

Biosecurity during nursing care to patients with pulmonary tuberculosis

A biossegurança durante os cuidados de enfermagem aos pacientes com tuberculose pulmonar

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Keywords

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Descritores

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Abstract

Objective: To evaluate preventive measures recommended during patient care for respiratory symptoms, with pulmonary tuberculosis.

Methods: Exploratory-descriptive study, retrospective, developed from information collected in medical records of patients with respiratory symptoms, diagnosed with pulmonary tuberculosis.

Results: The number of tuberculosis cases in the city diagnosed during hospitalization during the study period was 65,29 (44.6%). As for the biosecurity measures during the hospitalization of 29 diagnosed cases, early aerosol were found in medical records in 13 (44.8%) patients.

Conclusion: Data show that nursing professionals, working in hospitals, still exposed to risks of latent infection.

Resumo

Objetivo: Avaliar as medidas preventivas recomendadas durante a assistência aos pacientes sintomáticos respiratórios, com tuberculose pulmonar.

Métodos: Estudo exploratório-descritivo, retrospectivo, desenvolvido a partir de informações coletadas nos arquivos de pacientes sintomáticos respiratórios, com diagnóstico de saída tuberculose pulmonar.

Resultados: O número de casos de tuberculose no município durante o período do estudo foi de 65, 29 (44,6%) destes casos foram diagnosticados durante a internação. Quanto as medidas de biossegurança, durante a admissão dos 29 casos diagnosticados, foram encontrados registros de precaução por aerossóis nos prontuários de 13 (44,8%) pacientes.

Conclusão: Os dados mostram que os profissionais de enfermagem, que trabalham nos hospitais, continuam expostos ao risco de infecção latente.

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Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*, representing today, one of the major public health problems in third world countries.⁽¹⁾ Despite being one of the oldest infectious diseases and for over half a century vulnerable to treatment with drugs, tuberculosis remains one of the major health problems being faced worldwide.⁽²⁾

The increased number of tuberculosis cases is multifactorial, however, the failure of the health system, and the difficulty to diagnose and properly treat the sick leads to a further spread of the disease.^(3,4) The ease of transmission by infectious aerosols, plus the social, economic and environmental factors hinder its control. These factors contributed so that the World Health Organization decreed tuberculosis as a global priority.⁽⁵⁾

According to the Division of Tuberculosis, patients who present cough and sputum for over three weeks are considered symptomatic respiratory and the active search for these patients is the main strategy for diagnosis and disease control, since it allows the early detection of pulmonary forms.⁽⁶⁾

Early identification of respiratory symptoms allows diagnosis and initiation of treatment in a timely manner. In health care, the care of this group of patients deserves special attention by the potential spread of aerosols containing the bacillus, which determines the need for the imposition of appropriate control: administrative measures, environmental control measures and personal protection measures.⁽²⁾

Clinical diagnosis is performed with the presence of classic symptoms such as persistent cough, productive or not, afternoon fever, night sweats and weight loss, and complementary diagnosis with histopathological, radiological, bacteriological and tuberculin tests.⁽⁷⁾ In addition to the tests recommended by the Ministry of Health and other imaging tests (CT scan, MRI), phenotypic tests, and molecular immune-serological tests can be used. The emergence of tuberculosis together with the increase of multi-drug resistant strains of *Mycobac-*

terium tuberculosis has increased the need for rapid methods of diagnosis.⁽⁸⁾

The most frequent source of the spread of tuberculosis is the human being, which eliminates large numbers of bacilli through their respiratory tract, so, close contacts such as family and health professionals, make it more likely the transmission.⁽⁹⁾ However, one of the priorities of the National Tuberculosis Control Program is early diagnosis, and there are reports that many cases of tuberculosis have not been diagnosed because health professionals are not aware of the patients' respiratory symptoms.^(6,10) For the control of tuberculosis, it is expected that the professional is able to identify the individuals with respiratory symptoms and refer them to health services.⁽¹¹⁾

Health professionals have a major occupational risk related to the probability of occurrence of a work accident and specific procedures to the profession performed, especially when considering that the hospital is the worksite for professionals in the field.⁽⁶⁾

From the perspective of detecting and follow up patients' hospitalization with respiratory symptoms in the hospital environment and contribute to the awareness of professionals to the recommendations of health services, the study aimed to assess the preventive measures recommended by professionals in patient care with respiratory symptoms during hospitalization and with diagnostic of pulmonary tuberculosis in a public hospital of Sao Paulo inland, in the period 2008-2010.

