cerebrospinal fluid (CSF) of patients with TBM and to evaluate the feasibility of CSF enzyme-linked immunospot (ELISpot) for the diagnosis of active

TBM. It was a prospective blinded hospital-based study. The overnight ELISpot assay detected *M. tuberculosis* antigen-specific IFN- γ secreting T-cells in CSF from nine of 10 prospectively recruited patients with TBM, and zero of seven control patients with meningitis of other aetiology. This corresponds to a diagnostic sensitivity of 90% (95% CI 56-100) and specificity of 100% (95% CI 59-100). This pilot study demonstrates proof-of-principle for a new T-cell-based diagnostic test for TBM which is rapid, sensitive and specific.

Factors predictive of adherence to tuberculosis treatment, Valle del Cauca, Colombia

J.C.Mateus-Solarte and R Carvajal-Barona. *Int J Tub Lung Dis* 2008; **12**: 520-26.

Early diagnosis and treatment are fundamental to tuberculosis (TB) control. Nevertheless, the effectiveness of TB management continues to be influenced by treatment adherence. The objective was to determine which factors are predictive of adherence to TB treatment at the time of diagnosis in Colombia. A cohort of 300 patients newly diagnosed with TB was followed up over 26 weeks. Treatment adherence was measured by determining whether the patient took all or part of the 84 doses in the 26 weeks of treatment. A logistic analysis was carried out and the predictive power of the final variables was determined by means of a receiving operator curve analysis. A high incidence of partial completion of treatment (65.6%) was found. Significant associated factors were 1) living away from the family, 2) overcrowding at home (e^2 persons per bedroom), 3) lack of family support, 4) living >10 min away from the treatment facility and 5) not having used the services of the treatment facility before. Several factors can be measured on PTB diagnosis that would help identify those patients at higher risk for treatment non-adherence. The predictive value of each of these factors alone was weak, but if associated their predictive value was high.