Original Article

CURRENT EPIDEMIOLOGICAL SITUATION OF TUBERCULOSIS IN THE WORKPLACE: CONSIDERING THE RISK OF TUBERCULOSIS AMONG NURSES

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Abstract [Objective] To observe the trends and methods of tuberculosis (TB) detection in different occupations; to estimate the incidence of TB among nurses, and calculate the relative risk by comparing with the aged-matched general population; and to estimate the incidence of TB and relative risk also for teachers and doctors.

[Materials and Methods] The background of TB patients was analyzed using the annual reports of TB registry for the period between 1987 and 2004. The population obtained from the national census, which was conducted every five years, was used for the calculation of TB incidence by specific occupation. The annual population between the two census years was obtained by interpolation. The TB registry assigns the same occupation code for nurses, public nurses and nursery teachers, and similarly assigns a common code for teachers and medical doctors. Therefore, TB incidence of nurses was calculated by subtracting the estimated number in nursery teachers. The number of nursery teachers contracting TB was obtained assuming that their TB incidence was the same as that for the 20–59 year-old population of the same sex. On the other hand, TB incidence for teachers and doctors was calculated together, because of the difficulties in separating the two occupations.

[Results] Among nurses with TB, the proportion of cases detected by periodic mass screening in the workplace increased gradually from 21.4% in 1987 to 40.4% in 2004. Conversely, the proportion of cases detected by symptomatic visit to medical institutions declined from 69.4% in 1987 to 43.9% in 2004. In general population, the proportion of cases detected by contact tracing is low. Among nurses, however, cases detected by contact tracing had increased since around 1995 ; the proportion was 1–2% before 1995, increased to 7.0% in 1999 and leveled off at around 6–9%.

TB incidence of female nurses declined slightly from 54.1 per 100,000 population in 1987 to 46.3 in 2004 (14.4%), and that of male nurses also declined from 127.0 in 1987 to 82.5 in 2004 (35.0%). However, the relative risk of female nurses increased from 2.1 (95%CI: 1.9–2.3) in 1987 to 4.3 (95% CI: 3.9–4.8) in 2004, and that of male nurses also increased from 2.4 (95%CI: 1.6–3.4) in 1987 to 3.8 (95%CI: 2.8–5.2) in 2004. The relative risk had increased gradually from the middle of 1990s in both sexes.

TB incidence of female teachers and doctors decreased from 14.8 per 100,000 population in 1987 to 10.0 in 2004 (32.4%), and that of male teachers and doctors decreased from 39.3 in 1987 to 18.8 in 2004 (52.2%). While the relative risk was below 1 in both sexes, the relative risk in females increased from 0.6 (95%CI: 0.5–0.7) in 1987 to 0.8 (95% CI: 0.7–1.1) in 2004, and that in males also increased from 0.7 (95%CI: 0.7–0.8) in 1987 to 0.9 (95%CI: 0.8–1.0) in 2004.

[Conclusion] Based on the relative risk data, approximately 80% of nurses with TB might have been infected by nosocomial infection and developed the disease. Since about half of them were detected in an early stage by mass screening in the workplace or contact tracing, TB control measures for nurses may be considered effective. However, the relative risk of TB among nurses had continued to increase without any trend of decline. The infection control at the hospitals may be inadequate, and should be reinforced by evaluating the methods or contents of control measures conducted so far.

Key words: Tuberculosis, Surveillance, Incidence rate, Workplace, Case finding, Nurse, Relative risk

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