A Cohort Study on the Follow-Up and Case-Holding of the Newly-Diagnosed Tuberculosis Patients

Abstract

Purpose：Tuberculosis, an infectious disease of a long history, is re-emerging. Its control is highly associated with the patient's compliance with therapy. The purpose of the study was to understand the follow-up and case-holding of the newly-diagnosed tuberculosis patients, and to suggest any improvement in the process.

Method：Tuberculosis patients diagnosed in the year 2000 at a private medical center in Tainan County were studied.　Their medical records were reviewed; and their treatment was followed-up.

Result：The medical center had diagnosed 402 tuberculosis patients in the year 2000.　Of them, 53 (13%) had either died or lost contact; and 349 (87%) had still been under effective follow-up and case-holding.　38% (157/402) of them were already confirmed tuberculosis patients at the time of reporting; of them, 138 (88%) were pulmonary tuberculosis, and 19 (12%), extrapulmonary

tuberculosis patients.   48% (192/402) were probable tuberculosis cases at the time of reporting.   The diagnosis rate of those patients currently under follow-up was 62% (216/349); it was 31% (59/192) for the probable cases. 64% (139) of the patients had been treated by the reporting hospitals; 27% (6) had been referred to the DOH bureaus of chronic disease control for treatment; and 3.2% (7) had never been treated.

Conclusion：The follow-up and case-holding rate of the newly-diagnosed tuberculosis patients was about 87%.   The compliance with medical orders of a low 3.2% was not desirable.   The not-high-enough follow-up rate and the low compliance of some patients were some of the areas in the prevention and control of tuberculosis that required further improvement through incentives and coercion.

Key Words：tuberculosis, reporting, case-holding, compliance

Introduction

Tuberculosis is an infectious disease of long history[1], and is still threatening the lives of humankind.   By estimate, there are about 7-8 million new cases each year worldwide[2,3].   The increase in AIDS and the multi-drug resistance of tuberculosis have made the prevention and control of tuberculosis more difficult[4,5].   The number of confirmed tuberculosis cases in Taiwan in 1999 was as high as 114,730, indicating the importance and urgency of tuberculosis control in public health.

The nosocomial infection control committee set up in hospital is responsible for the reporting of communicable diseases; it is one of the basic infrastructures for the reporting and control of communicable diseases.   Case-holding and

patients' compliance with treatment after cases are reported by medical care institutions to health authorities are key to the effective control of tuberculosis. It is generally believed that the compliance of patients with medication and the willingness of patients to accept treatment are some important factors for the cure of the disease[7,8].   An effective control measure currently accepted by many is a strengthened monitoring of cases together with follow-up treatment by the DOTS (directly observed treatment, short course) method[9].   Through clinical experience and by the prevalence of tuberculosis, it was noted that there were some areas in case-holding and compliance with medication that required further improvement.   The purpose of the study was to identify the degree of abscondence of the newly-diagnosed tuberculosis patients.

Patients and Method

Patients for study were collected from a private medical center of 1,200 beds in Tainan County.   The hospital serves a population of about two millions in the vicinity.   Tuberculosis cases are reported through the following process: 1) a doctor in attendance fills in a communicable disease report; a nosocomial control nurse checks the report against laboratory findings and then reports to the local health bureau; 2) reports of microbiological testing for acid-fast bacilli and culture of tuberculosis bacilli are reviewed every week; positive cases are reported immediately. Since 1997, the nosocomial infection control committees of hospitals have decided that, for the convenience of case management, tuberculosis cases, either probable or confirmed, when placed on treatment with anti-tuberculosis drugs such as isoniazid, rifampin, ethambutol, and pyrazinamide for the first time, a communicable disease report should be made for each of them.   When cases are reported, they are screened by

