

314. Passive versus active tuberculosis case finding and isoniazid preventive therapy among household contacts in a rural district of Malawi.

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The annual risk of developing active tuberculosis (TB) is higher in a person infected with the human immuno deficiency virus (HIV) than in a non-infected individual, ranging from 5-15%. HIV infection also favors rapid progression from exposure to *Mycobacterium tuberculosis* to active disease, which can develop over weeks rather than years. A high frequency of TB among household contacts of index TB patients has been reported in Malawi. Hence a cross sectional study to compare passive with active case finding among household contacts of smear positive pulmonary TB patients for: 1. TB case detection, 2. The proportion of child contacts aged less than 6 years who are placed on isoniazid (INH) preventive therapy was carried on.

Both active and passive case finding was conducted among household contacts and the uptake of INH preventive therapy in children was assessed. A total of 189 index TB cases and 985 household contacts were selected for the study. HIV prevalence among index cases was 69%. Prevalence of TB by passive case finding among 524 household contacts was 0.19%, which was significantly lower than with active case finding among 461 contacts ($P=0.01$). Of 126 children in the passive cohort - 22 (17%) received INH, while in the active cohort 25 (22%) of 113 children received the drug. Transport costs associated with chest X-ray (CXR) screening were the major reason for low INH uptake.

The authors opine that, in a setting where the majority of TB patients are HIV positive, active case finding among household contacts provides an opportunity to reduce TB morbidity and mortality. TB control programs in countries such as Malawi must be provided with more resources if such a strategy is

to become a reality. Otherwise, more household members are bound to come into contact with TB; or else TB case rates will continue to increase and more people will eventually die from the disease.

315. Implementation of proficiency testing in conjunction with a rechecking system for External Quality Assurance in the TB labs in Mexico.

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With more than 8 million tuberculosis (TB) cases estimated annually, TB remains an important health problem worldwide. In Mexico it was estimated that for every 1,00,000 population, the incidence rates ranged from 4 - 37 cases. Around 23,000 new cases of TB are diagnosed every year and of these 80% is pulmonary TB. Sputum smear microscopy being the most quick and reliable method for diagnosis of TB is recommended and widely used. Hence to evaluate the quality of acid-fast bacilli (AFB) microscopy, the Mexican secretary of Health National Reference Laboratory implemented proficiency testing for its network of 637 labs.

A total of 586 (92%) labs were inspected and 430 technicians evaluated by proficiency testing consisting of 10 slides with known numbers of AFB. Results were compared with those of slide rechecking and with proficiency testing performed 2 years later. Of the 430 technicians evaluated by proficiency testing in 1998, 196 (46%) scored less than 80% and received intensive training in 1999. From a previous mean score of 65% their results increased to 90% ($P<0.0001$). In 2001, they again underwent proficiency testing, and the mean score was 83%. The main factors affecting proficiency testing results were the type of lab in which the microscopists worked and the number of low positive slides (1-9 AFB/100 MF) in the test. Labs whose work was rechecked had better scores ($P=0.002$). Proficiency testing scores and the estimated sensitivity of the microscopists lab were associated ($P=0.01$).

The authors conclude that with external quality assessment and training, diagnostic procedures can

be improved. They also feel that rechecking and proficiency testing are both viable measures for lab performance.

316. Comparative evaluation of BACTEC MGIT 960 system with solid medium for isolation of mycobacteria.

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Pulmonary tuberculosis (TB) has long been a worldwide public health problem. Taiwan has relatively high rate (61.3 cases/100.000) of TB incidence. The successful treatment of pulmonary TB involves making an accurate and rapid diagnosis and starting anti-TB medication. It is recommended that the turnaround time for isolation and identification of *Mycobacterium tuberculosis* complex should not exceed 21 days. However, conventional solid culture systems such as Lowenstein-Jensen (LJ) slant or Middlebrook 7H11 Agar plate rarely achieve these standards.