Methods

This is a descriptive exploratory, retrospective study, developed from information collected in the medical records of patients with respiratory symptoms, diagnosed with pulmonary tuberculosis, in a public hospital in country side of Sao Paulo State, Brazil, in the period of 2008 to 2010.

Inclusion criteria for this study were patients with respiratory symptoms and diagnosed with tuberculosis and exclusion criteria were all patients

with respiratory symptoms and other diagnoses that were not tuberculosis.

This study used information obtained from the database of medical records, with diagnosed cases of pulmonary tuberculosis, search for patients' records hospitalized and diagnosed with pulmonary tuberculosis and tuberculosis cases identified by city epidemiological surveillance.

The variables included in the study were grouped into clinical, sociodemographic and safety-related to nursing staff during care in the hospital setting. Clinical variables were tuberculosis cases in the city and the hospital, clinical cases diagnosed in hospital (pulmonary, pleural, pleural and pulmonary), the new cases and recurrence of the identification of admission diagnostic and hospital discharge diagnostics. The sociodemographic variables of diagnosed cases considered were age (<or = 30 years,> 30 years), gender and professional occupation.

Variables related to the safety of nursing staff during care in the hospital environment, considered as the main variables of the study, which describes the beginning of biosecurity measures. The preventive recommended measures were: on the first day of hospitalization; on the second day of hospitalization; on the third day of hospitalization without precaution during hospitalization.

Preventive measures suggested from diagnosis in the emergency care unit include: patient flow previously planned, usage of a surgical mask and forwarded to the isolation room that has a negative pressure system, filter High Efficiency Particulate Air Filter (HEPA), the use by the health team of mask type N95, and the record of respiratory care in the medical record for awareness of all members providing care to patients.⁽⁷⁾

The collected data were organized and analyzed using the software Microsoft Excel® and Epiinfo (Epidemiological Information) 6.04d, Center for Disease Control and Prevention, which allowed the extraction of absolute and relative frequencies of the research.

The development of the study followed the national and international standards of ethics in research involving human.

Results

The number of tuberculosis cases diagnosed in the city was 65 cases, of which 29 (44.6%) cases were diagnosed during hospitalization and 36 cases (55.4%) diagnosed by other health services and the primary care teams of the city.

Among the 29 cases detected in the hospital during the time of hospitalization, the predominant clinical form was pulmonary 25 (86.2%) cases, 01 (3.4%) mixed case (pleural and pulmonary) and 03 (10.4%) as pleural cases, which are distributed in table 1 year.

Table 1. Clinical form of tuberculosis cases diagnosed during hospitalization

| Clinical form | 2008 n(%) | 2009 n(%) | 2010 n(%) | Total n(%) |
|---------------|--------------|--------------|--------------|---------------|
| Pulmonary | 7(28.0) | 10(40.0) | 8(32.0) | 25(100.0) |
| Pleural | 0(0) | 1(33.3) | 2(66.6) | 3(100.0) |
| Both | 1(100) | 0(0) | 0(0) | 1(100.0) |
| Total | 8(27.6) | 11(37.9) | 10(34.4) | 29(100.0) |

With regard to sociodemographic data, the number of male cases was 25 (82.2%) and four (17.8%) females, of these cases the predominant age group were older than 30 years - 20 (68.9%) cases, and related their occupation, as registered in their medical records, most had undefined occupation, with 17 (58.62%) cases.

The number of tuberculosis cases, raised on hospitalization, with diagnosis or diagnosis hypothesis of 19 (65.5%) among the 29 cases detected in the period, with a hospital discharge diagnosis confirmed or referred to the city epidemiological surveillance for confirmation.

Biosecurity measures, during hospitalization of the 29 diagnosed cases, previously registries of aerosol were found in medical records of 13 (44.8%) patients, this is a routine procedure recommended by the Commission for the Control and Prevention of Infections Related to Hospital Health Care, 09 (34.5%) cases initiated precautionary measures from the second day of hospi-

talization and 06 (20.6%) cases were discharged without the existence of records of preventive measures, according to data shown in table 2 distributed annually.

