

Pulmonary Tuberculosis Outbreak in Riyadh city-center, 1999.

During the second school term (January-June) of 1999, five female secondary-school students were diagnosed with Active Pulmonary Tuberculosis (PTB). All were from Riyadh city-center. An investigation to determine the magnitude and source of this outbreak was started. A case was defined as any resident of Riyadh city-center, during the period from December 1998 to June 1999, with cough, with or without expectoration, hemoptysis, fever, anorexia, weight loss, chest pain and showing a positive tuberculin test (induration ≥ 10 mm) or a suggestive chest x-ray (CXR) or the presence of Acid Fast Bacilli in the sputum smear. A TB infection was defined as a positive tuberculin reaction.

Passive and active case finding was done in local Primary Health Care centers (PHC) and schools. Cases and contacts were interviewed using a structured questionnaire. Tuberculin skin tests and Mass Miniature Radiology (MMR) were performed. Normal CXR films were done for those with suspected MMR and/or positive tuberculin skin test. This outbreak was identified by a three-fold increase of PTB during the second school semester of 1999 as compared to the average of the previous two years within the same time period. The five cases had been attending five different schools (A, B, C, D & E). Schools A and C were at Ghubera, school B was at Shemaisy, while schools D and E were at Al-Dira and New Manfouha.

Of a total of 193 identified contacts, only 178 had had a tuberculin skin reading; 39 household and 139 school contacts. Among those 178, the infection rate was 52.2%. TB infection rate among household contacts was higher than that among school contacts (69.2% compared to 47.5%). The risk factors for positive tuberculin test included being household contacts (OR = 2.49, CI 1.09-5.74); non-Saudi nationality (OR = 2, CI 1.05-3.83); living at Al-Dira (OR = 5.57, CI 1.19-28.23) and Ghubera (OR = 3.73, CI 1.19-11.96) and father's oc-

cupation as driver (OR = 6.93, CI 1.71-30.38). The insignificant risk factors were age, no previous BCG vaccination, parents education, and crowd index. The first diagnosed case could have been the index case, whose source of infection might have been her father who had a history of incompletely treated PTB 16 years before. One of the other cases had a history of completely treated PTB three years before, which might have been reactivated.

- Reported by: Dr. Maysoun Al-Amoud, Field Epidemiology Training Program, and Dr. Ashry Gad Mohammed, Associate Professor of Epidemiology, King Saud University.

Editorial Note: Tuberculosis is a global public health problem. Although its incidence has increased among industrialised countries in recent years⁽¹⁾, it has however, declined in Saudi Arabia. During the second school semester of 1999, five cases of smear positive PTB cases were diagnosed among female secondary school students in Riyadh city-center. A state of anxiety and phobia spread among the students and teachers of the affected schools. No previous PTB outbreak in schools has been reported in Saudi Arabia, apart from one outbreak among students of the college of Medicine in Riyadh, 1997⁽²⁾. The importance of this outbreak is highlighted by the fact that the affected cases were young adolescent females, whose ages ranged from 14 to 19 years, and who had no immunity impairment factors. The 5 cases were from the city-center, an overcrowded area with old, poorly ventilated houses. The diagnosis of PTB was missed by PHC centers attended by the patients at early stages of the disease. Three of the cases were Saudi unlike the usual pattern of TB in Saudi Arabia where most of the cases are non-Saudi^(3,4).

In this outbreak, the TB infection rate among household contacts was higher than that among school con-

tacts. Delayed diagnosis led to prolonged exposure to the cases, which may explain the high infection rate among contacts. Previous studies have reported that an estimated one-third to a half of smear-positive individuals close household contacts become infected. In a school outbreak in Italy, investigators reported that classroom, bus and residence contact were all independent predictors of the risk of TB infection⁽⁵⁾. In an outbreak at the medical college in Riyadh in 1997, the infection rate ranged from 36.8% among first year students to 45.2% among third year students. Contact may have occurred at the college's common areas, such as the cafeteria, library or mosque⁽²⁾.

Although TB is a known health problem in Saudi Arabia, there was a delay in diagnosis in this outbreak, in spite of the fact that the cases had sought medical care within a short period of the onset of symptoms. This reflects a low index of suspicion for PTB of the physicians at the school health, government and private PHC centers. Physicians in all settings need to be familiar with the recently revised recommendations for the treatment of both TB infection and disease⁽⁶⁾. Proper screening of school contacts, management of cases and infected contacts, raising the suspicion index for TB, and promoting public health education are recommended.