The BACTEC MGIT 960 system, which is a radiometric culture system not only meets the above standard but is also more accurate. Hence the study was conducted to evaluate and compare the BACTEC MGIT 960 with LJ medium and Middlebrook 7H11 plate for recovery rate and time to detect *Mycobacterium*. A total of 1396 sputum samples were tested for the presence of *Mycobacterium*. Specimens were processed and inoculated separately in the BACTEC MGIT 960 system, on LJ media and 7H11 for comparative study. The BACTEC MGIT 960 detected 235 isolates (100%) followed by LJ with 205 isolates (87.2%) and 7H11 with 178 isolated (75.7%). The mean time to detect *Mycobacterium tuberculosis* complex was 11.6 days with BACTEC MGIT 960; 10.1% with LJ and 9.7% with 7H11.

The authors conclude that the BACTEC MGIT 960 system is sensitive, rapid Mycobacterial culturing system. However, they feel that high contamination rate is a concern and further studies have to be conducted to minimize the same.

317. Annual risk of tuberculosis infection in rural areas of Uttar Pradesh, India.

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The majority of epidemiological studies that followed the nationwide disease prevalence survey in the 1950's were confined to limited geographical areas in South India. Thus, there is little information on the TB situation for most part of the country. To bridge this gap, a nationwide tuberculin survey is presently being undertaken to estimate the Annual Risk of TB Infection (ARI) in different parts of India. About 1/6th of the country's population resides in the state of UP. The main occupation being agriculture, 80% of the population live in rural areas.

The above study was conducted with objectives of 1) To estimate the average annual risk of tuberculosis infection (ARI) 2) To study ARI trends with age and 3) To compare tuberculin reaction among children with and without BCG scar. A cross-sectional tuberculin survey was conducted among children aged 1-9 years residing in Rae Bareilly, Hardoi and Jaunpur districts of Uttar Pradesh. Tuberculin testing was performed using 1 TU of PPD RT23 with Tween 80, and indurations were measured 72 hours later. Prevalence of infection was estimated in children without BCG scar based on the cut-off point identified on the frequency distribution of reaction sizes. The proportion of children with BCG scar varied from 25% to 31% in the study districts. Using a cut-off of 14 mm among children without BCG scar, the ARI was estimated as 2.3% in Rae Bareilly, 1.9% in Hardoi and 1.5% in Jaunpur, and was observed to increase with age. Tuberculin test results among children with BCG scar suggest that they may be included in tuberculin surveys to estimate ARI.

The average ARI indicates the extent of transmission of infection in the community, which depends on the prevalence of infectious TB cases in the community as well as on the efficacy of disease control activities.

318. The private-public divide: impact of conflicting perceptions between the private and public health care sectors in India.

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With a third of the world now infected with TB, and with MDR TB and the HIV epidemic exacerbating the bacteriological problem, ill-managed TB programs currently present a social problem that threatens to make TB incurable. One major uncertainty limiting social management of TB care is the obscurity of the private sector. Half of India's TB patients are treated privately, and India's private sector alone treats a sixth of global TB cases. Studies in the past have demonstrated inconsistent diagnosis and treatment behaviour amongst private physicians and lack of collaboration and cooperation between the 2 sectors. The above cross-sectional survey to quantify conflicting perceptions between private and public physicians in one Indian city. By determining these varying perceptions, the authors hoped to determine necessary steps and future directives for reconciliation.

Significant conflicts in perception were found regarding interpretation of general facts, attitudes towards each sector, and effectiveness and social implications of DOTS. We also found that such differences in perception were likely to result in mistrust, differing views on reform propositions, conflicting mindsets about social agendas, and unwillingness to co-operate.

The study indicates actions that global agencies, the government of India, and local communities can take to foster understanding, co-operation, and effective TB cares between private and public practitioners. Such steps are undoubtedly likely to enhance cross sector trust and co-operation, leading to a more uniform and effective TB control strategy.