either the thoracic department or the infection department, and then reported by telephone and through mail to the local health bureau to complete the entire tuberculosis reporting process.   A laboratory-proved tuberculosis case is one who 1) has been detected at least once acid-fast bacillus positive in his/her sputum smear; 2) bacillus has been cultured at least once; the bacillus is then identified as *Mycobacterium tuberculosis*; 3) the pathological diagnosis is caseation necrosis; and 4) the pathological testing of the auramine-rhodamine dye is positive.   Those who have not yet been confirmed are defined as probable cases.   Cases with non-tuberculous *Mycobacterium* detected in sputum and cases only clinically diagnosed were not included in the study.   Cases studied were either confirmed or probable patients reported by the nosocomial infection control committee during the year 2000.   All cases had been telephone-contacted by the local health bureau.   If they could not be reached, they were home-visited.   A case that failed both approaches was considered absconded.

Results

In the year 2000, the nosocomial infection control committee had reported a total of 402 cases.   Of them, 53 (13%) had either died or lost contact; and 349 had been under follow-up.   157 cases were laboratory-proved microbiologically or pathologically at the time of reporting.   Of them, 138 (88%) were pulmonary tuberculosis, and 19 (12%) were extra-pulmonary tuberculosis patients.   In addition, 192 cases were reported as probable. Through later laboratory diagnosis, 216 cases were confirmed (see Figure 1). Follow-up of the laboratory-proved cases showed that 139 (64.4%) of them had been treated by the reporting hospitals; 60 (26.3%) had been referred to the DOH bureaus of chronic disease control for treatment; 3 (1.4%) had been treated at local health stations; 8 (3.7%) had been treated at other hospitals;

and 7 (3.2%) had either not been treated or were not cooperating (see Table 1).

Discussion

The study showed that in one year, 13% of all patients diagnosed and reported would be lost to follow-up by the telephone number and address on the medical record.   Even when some of them were reached, chances were that they would be reported dead by their families.   Some of them might have moved to other places and had been held for follow-up by health or medical care authorities of other townships.   The actual number of patients died of tuberculosis was unknown.   The likely reasons for failure of contact were either the telephone number or address on the medical record was wrong, or cases had moved to other places.   The control of tuberculosis is teamwork; both the government and the private sectors, and medical and non-medical institutions should all be responsible for this public health effort[10].   The effectiveness of tuberculosis control is highly associated with the mental set of patients, and other social-economic factors such as transportation, and accessibility to care.   To improve patients' compliance with therapy, some control programs even offer incentives such as meals, clothing, transportation money, and nursery services to encourage patients to accept treatment[11].   Improvement of patient's compliance with therapy is not only a key factor to the control of tuberculosis; it is also associated with the issue of drug resistance[12].   How to reduce the number of patients lost to follow-up is an important matter and should not be overlooked.

Furthermore, 3.2% of the new patients had never been treated.   On the phone calls, they refused to accept treatment, for reasons unknown.   One report suggested that a misguided attitude toward tuberculosis control and poor knowledge of the infection were some contributing factors to the poor compliance with treatment[13].   By talking to patients, it was noted that some

patients declined treatment for economic reasons, and some, for poor understanding of the seriousness of the disease.   More studies in this regard, however, would be needed to further understand the reasons deeply behind. An initially untreated tuberculosis patient, once treated, for the inconvenience of treatment and the adverse reactions of drugs, would likely to develop poor compliance.   Poor compliance would bring down the cure rate, and the effectiveness of the entire control program would be jeopardized.   More, therefore, should be done to educate the patients and their families about the program and thus to improve the treatment rate.

Tuberculosis control is a relay race.   Private medical care institutions, an important medical care resource of the community, also play a major role in it[14], in the entire process starting with the screening of patients through their cure.   It was fortunate that 64% of the patients had still been treated by the reporting hospitals.   There could be many reasons for patients to change hospitals, the perception of the patients[9], geographic location of cure institutions, and convenience in terms of time, for instance.   27% of the patients had been referred to the DOH bureaus of chronic disease control for treatment.   This figure showed the degree of appreciation of patients for the services offered by these bureaus.

