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MANAGEMENT OF PULMONARY TUBERCULOSIS**

Ariel A. Boongaling, MD, Edgar Abarcar, MD, Jubert Benedicto, MD,
Rodolfo Pagcadpunan, MD, FPCCP

A COMPARATIVE STUDY OF THE IMPACT OF ACADEMIC DETAILING AND MAILING OF EDUCATIONAL MATERIALS VERSUS MAILING ALONE ON THE KNOWLEDGE AND PRACTICES OF PHYSICIANS-IN-TRAINING MANAGING PATIENTS WITH PULMONARY TUBERCULOSIS (PTB) AT THE UP-PGH MEDICAL CENTER

Lalaine Mortera, MD, Tessa Villanueva, MD, Joel Santiaguel, MD, FPCCP, and Renato Dantes, MD, FPCCP

BACKGROUND: In 1999 the Philippines Practice Guidelines on the Diagnosis and Management of Pulmonary Tuberculosis was published with the aim of addressing the critical issues in the diagnosis and management of Tuberculosis. Much of the success of this guideline rests of the timely and adequate dissemination of its information to physicians. This study will compare the impact of academic detailing and mailing of educational materials versus mailing alone on the knowledge and practices of physicians in training with regards to their management of patients with pulmonary tuberculosis.

GENERAL STUDY DESIGN: Randomized single blind controlled trial.

PARTICIPANTS: Fifty-seven physicians from the Philippine General Hospital were included in the study, with 49 residents coming from the Department of Internal Medicine, and eight residents coming from the Department of Family and Community Medicine.

INTERVENTIONS: The resident physicians filled up a validated case-based objective-type questionnaire that focused on their current knowledge on PTB management before and after the interactive lecture on the contents of the consensus guidelines. The resident physicians were then randomized into two groups, with the first group (Group 1, n = 28) receiving educational materials twice by mail at monthly intervals, while the second group (Group 2, n = 29) receiving academic detailing from a trained study nurse weekly for six (6) weeks, aside from the educational materials that was also mailed to Group 1. After three months, all randomized resident physicians were made to answer the same questionnaire as a final test. Randomly selected resident physicians (n = 25-27) were also subjected to outpatient visits by training patients pre- and post-intervention to determine these physicians' practices in dealing with PTB patients.

RESULTS: After the interactive lecture, the mean test scores (pre- vs. post-test) of all subjects improved from 6.67 ± 1.356 ($p < 0.0001$). However, with randomization into two groups and after 3 months of intervention, our results showed a significant decrease of about 1.92 points (CI - 2.92, 0.92) in the matched scores of the physicians in the first group (mailing alone). The 0.15 point decrease in the matched scores of the physicians in group II (mailing + academic detailing) was found not to be statistically significantly (CI - 1.05, .075). Intergroup comparison of the reduction of the scores after

three months of intervention between the two groups showed a difference of 1.77, which was found to be statistically significant ($p < 0.0105$).

There were also differences in the utilization of Sputum AFB smear, chest radiograph and utilization of PPD in either group.

CONCLUSIONS: Physicians' knowledge, understanding and adherence to the guidelines can be greatly improved with the conduct of interactive lectures. The use of academic detailing combined with mailing is more effective than the mailing alone in retaining this acquired knowledge and practices. Improvement in knowledge and practices can persist even after 3 months by the addition of academic detailing combined with mailing of educational materials but not with mailing alone. *Phil. Journal Chest Diseases*. Vol. 10 No. 2. pp: 60-69.

**TUBERCULOSIS SCREENING OF UST RESIDENT FEMALE ATHLETES AT
THE UNIVERSITY OF SANTO TOMAS HOSPITAL – CLINICAL DIVISION
DORMITORY**

Joanne Apdol-Albacete, MD, Bernardo B. Briones, MD, FPCCP

OBJECTIVE: To determine the prevalence of pulmonary TB (PTB) among female athletes residing at the STUH Clinical Division Dormitory.