319. Qualitative tuberculin response in the diagnosis of tuberculosis in apparently healthy school children.

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The global epidemic of tuberculosis (TB) is increasing. The breakdown in health services, the spread of human immunodeficiency virus and the acquired immunodeficiency syndrome (HIV/AIDS) and the emergence of multi drug resistant TB are contributing to the worsening impact of this disease.

One third of the world's population is infected with TB, and around 8 million TB cases and some 2 million deaths occur annually. The tuberculin test is the "gold standard" for the detection of *Mycobacterium tuberculosis* infection. The usefulness of the quantitative response, namely the non-turgid (Listeria) and turgid (Koch's) variants, has been inadequately addressed in assessing the tuberculosis disease. Hence the present cross-sectional study was undertaken to assess the value of non - turgid and turgid type of tuberculin response in diagnosis of tuberculosis disease in apparently healthy school children.

Qualitative tuberculin responses were assessed in 548 apparently healthy school children. Tuberculin positive (≥ 10 mm) children were investigated for evidence of TB. The relationship between the types of qualitative tuberculin response and occurrence of TB was studied. Eighty eight (16.1%) of the children were found to be tuberculin positive. Of these 68 had non-turgid reaction whereas 20 had turgid reaction. Most of the children with a reaction of 5-9 mm had a non-turgid type of tuberculin reaction. Only four children with non-turgid reaction had TB, while 18 children with turgid reaction had TB disease ($P < 0.0001$). A larger tuberculin reaction was found to be associated with a higher occurrence of TB ($P=0.016$) by linear regression method.

The observation of this study indicated a possible reaction between turgid tuberculin reaction, TB disease and its severity. The necrotic turgid response to tuberculin may act as a surrogate external marker of the internal disease process. The authors are of the opinion that the histopathology of these two types of tuberculin reaction and the difference in their clinical profiles need further study.

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320. Trend of HIV infection in patients with pulmonary tuberculosis in Lucknow area.

Prasad R, Saini JK, Kannaujia RK et al; **Ind J Tub** 2003, **50**, 39-41.

Prevalence of tuberculosis (TB) is increasing in many countries and now it is the leading cause of death from infectious diseases world wide, being

responsible for 3 million deaths annually. Similarly, infection with HIV is increasing and it has emerged as the most important predisposing factor for developing tuberculosis in people co-infected with M TB. Many reports from India suggested a high prevalence of HIV infection in TB patients, but most of the reports were from western and southern states of the country. Hence to study the trend of HIV infection among pulmonary tuberculosis patients in Lucknow and its adjacent district this study was undertaken during 1995-96, 1996-97 and 2000-2001 by Department of TB & chest disease, King George's Medical College, Lucknow.

In all 400, 225 & 350 bacteriologically and/or radiologically confirmed patients of pulmonary tuberculosis aged 12 years and above were subjected to HIV screening during 1995-96, 1996-97 and 2000-2001 respectively. These 975 patients were selected randomly out of 2,694 patients. Out of these 975 cases, 498 were bacteriologically confirmed.

All the patients were subjected to detailed clinical examination. For TB examination; chest X-ray, sputum for AFB 3 times & tuberculin test was done and for HIV examination; written consent was obtained from each patient & their serum samples were collected and assayed for antibodies against HIV. All the ELISA reactive sera were reconfirmed by Western blot analysis at NICD Delhi in 1995-96 and 1996-97. UBI HIV ½ EIA kit (Beijing China) was used during 1995-96 and 1996-97, and Labsystems EIA kit (Helsinki, Finland) was used during 2000-2001.

HIV infection was detected in 24 (3.07%) patients out of 975 patients of pulmonary TB. Among the 24 HIV positive patients 15 (62.5%) were smear sputum positive and 6 (25%) were tuberculin positive. 19 (79.16%) males and 5 (20.84%) females form the sexually active age group of 21-40 years.

This study reveals that the HIV infection is rising in Lucknow and adjacent district, as the HIV seropositivity rate among pulmonary TB patients was 1.25% in 1995-96, 1.78% in 1996-97 and 4.28% in 2000-2001.