In summary, there is still room for improvement as to case-holding and treatment of the newly-diagnosed tuberculosis patients.   In the short run, confirmation of the telephone number and address given by patient, and changes of patient's attitude toward tuberculosis control and treatment should be given priority to minimize potential sources of infection. Tuberculosis control program could be more effective if the lost-of-contact patients could be found and if patients of undesirable attitude could be persuaded to accept treatment.

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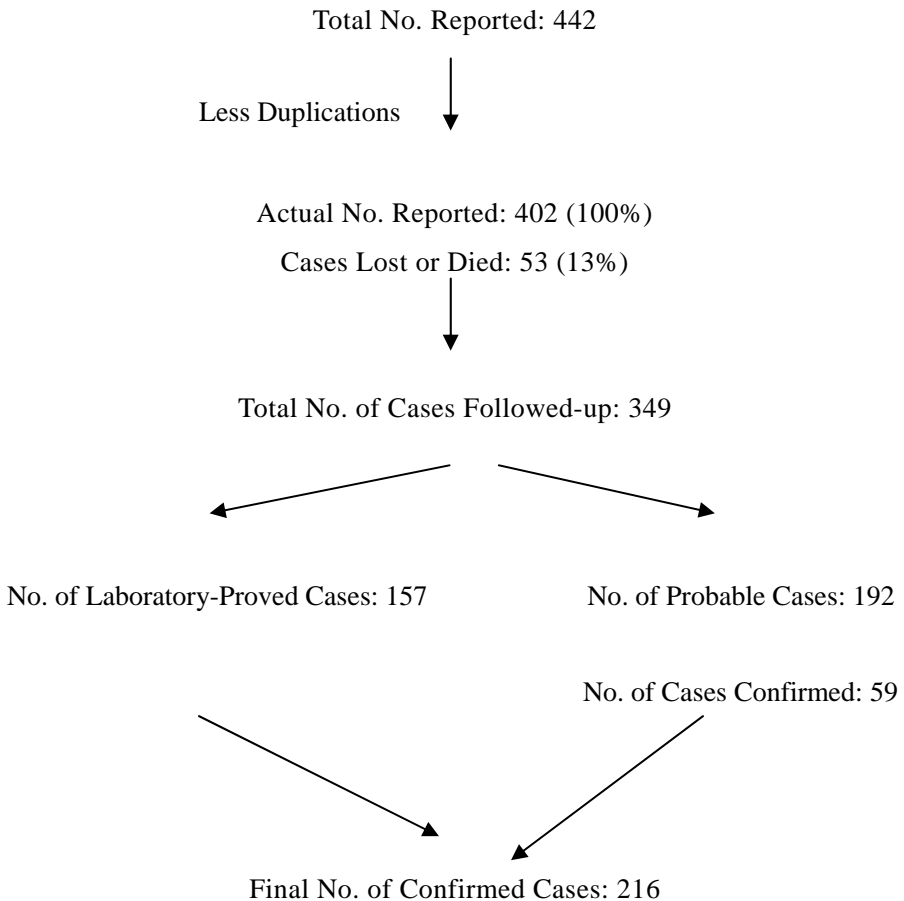
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Flow of Case Reporting for Tuberculosis, 2000

Total No. Reported: 442

Less Duplications

Actual No. Reported: 402 (100%)

Cases Lost or Died: 53 (13%)

Total No. of Cases Followed-up: 349

No. of Laboratory-Proved Cases: 157   No. of Probable Cases: 192

No. of Cases Confirmed: 59

Final No. of Confirmed Cases: 216

Medical Care Institutions Caring for the Reported Tuberculosis Patients, 2000

Medical Care Institutions	No. (%)
The Reporting Hospital	139 (64.4)
Bureaus of Chronic Disease Control	59 (27.3)
Health Stations	3 (1.4)
Other Hospitals	8 (3.7)
Not Treated or Refused Treatment	7 (3.2)
Total	216 (100)