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Pulmonary Tuberculosis – The Asian Tiger Returns

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INTRODUCTION

To appreciate the development of tuberculosis before Christ there are historical documentations of its existence. The light of science opens pages of understanding of this mysterious disease of the past. CONSUMPTION a word that is well known once upon a time, returns in a similar form in the HIV population. Let me share with you the problems and worries in Asia.

HISTORY OF TUBERCULOSIS

Genetic concordance suggested that Mycobacterium tuberculosis was probably evolved from M. Bovis after the domestication of cattle between 8000 to 4000 B.C. Cattle domestication occurred in Asia, Europe, Africa by 4000 B.C. The first evidence of tuberculosis was found in mummies 4pted 1000 B.C. In the mummy, there was destruction of the lower thoracic and upper lumbar-vertebrae resulting in gibbus and psoas abscess.

There was migration of the herders. The milk drinking habit favored the selection of M. Tuberculosis. Hippocrates described CONSUMPTIVE in 460 B.C. Nei Ching also depicted tuberculosis symptoms in 200 B.C. The scripture written on shortness of breath, fever, cough, hemoptysis and back pain. The understanding of tuberculosis gradually evolved from symptoms collection to a disease entity. From 500 B.C. Hippocrates depicted as consumptive. Only much later that it was considered to be infectious. Science progressed slowly 1781 Laennec proposed his unifying theory of the Tubercle. Whether it is cavitation or calcification is still one disease. Koch discovered the mycobacterium in 1882, and opened the new era of microbiology and thereafter development of identification, management and chemotherapy for the disease.

With DNA probes (PCR technique), it was able to identify that the 1000 year old mummy has suffered from M. tuberculosis. It is not a new disease, but one survived all the human civilization and wars as well as populate through the world.

TUBERCULOSIS IN HONG KONG

In Hong Kong, there are important landmarks in the battle with tuberculosis. Hong Kong transformed from a small fishing village to a metropolitan city over a century. Late 1800´s Marks the end of the Ching Dynasty. 1911 was the Chinese Revolution. Followed shortly by the World War I in 1914 to 1918, and II in 1939 to 1945. The flux of refugees together with poverty, overcrowding, sanitation problems, primitive medical facilities, harbors the development of tuberculosis. In 1947 the Chest Service began data collection on

notification rate. In 1950 specific TB programs and sanitorium began. In 1952, BCG vaccination started. In 1965, the Wong Tai Sin Infirmary was established for rehabilitation.

The Hong Kong TB notification rate peaked at 697.2 per 100,000 population in 1952. The rate has improved to 104.2 in 1994. TB death rate peaked at 207.9 per 100,000 population in 1951. The death rate has also improved to 6.47 in 1994. Both rates have been unchanged over the last five years with no trend of further reduction. Population has increased 360% from 1.7 million to 6.1 million during the year 1947 to 1994. Tuberculosis ranked ninth in the leading cause of death, and tuberculosis deaths accounted for 1.4% of the total registered deaths. The average age of deaths was 71. In 1994, 99.5% of all newborns have BCG vaccination at birth. 90% of primary schoolchildren had a tuberculin test, 76.5% were tuberculin-negative and received revaccination. Most of the patients attended Chest Clinics for their treatment had Direct Observed Therapy (DOT). Hong Kong has collaborated with the Medical Research Council and actively engaged in the development of TB treatment regimens. There are still various challenges to the control of tuberculosis. The population structure is changing, immigrants, overcrowding environment a high incidence of TB in neighboring areas, large number of travelers still favors the persistence of the disease. IRV testing was done on a voluntary basis with patients´ consent and has very low positive rate.

TUBERCULOSIS IN TAIWAN

Taiwan shared similar problems facing tuberculosis. BCG vaccination was started in 1951, and was given at birth in 1965. X-ray survey team began in 1953. TB registry began in 1957 with anti-TB programs both in the urban and rural areas. From 1978 effective medications, including ISONIALZID, RIFANWIN, and ETHAMBUTOL, were given free. However, most of the therapy was not directly observed. There is a plan for overall computerized the TB registry for improvement of treatment and contact tracing.

TB death rate in Taiwan has significantly drop from 294 per 100,000 population in 1947 to 7.52 in 1995. Population rose from 6.3 million to 21 million in the respective years. From the sputum smear and culture results obtained from 1991 to 95, the positive rate is high at 0.33% in 1995, double from 0.15 % in 1994. This may be a yearly variation or an increase? Treatment completion was about 84%, and those lost for follow was 2.5%. Problem of high drug resistance rate in culture studies. Ranging from 9.9 % to 30.7 % to any drugs, and from 6.8 % to 22.6% to isoniazid.

TUBERCULOSIS IN CHINA

China encompasses a Hugh geographic area with climatic, urban and rural, population density, and available medical services differences. It is especially difficult for detection and treatment In the rural and undeserved areas. The prevalence is high, but the reported incidence is somewhat lower than the surrounding Southeast Asia counterparts. The World Bank has initiate anti-TB projects both in the urban and rural areas by grants as well as loans provided toward the control of TB. Though the projects and epidemiological data, may lead to a better understanding of the magnitude of the problem.

WHAT ARE THE CONCERNS?

Within the Asian country, there is no effective infrastructure that joined the different regions in a unified policy against tuberculosis. Non-compliance and public health neglect are contributing factors for treatment failure as well as high incidence of resistance. Demographic factors for the accessibility to diagnostic tests as well as treatment. There is a enormous population load as well as the fluidity of the population in relation to migration. Social, education and financial background differ as well as the acceptance for western medicine for a prolonged period of time. The last but not least is the beginning of the flame of IRV infection spreading through a virgin land of Asia. It has quickly established it's ground in Thailand and around the Vietnam border in China. Drug addiction and unprotected sex practice has enhanced the epidemic.

THE LESSON FROM THE STATES

Tuberculosis has absolute and rate reduction from 1953 to 1983. However in the recent years there was an excess of TB cases which coincided with the HIV epidemics. In the top five cities, among the younger age group there was a significant increase in TB cases in AIDS patients. There is an 8% per year risk of developing TB among the HIV infected subjects, as compared to an eight to 10% life time risk of PPD negative subjects. FHV infection resulting in skin anergy. There is a lower threshold to treat. A PPD test induration of 5 mm is considered positive. Many patients fall into the category for isoniazid chemoprophylaxis, but still compliance is the major problem. In synergies with other adverse factors of social deprivation, iv drug abuse, general debilitation; the problems multiply with the emergence of multidrug resistance TB.

THE ASIA PROBLEM

World Health Organization estimated 1,700 million has TB infection. 75% of population has been infection before the age of 50 in developing countries. It carries high morbidity of eight million and 2.9 million mortalities. Major portion is from the African area. Asia is not immune. Facing with enormous population exploration and migration, limited resources, high TB infection rates, multidrug resistance strains, drug compliance, potential HIV spread, lack of centralized infrastructure etc.

WATCH OUT FOR PULMONARY TUBERCULOSIS – THE ASIAN TIGER RETURNS