321. Effect of intensive health education on adherence to treatment in sputum positive pulmonary

tuberculosis patients

Jacinth D' Souza; **Ind J Tub 2003, 50, 33-38.**

This article emphasizes about the impact of health education while treating patients with sputum positive pulmonary tuberculosis (TB). Effective treatment capable of curing almost all type TB patients in six months has been available for the last 4 decades under NTP. However its impacts is yet to be seen and there is a growing TB mortality curve at the beginning of the 21st century.

From public health prospective, poorly supervised incomplete treatment of TB can be worse than no treatment at all. When patients remain infectious for a long time, they may spread drug resistant strains. While drug resistant TB is treatable, it requires extensive chemotherapy, which is often prohibitively expensive and is also more toxic. Hence, this study was undertaken to study the effect of intensive health education on adherence to treatment among 60 newly diagnosed pulmonary patients at the District TB Centre and a private hospital in Mangalore, Karnataka. Knowledge of TB among these patients before and after the health education was recorded and their health status during the first three months of the treatment was assessed to measure the effect. The data were collected in four stages, with a gap of 30 days.

The findings of the study revealed a significant difference in the total health status of patients, after receiving intensive health education between 1st & 30th day, 30th & 60th day, 60th & 90th day, and 1st & 90th day, higher mean post test knowledge scores, and a highly significant association between sputum conversion and adherence to treatment. There was no association between adherence to treatment and age-sex, education, income & family support of the patients.

322. Treatment seeking behaviour of chest symptomatics

Ashoo Grover, Rajesh Kumar & Jindal SK; **Ind J Tub 2003, 50, 87-92.**

The prevalence of symptoms and treatment seeking behaviour of symptomatics provide vital information for planning and organizing a national

health care delivery system. To assess the treatment seeking behaviour of chronic chest symptomatics, this study was conducted by Department of Community Medicine and Pulmonary Medicine, Post Graduate Institute of Medical Education and Research, Chandigarh in randomly selected two villages of Panchkula district in Haryana and two urban sectors of Chandigarh city.

All individuals aged 15-65 years in the selected households were interviewed for chronic chest symptoms for more than a month viz. cough, expectoration, breathlessness, blood in sputum, wheezing or pain in chest. A total of 1659 adults were interviewed in 433 households and 200 chronic chest symptomatics were enrolled during the course of the study. A semi structured interview schedule was used for data collection.

Among 1659 adults, 192 (12.0%) had chronic chest symptoms. Out of these 192 chronic chest symptomatics, 19.0% had not taken any treatment. Of those who took action initially, 52.5% had taken home remedies and 47.5% had relied on self-medication. Majority of them (82.0%) later switched over to a health care provider. Delay in seeking treatment varied from 7 to 365 days. 34% changed their health care providers more than two times. At the time of the survey, 20.3% were taking treatment for the unqualified medical practitioners. 18.2% from allopathic practitioner, 2.0% were in the care of government hospitals, and 8.3% were being treated by practitioners of Indian systems of medicine, and homeopathy. In rural area, major source of care was unqualified medical practitioners and in urban area, majority sought treatment from private allopathic doctors. 18% were still not satisfied with their current treatment.

This study reveals that most of the chronic chest symptomatics start with home treatment or self medication, and there is considerable delay in seeking treatment from a proper health care provider.

323. HIV infection seroprevalence in tuberculosis patients

Zubeer Ahmed, Rakesh Bargava, Pandey DK & Sharma K; **Ind J Tub 2003, 50, 151-154.**

HIV sentinel surveillance among tuberculosis (TB) patients is carried out to ascertain the level of

HIV prevalence and its trend. TB exerts a detrimental effect on the course of HIV infection and the risk of death in HIV infected person with TB is twice as high as that in HIV infected person without TB. HIV seroprevalence among TB in India varies from less than 1% to around 30% as recorded by the various studies. Hence this study was conducted by Department of Tuberculosis and Chest Diseases, J N Medical College, Aligarh to find out the prevalence of HIV infection in TB patients in and around Aligarh, to study the clinical presentations of TB in HIV infected patients and the associated complications.