References:

1. Asogwa SE. Tuberculosis Re-surgence. *Epidem Bull* 1993; 2 (3): 7-10.
2. Al-Salman S, Fontaine RE. Outbreak of primary infection of Mycobacterium tuberculosis among medical students and staff, King Saud University, Riyadh, 1997 (Unpublished).
3. Ministry of Health. Statistical Annual Report, 1997.
4. Batarfi N. Tuberculosis in Jeddah city, Saudi Arabia, 1995 (unpublished).

Pulmonary TB, Riyadh cont.

(Continued from page 3)

113 (1): 83-93.

6. CDC guidelines for preventing the transmission of Mycobacterium Tuberculosis in health care facilities, 1994. MMR 1994; 43 (RR-13).

Notice to Contributors

The *Saudi Epidemiology Bulletin* is published quarterly by the Department of Preventive Medicine and the Field Epidemiology Training Program. This publication provides feedback between the Department of Preventive Medicine and medical staff in the Kingdom. The scope is public health in general and epidemiology of infectious and non-infectious diseases in particular, with emphasis on surveillance, outbreak investigation, applied research, hospital infection and innovative approaches. All medical personnel may contribute. Papers fulfilling the following requirements will be considered:

- The work should be original.
- Follow the Vancouver style [1] in preparing articles, which should be no longer than 500 words. An Arabic translation of the summary is desirable. Number references sequentially.
- The author is responsible for statements and figures, which should not have been previously published.
- Articles accepted for publication are subject to editing, including omission or amendment of material.
- Author's name, institute, full postal address, telephone and fax number should be provided.

Reference:

1. International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. *Saudi Med J* 1991;12(6): 443-448.

NHL in Eastern Region of Saudi Arabia cont.

(Continued from page 5)

NHL.

The small numbers of exposure to some variables in this study are most probably attributed to the small number of our studied cases. An additional study on a larger number of cases within more recent years would be very supportive.

References:

1. Parkin DM, Muir CS, Whelan SL, Gao YT, Ferly J and Powell L. Parkin DM, Muir CS, Whelan SL et al. editors. Cancer incidence in five continents. Volume VI. IARC Scientific Publication No. 120. Lyon: International Agency for Research on Cancer; 1992.
2. Ministry of Health. National Cancer Registry: Cancer Incidence Report (1994-1996). 1999; 26-27.
3. Ministry of Health. National Cancer Registry: (Through verbal communication).
4. Scherr PA, Mueller NE. Non-Hodgkin's lymphoma. In: *Cancer Epidemiology and Prevention*. Schottenfeld D, Joseph F, Fraumeni TR. 2nd Edition. Michigan. University of Michigan School of Public Health, 1996.
5. Watson SA, Wilkinson LJ, Roberston JFR, et al. 1993. Effect of histamine on the growth of human gastrointestinal tumors: reversal by cimetidine. *Gut* 34:1091-6.
6. Zahm SH, Welsenburger DD, Babbit PA, et al. 1992. Use of hair coloring products and the risk of lymphoma, multiple myeloma, and chronic lymphocytic leukemia. *Am J public Health* 82:990-997.

تابع ملخص اللغة العربية

أعمارهم بين ٢١-٦٠ سنة، و ٧٣٪ منهم من ذوي البشرة السمراء. ثلث الحالات كان مستواهم التعليمي فوق الثانوي.

وقد بينت هذه الدراسة أن عوامل الخطورة لسرطان الغدد الليمفاوية غير هودجكن ذات الدلالة الإحصائية هي جنس الإناث و البشرة السوداء وقد يفسر هذا بأن أغلب سكان المنطقة الشرقية ذوو بشرة سمراء اللون ونسبة ضئيلة ذوو بشرة سوداء وهم غالباً من جنسيات غير سعودية، والعمل بالزراعة ويشمل عامل رش المبيدات الحشرية. أما عوامل الخطورة المرتفعة التي ليست لها دلالة إحصائية فكانت الأعمار فوق الأربعين، الميش في المناطق الريفية، المستوى التعليمي فوق الثانوي (وهذا لا يتوافق مع دراسات سابقة)، التاريخ المرضي لكل من روماتيزم المفاصل والالتهاب الكبدي (ج) ونقل الدم و التعرض للأشعة التشخيصية و استعمال أدوية القرحة، إضافة إلى استخدام أصباغ الشعر الكيماوية و جميعها تتوافق مع دراسات أخرى سابقة.

وتوصي الدراسة بتكرار عمل دراسة مشابهة على عينة أكبر و معلومات أحدث.

إعداد:

د. عبد الرحمن الخان

برنامج الوبائيات الحقلية