DESIGN: High risk group-targeted TB prevalence survey.

SETTING: STUH-Clinical Division Athletes Dormitory, sixth floor of the hospital building where an index case of TB was identified.

PARTICIPANTS: All eighty four (84) female athletes currently staying at the STUH Clinical Division Dormitory.

INTERVENTION: All athletes were asked to report to the UST Students Health Service for TB screening. Seventy five (75) athletes submitted to a complete history and physical examination. Mantoux testing, chest x-ray and serology by ELISA (antigens 5 and 16 to detect TB antibodies). All those identified with TB infection or TB disease received free preventive or curative therapy with intended two years follow-up at the Students' Health Service.

OUTCOME MEASURES: Demographic profile of the high risk group; TB prevalence by Mantoux reaction (TB infection rate), by chest x-ray and serology, TB disease rate and compliance to the screening.

RESULTS: Screening compliance was 75/84 (89%). Two were symptomatic cases, the index case presented with respiratory symptoms and the other only with weight loss. TB infection was inferred in 25/75 (33%), 7/75 (9.3%) by chest x-ray, 6 (8%) of which were also Mantoux (+) and were classified PTB Class 3 for a disease rate of 8%; only 2/75 (2.7%) were serology (+) in 2/6 of the cases with active TB.

CONCLUSION: Compliance to the targeted TB screening in 89% and in those who complied, TB infectivity by Mantoux test was at 33%. Chest x-ray coupled with a Mantoux (+) reaction was useful in identifying those with active disease. The negative serology in almost all patients except in two with active TB was an impressive indication of test specificity. A high risk group-targeted TB screening may be an effective means of detecting TB infection and TB disease for preventive and short-course chemotherapy respectively. *Phil. Journal Chest Disease. Vol. 10 No. 2 pp: 70-77.*

CLINICAL AND IN-VITRO OUTCOMES OF MDR TB TREATMENT

Myrna T. Mendoza, MD, Tessa T. Tan Torres, MD, Mel Catambing, MD, Rommela Dolores Tipples, MD, Jaime C. Montoya, MD, Concepcion F. Ang, RMT, Camilo Roa, MD, FPCCP, and Antonio J. Gonzaga, MD

OBJECTIVES: To correlate clinical findings of PTB with type of drug resistance and to describe the clinical response to short-course chemotherapy (SCC) treatment of patients with documented in-vitro drug resistant PTB.

SETTING: Infectious Disease Clinic at the University of the Philippine-Philippine General Hospital in Manila, Philippines.

DESIGN: Observational Cohort Study.

METHODS: Symptomatic patients suggestive of PTB were screened by acid-fast bacilli (AFB) sputum smear and culture. Only patients with (+) AFB smear, culture or both were included. Treatment was self-administered daily with triple therapy and quadruple therapy for those with history of previous anti TB treatment Triple therapy consisted of 2HRZ/4HR and the quadruple therapy 2HRE/4HR. Patients were seen every two weeks during the intensive two months therapy and monthly during the four months maintenance therapy. Success of treatment was defined as clinical improvement and negative sputum AFB smear and culture at end of treatment. Failure was defined as no or poor clinical response and positive sputum AFB smear and/or culture at termination of treatment. Patients with relapse had recurrence of signs and symptoms and a positive sputum AFB smear and culture after completion of SCC.

RESULTS: There were 126 evaluable patients. The rate of multi-drug resistance (MDR) in the study population was 26%. Overall treatment success rate was 76%. The overall relapse rate was 4.0%. Clinical with persistently positive sputum AFB smears and the “fall and rise” phenomenon.

CONCLUSION: The study showed good concordance between in-vitro M.TB drug susceptibility test results and clinical response among patients with drug-resistant PTB. Poor clinical response and positive follow-up sputum AFB-smears during treatment are clues to suspect resistant PTB. Baseline M.TB culture and drug susceptibility tests should be done in patients for re-treatment and in those with history of previous anti-TB therapy. *Phil. Journal Chest Diseases*. Vol. 10 No. 2 pp: 78-84.