Table 2. Day of the beginning of biosecurity measures

| Precaution | 2008 n(%) | 2009 n(%) | 2010 n(%) | Total n(%) |
|---------------|--------------|--------------|--------------|---------------|
| Admission | 2(15.3) | 5(38.4) | 6(46.1) | 13(100.0) |
| 2nd day | 3(33.3) | 5(55.5) | 1(11.1) | 9(100.0) |
| 3rd day | 1(100) | 0(0) | 0(00.0) | 1(100.0) |
| No precaution | 2(33.3) | 1(16.7) | 3(50.0) | 6(100.0) |
| Total | 8(27.6) | 11(37.9) | 10(34.4) | 29(100.0) |

In assessing the admission and discharge diagnostic description, among the 29 confirmed cases, 13 (44.8%) were identified with admission diagnoses confirmed as pneumonia, pleural effusion, and epigastric pain, making it difficult to the possibility of application of biosecurity measures by team, on the ward at the time of hospitalization, for lack of diagnosis-related pulmonary tuberculosis.

Discussion

The results of this study revealed the situation of the city, similar to the scenario mentioned by other authors, with 65 cases diagnosed in the city, 29 (44.6%) were detected during hospitalization.

The data analysis exposes the need for awareness of professionals, especially nurses, as the importance of biosecurity measures when treating patients with respiratory symptoms and the active work of the infection control team to institute routine precaution and isolation. The adoption of these measures in health care is essential to ensure the protection of patients and professionals.

The first conception formed on tuberculosis is that this is contagious disease, therefore, physical interaction space becomes a hazardous environment.⁽¹²⁾

Some studies on the epidemiology profile of hospitalized patients with tuberculosis point to the lack of quality of preventive measures to control the spread of the disease, despite the efforts of the professionals who manage the surveillance service.^(13,14)

Souza⁽¹⁵⁾ conducted a qualitative, exploratory and descriptive study with the nursing team leaders in a university hospital in Rio de Janeiro, in order to know the risks of tuberculosis among staff, and concluded that this risk is real, identified gaps and unpreparedness mainly related to actions of biosecurity.

The misdiagnosis, isolation and management of patients are also considered crucial for nosocomial transmission and may thus affect both patients and health professionals.^(7,16)

At the end of the 90's studies were performed that confirmed a very high transmission of tuberculosis in closed environments, independently if they are in Health Units or in developing or developed countries. Thus, risks are considered in places such as hospitals, prisons, psychiatric health houses and others, where there is an elevated chance of transmission by the bacillus of tuberculosis, both from patient to healthy individuals, as from patient to patient, or from patient to health professionals.^(13,17) Therefore, the adoption of norms of biosafety in health services is fundamental condition for the safety of workers, because risks are always present.⁽¹³⁾

This fact is due to the lack of adherence of health professionals involving the delayed diagnosis, putting professionals themselves at risk by exposure to the bacillus in environments without adequate security, making common the presence of patients with active tuberculosis in general hospitals.^(18,19)

The results of this research confirm the risk of these professionals acquiring the predominant form of tuberculosis which is pulmonary, because of the detected cases within the hospital.

Biosecurity measures must be adopted in all symptomatic patients in the hospital environment for security and control of the disease among health professionals.⁽⁷⁾ The current model is not sufficient to control a social disease that weakens in long time

and leads to death an expressive contingent of the population, therefore, professionals need to evaluate patients from their needs to the decisions regarding the safety of the team.^(20,21)

The study highlighted the need for awareness of health professionals, especially nurses, as the importance of measures to prevent exposure to biological agents when treating patients with respiratory symptoms. The adoption of these measures in health care is essential to ensure the protection of patients and professionals.

Simple and effective measures should be encouraged to contribute with increased adherence to biosecurity measures with administrative initiatives, environmental control and personal protection.

Conclusion

The results indicate that health professionals who work in hospitals, are at risk of latent tuberculosis infection. The results highlight new research to assess the health of these professionals and the implementation of educational interventions aimed at biosafety diagnosis and control of tuberculosis in hospital.

Collaborations

Costa MCP contributed to the project design, conducted the research and wrote the article. Silva V and Grande AJ collaborated with the critical review of intellectual content. Taminato M and Beretta ALRZ contributed to the project design, conducted the study, and drafted the article and final approved the version to be published.

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