From Aug. 1996 to June 2001. 58181 patients were diagnosed with pulmonary, extra pulmonary or both forms; & more than 15 years of age were screened for HIV seropositivity. The screening was done by using ELISA technique after an informal consent and the positive results were re-confirmed by repeat ELISA test. For this purpose Innostest HIV-1/HIV-2 Ab Sp., Immunocomb HIV-1/HIV-2 and Innolia HIV-2 Ab kits were used.

Prevalence of HIV infection rose from 0.8% in 1996-97 to 0.91% in 1997-98, 1.24% in 1998-99, 1.8% in 1999-2000 and 2.82% in 2000-2001. Out of total 91 HIV positive patients, 78 (85.71%) were males and 13 (14.29%) were females. 87 (95.60%) patients had contracted HIV infection through sexual contact, 3 by blood transfusion and 1 by sharing of needles. 68 (74.73%) patients had pulmonary TB, 12 (13.19%) had pleural effusion, 4 (4.4%) had lymphadenitis, 5 (5.5%) had both pulmonary and extra pulmonary TB and 2 (2.2%) had miliary TB. Associated complications were present in 68 (74.73%) patients: oral candidiasis in 57 (62.64%), chronic or recurrent diarrhoea in 7 (7.69%), herpes zoster in 2 (2.2%) and pyrexia of unknown origin in 2 (2.2%) patients.

This study reveals that the trend of dual infection with HIV and TB in the area is rising. Pulmonary TB is the commonest lesion followed by pleural effusion. Oral candidiasis is the commonest associated complication found during the study.

324. Qualitative tuberculin response in the diagnosis of tuberculosis in apparently healthy

school children

Sastri AR, Serane VT, Mahadevan S & Nalin P; **Int J Tuberc Lung Dis** 7/11, 1092-1096.

The tuberculin test is still the gold standard for detection of infection with M. TB. The usefulness of quantitative cut - off response to tuberculin has been traditionally reported in epidemiological and clinical contexts. Qualitative reaction to tuberculin (i.e. turgid and non-turgid) has been referred in animal and human studies, but its usefulness in assessing tuberculosis (TB) disease has not been adequately reported. Hence, a study was conducted in a school in the sub-urban area of the Union territory of Pondicherry, India from March 2000 to Sep. 2001 to assess the value of qualitative tuberculin response (turgid and non-turgid type) in diagnosis of tuberculosis disease.

Five hundred & Sixty five children aged 10-14 years were registered in this study after getting a written permission from the school authority and consent from parents of these children. Each child was examined for presence of BCG scar and Mantoux test was done on the volar aspect of left forearm using 1TU of PPD RT 23 with tween 80. 8 children were diagnosed as having TB and/or having anti TB treatment were excluded from the study. The reading of tuberculin reactions were done among 548 children after 72 hours by

measuring the maximum transverse diameter of induration by a transparent plastic ruler. The reactions were then classified as turgid or non-turgid type by a single experienced observer. All the children who were tuberculin positive were examined for clinical evidence of TB after a period of 3-4 weeks. The diagnosis of TB was done independently by 2 experienced observers applying the Nair and Philips scoring system. Children diagnosed as having TB were given SCC and tuberculin negative children were not further investigated for evidence of TB.

88 (16.1%) children were found to be tuberculin positive. Out of these 88 tuberculin positive children, 68 had non-turgid reactions whereas 20 had turgid reactions. Most of the children with a reaction of 5-9 mm had a non-turgid type of tuberculin reaction. Only four children with non-turgid reaction had TB, while 18 children with turgid reaction had tuberculosis disease. A larger tuberculin reaction was found to be associated with a higher occurrence of tuberculosis. The observations indicate a possible relationship between turgid reaction and TB disease.

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