**DIAGNOSTIC YIELD OF SPUTUM CULTURE AND SENSITIVITY TESTING
IN SMEAR NEGATIVE PATIENTS SEEN AT THE QUEZON INSTITUTE
FROM JANUARY TO OCTOBER 2001**

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The emerging problem of sputum smear negative but culture positive patient cannot be denied. With their capacity for disease transmission, it is imperative to determine the sensitivity and specificity of a sputum AFB smear in our institution. We also need to further determine the prevalence of *Mycobacterium tuberculosis* on sputum culture. Finally, in the subpopulation of patients with smear negative but culture positive sputum, a description of the clinical profile and sensitivity pattern will be done. From January to October 2001, there were 555 sputum specimen submitted for AFB smear with culture and sensitivity testing. Results showed that AFB smear has a sensitivity of 89% and specificity of 89%. Two hundred fifty-six (46.1%) patients were culture positive, of which 27 (10.5%) were smear negative. With the exclusion of 9 outpatient referrals without records, all the remaining 18 smear negative but culture positive patients have both chronic cough and diffuse or extensive infiltrates. Drug resistance was noted on patients who had previous intake of anti-tuberculosis medications. All 17 smear negative but culture positive patients had history of prior treatment of anti-tuberculosis drugs. Eleven of these patients had drug-resistant TB (3 resistant of rifampicin alone; 3 resistant to INH alone; 2 resistant to INH and Rifampicin; 1 resistant to HSR; 2 resistant to HRZE), while the remaining 6 patients had no growth noted on sensitivity testing. One patient had no previous history of anti-TB treatment and was sensitive to all four drugs. Therefore, smear negative but culture positive patients are (40.7%) likely to have drug-resistant TB. *Phil. Journal Chest Diseases*. Vol. 10 No. 2 pp: 85-88.

**RISK FACTORS FOR THE UNTOWARD REACTIONS AND INTOLERANCE
MANIFESTATIONS OF FILIPINOS TO ANTI-TUBERCULOSIS DRUGS AT
PHILIPPINE GENERAL HOSPITAL-OUT PATIENT DEPARTMENT**

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RESEARCH QUESTION: What are the different risk factors for the development of untoward reactions and intolerance manifestations to anti tuberculosis medications. What is the incidence of side effects of anti-tuberculosis drugs?

BACKGROUND: The most effective treatment of pulmonary tuberculosis (PTB) is combination of isoniazid, rifampicin, pyrazinamide and ethambutol. Despite the development of this powerful regimen, the treatment of PTB continues to be a problem in patients who do not tolerate these drugs.

PARTICIPANTS: All Filipino patients > 18 years old diagnosed with pulmonary tuberculosis either through radiograph findings, clinical manifestations, sputum and tissue analysis and given anti-tuberculosis medication upon diagnosis were retrospectively studied. The OPD logbooks from the section of pulmonary medicine, allergology and infectious disease were reviewed from January 1 to December 31, 2000. Charts of these patients were subsequently retrieved from the record section. Those with extrapulmonary or disseminated tuberculosis and incomplete data were excluded.

OUTCOME MEASURES: The risk factors analyzed were age, sex, history of previous treatment with antikocho, other co morbidities like DM, HIV, previous hepatitis infection, use of concomitant hepatotoxic drugs and if the antikocho regimen used is a fixed combination or weight based individualized dosing. The incidence of side effects related to the therapy was measured. Values were expressed as medians with 95% CI, categorical data were compared with 2x2 contingency tables and Fisher's exact test using two-tailed p-values.

RESULTS: One thousand four hundred ninety three were diagnosed to have PTB III. Four hundred twenty one files were included, 145 (9.7%) experience side effects, which led to termination of treatment. The most common side effects noted were pruritus and exanthema (54.4%), nausea and/or vomiting (24.1%), hepatitis (9.7%) and headache (8.3%). Significant risk factors for intolerance of the standard therapy were > 60 years old ($p = 0.03982$) and those given combination fixed dosing ($p = 0.00026$).

CONCLUSIONS: The side effects of anti-tuberculosis therapy are frequent in elderly patients, in re-treatment cases, in diabetics or those who received combination fixed dosing. Patients, therefore, with the said risk factors need closer monitoring for side effects. Weight base dosing is safer to use especially in patients at risk. Phil. Journal Chest Diseases. Vol. 10 No. 2 pp: 89-92.

DETECTION OF MYCOBACTERIUM TUBERCULOSIS IN SPUTUM SAMPLES THROUGH UTILIZATION OF POLYMERASE CHAIN REACTION (PCR)

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OBJECTIVE: To compare the test performance of polymerase chain reaction (PCR) with convention direct staining and BACTEC using Lowenstein-Jensen culture and clinical diagnosis as reference standards in detecting the presence of TB bacilli from sputum.

DESIGN: Prospective, cohort study.

SETTING: Tertiary hospital, in- and outpatients.

SUBJECTS: A total of 73 out of the 135 patients diagnosed clinically as PTB Class 5 (suspect), based from the National Consensus on Pulmonary Tuberculosis seen at the St. Luke's Medical Center in- and outpatient sections starting October 1998 to March 1999 were included in the study.

METHODS: Sputum specimen of the 135 patients sent for the conventional direct staining and cultures were consecutively evaluated for PCR based on the detection of IS6110 sequence specific for Mycobacterium tuberculosis complex. A clinical definition of pulmonary tuberculosis was made and a 2-3 month follow-up was obtained. A contingency table was used to compare the outcome of the sputum examinations. Sensitivity, specificity and, predictive values were computed.

RESULTS: Of the 135 specimens, 112 had BACTEC and only 73 had a culture done using Lowenstein-Jensen (LJ). Available results from LJ culture and clinical diagnosis were utilized as reference standards. Only 73 patients out of the 135 subjects had a complete data from which results were derived. With LJ culture as the reference standard, smear, BACTEC and PCR revealed a sensitivity of 33%, 66.6% and 100%, respectively. The specificity on the other had was 75.7%, 80% and 11.4%, respectively. All of them had low positive predictive values, 6%, 12% and 5%, respectively. Their negative predictive values were comparably high at 96%, 98%, and 100%, respectively. Utilizing clinical diagnosis as reference standard, smear, BACTEC and PCR revealed as sensitivity of 29%, 26% and 100%, in that order; and specificity of 100%, 100%, and 73%, respectively. Positively value of 100%, 100% and 95% with negative predictive value of 20%, 19% and 100% correspondingly.

CONCLUSION: PCR in reference to culture and clinical diagnosis, is useful clinically as a screening tool for PTB. Phil. Journal Chest Diseases. Vol. 10 No. 2 pp: 93-99.

**THE VALIDITY OF CLINICAL SYMPTOMS, A SINGLE-DAY THRICE
RANDOMLY COLLECTED SPUTUM SPECIMENS (SINGLE DAY
COLLECTION) AND A THREE-CONSECUTIVE MORNING SPUTUM IN THE
DIAGNOSIS OF PULMONARY TUBERCULOSIS**

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Sputum microscopy for AFB proves to be one of the best screening tool for patients suspected to have pulmonary tuberculosis. However, isolation of acid-fast bacilli on bacteriologic culture remains as the means of definite diagnosis for pulmonary tuberculosis. In order to assess the clinical value of clinical symptoms, a single-day thrice randomly collected sputum and a three-consecutive morning sputum microscopy for acid-fast bacilli (AFB), the results of 333 clinical specimens submitted for mycobacterial smear and culture were analyzed. A great majority of the patients included in this study presented with chronic cough > 2 weeks duration (81%), unemployed (52%), and smokers (58%). For the one-day thrice randomly collected sputum, the overall sensitivity of the smear was 81% with specificity of 82%. For the three-consecutive morning sputum, the overall sensitivity of the smear was 79% with specificity of 82%. Smear sensitivity correlated well with quantitative growth. Specificity of the AFB smear was high; for the one-day thrice randomly collected sputum 82% of smear-positive specimens had positive cultures which was comparable to that of the three-consecutive morning sputum. When the results of all specimens from each patient were considered in too, the single-day thrice randomly collected sputum AFB smear had a positive predictive value of 80%. *Phil. Journal Chest Diseases*. Vol. 10 No. 2 pp: 100-103.

ANTI-KOCH'S INDUCED HEPATITIS: A VETERANS MEMORIAL MEDICAL CENTER EXPERIENCE

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BACKGROUND: The increasing incidence of tuberculosis exposes a greater number of patients to the risks of three potentially hepatotoxic drugs, isoniazid, rifampicin and pyrazinamide. The study is designed to determine the incidence of drug-induced hepatitis among patients with anti-tuberculosis medications and the various factors related to the development of drug-induced hepatitis.

METHODS: This is a prospective cohort study of patients more than 18 years of age, admitted with a diagnosis of PTB class III admitted at the Veterans Memorial Medical Center from June 2000 to October 2001. Patients who developed drug-induced hepatitis were regarded as cases and the controls were those who did not develop drug-induced hepatitis. Excluded were alcoholics, history of jaundice, hepatitis in the past, patients with right-sided heart failure, and those with intake of hepatotoxic medications. The characteristics of both groups were compared. Paired t-test and Chi-square test were used to determine the significance of the difference between the two groups and a p value of < 0.05 was considered to be significant.

RESULTS: Three hundred forty two patients were diagnosed to have PTB class III based on the symptoms, chest radiograph, sputum for AFB smear and PPD testing. Fifty-one patients developed drug induced hepatitis and the majority belonged to 65 and below age group. Triple therapy with Rifampicin, Isoniazid, and Pyrazinamide had a greater chance of developing drug induced hepatitis after 16 days of therapy.

CONCLUSIONS: Drug induced hepatitis is not uncommon with the incidence of 14.9% in this study. There seems to be a noticeable relationship with the use of triple anti-kochs regimen and the development of hepatitis. *Phil. Journal Chest Diseases*. Vol. 10 No. 2 pp: 104-108.

QUALITY OF CARE ASSESSMENT ON THE DIAGNOSIS AND MANAGEMENT OF PULMONARY TUBERCULOSIS

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OBJECTIVE: The study aims to evaluate the quality of care given to tuberculosis patients seen at the outpatient department of Quezon Institute by evaluating the physicians performance and awareness on the management and treatment and to identify which areas could be improved.

SETTING: Out-patient department of Quezon Institute.

METHODS: The population under study was comprised of 264 records of patients seen at the out-patient department of the Quezon Institute using systematic sampling with a random start. The records were reviewed and quality of care indicators were assessed with regards to proper history taking, the use of standard diagnostic procedures, appropriate treatment regimen and proper instructions upon discharge at OPD. The quality of care was expressed in ration, wherein the denominator served as the number of patients who should have received the care, whereas the numerator is the number of patients who actually received the care.

RESULTS: Based on the data presented, we found out that the performance of the physicians were acceptable with regards to the use of standard diagnostic procedure requesting AFB smear and CXR. Likewise, the quality of care was acceptable in the management of Class 3 category 1 patients however they performed dismally with other parameters.

CONCLUSION: The quality of care in TB patients was acceptable in some parameters but as a whole the quality of care in TB patients at QI is unacceptable. Phil. Journal Chest Diseases. Vol. 10 No. 2 pp: 109-113.