73 - QUICK AND EFFICIENT DIAGNOSTIC TECHNIQUES USED IN THE DETECTION OF TUBERCULOSIS: A REVIEW OF THE LITERATURE

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INTRODUCTION

The MycobacteriumTuberculosis is responsible for the tuberculosis (TB) disease. Tuberculosis is a disease that affects 8 to 9 million people in the world today and causes the death of approximately 2 to 3 million each year world wide. In Brazil, the number of new cases of tuberculosis is nearly 100.000/year. It is estimated that the latent form of TB is present in close to one third of humanity (TEIXERA et al, 2007).

The World Health Organization (WHO) established the goal of eliminating the disease of tuberculosis by the year 2050, provided that preceding goals be met. The specific goals were that by the year 2005, diagnose 70% of the TB cases and cure 85% of these; that by 2010, reduce by 50% the prevalence and mortality of tuberculosis; and, that by 2020, impede 25 million deaths and prevent 50 million cases of the disease (TEIXEIRA, 2002, Apud QUEIROZ, 2008).

Given the strong TB morbi-mortality, in 1999, the National Program for the Control of Tuberculosis (NPCT) established and intensified systematized disease control measures. In addition, in 2001, The National Mobilization Plan for the Elimination of Hansen´s Disease and Tuberculosis was launched. These programs sought to increase the early detection of TB cases and to implement the directly observed treatment of short duration (DOTS). They constituted the principal means of TB control in the world (IGNOTTI, et al 2007).

Even though tuberculosis is one of the most ancient diseases of humanity, it is not considered a disease of the past but rather one that needs a new and fresh look. Without a doubt, political, social, and economic factors influence the differences in the prevalence of tuberculosis amongst the populations (MATTOS, et al 2006; QUEIROZ, 2008). For this reason, the active search for respiratory symptomatic (RS) individuals, the early diagnosis, the completion of treatment, and the prevention are measures that need to be undertaken for the erradication of TB in the future.

The nurse´s involvment in the control of tuberculosis is ample and continuous to the extent that he/she plays a role in primary care. The search for means to facilitate the early diagnosis is a part of that process. Therefore, nurses and health professionals need to know the the methods for the early diagnosis of the disease and enhance their use, as well as for the purpose of advising the population as to their realization.

The objective of this paper is: to analyze the diagnostic techniques of Tuberculosis used in Brazil and to identify the method that is most advantageous for the detection of the disease.

METHODOLOGY

This study is a literature review conducted in the data bases of the Virtual Library of Health (HVL) – LILACS and MEDLINE - for the period of 2004-2009, using the following search and Boolean terms "tuberculosis" "AND "diagnosis", and later "diagnosis" AND "sputum smear", according to the classification of the health science descriptor (DECS). The inclusion criteria were: that the focus of the study be on the detection or diagnosis of tuberculosis, that it be written in Portuguese, Spanish or English, that it be originated in Brazil, and that it be available in whole text format.. Articles that were repeatedly listed were excluded.

The articles were analyzed firstly by repeated readings, then identification of the texts that referred to the diagnosis of TB and to the method considered more effective in the diagnosis of the disease, grouping of this information by commonality and later presented in frequencies and percentages.

RESULTS AND DISCUSSIO N

A total of 137 articles were identified in the two searches. After analysis based on the selection criteria, only 12 were selected. Figure 1 and 2, following, demonstrate the results of the 2 searches using different descriptors and Boolean terms.

FIGURE 1 – Articles that discuss the diagnosis of tuberculosis and the methods focused. Natal, RN, 2009.

Article	Diagnostic methdod(s) discussed
BALDEVIANO, V. et al. (2007)	Genetic molecular amplification REP13E12 (PCR); baciloscopy; Culture
BAZZO, M. L. et al.(2004)	Molecular detection – polymerase chain reaction (PCR); Bacteriologic culture; Baciloscopy
D´ALESSANDRO, A; DE WAARD, J.H., 2008.	commercial serological tests, Pathozyme- TB complex plus™ and Pathozyme-Myco IgG™
FREIRE, D. N.; BONAMETTI, A. M.; MATSUO, T., 2007.	Raciologic exam; Baciloscopy
IGNOTTI, E., et al.	Baciloscopy; Radiography; Bacteriologic culture
MARCHI, et al, 2008.	Baciloscopia; Cultura; PCR
MATTOS, I.G. et al., 2006.	Bacteriologic culture; Acid-fast baciloscopy
MEJIA, G.I., 1999	7L7H11 Culture; Lewinstein-Jenson (L-J)
NOGUEIRA,P.A.; ABRAHAO, R.MC M.; MALUCELLI, M. I. C., 2004	Baciloscopy
PINTO JUNIOR, H. et al .	Molecular detection – polymerase chain reaction (PCR)
SILVA, P. E. A., et al .	TL7H11 Culture; Conventional culture
SANTOS, R.M.C., et al., 2006	Molecular detection – polymerase chain reaction (PCR); Bacteriologic culture; Baciloscopy
TEIXEIRA, H.C.; ABRAMO, C.; MUNK, M. E., 2007	Baciloscopy; PCR; PPD; Radiography; Antigens test - QuantiFERON TB; T SPOT.TB

In this review we found various diagnostic methods currently in use, such a: the baciloscopy, the polymerase chain reaction (PCR); microbiologic culture, thorax radiography, and the intradermic test with the purified proteic derivative (PPD), UL7H11 method, among others. Amongst the molecular techniques, the PCR was cited in 33,4% of the articles , as an efficient method in the diagnosis of TB. However, it has sensitivity problems that should be resolved so that it can effectivey contribute to the diagnosis and intervention in the change of transmission (BAZZO et al, 2004). This test, among others, more or less complex exams continue to revolutionize the diagnosis and the follow-up of infectious disease in the last decades. The techniques have improved the sensitivity, specificity and they have shortended the time for diagnosis of the many diseases, including tuberculosis.

We observed that 50% of the studies cited the baciloscopy as the method more frequently used and of low cost. The thorax radiography was referred in 8,3% of the articles and evaluated as the early diagnosis of the disease 16,6% referred that this test should be used only to help in the diagnosis, as suggested by the Ministry of Health (BRASIL, 2005); 8,3% mention other types of diagnosis.

We also identified that many authors consider the early diagnosis as an important factor for the control of tuberculosis, because it enables the interruption of the transmission chain of the disease in the community, besides providing the improvement and recuperation of the patients (TEIXEIRA, et al, 2007; MATTOS, et al, 2006; SILVA, et al, 2007; PINTO, et al, 2007; SANTOS, 2007). In detecting TB at its initial stage, two aspects converge to the success: the disease is treated before it advances and, upon knowing that he has the disease, the patient will take care so as to avoid dissemination.

Tuberculosis affects almost all the body organs, but the pulmonary form is predominant and has epidemiologic important because of its contagiousness. For this reason, the major biological material investigated is the sputum of the Symptomatic Respirtory (SR) who are people with cough and expiration for 3 or more weeks). It offers more renderability in the indentification of cases (NOGEIRA, 2004).

The minimally specific diagnostic measures that are still in use do not affect the control of the infection by the M Tuberculosis. That is why more specific and sensitive measures, as well as a greater comprehension of the molecular and cellular mechanisms that regulate the parasite-host interaction, are believed to contribute to a more efficient fight against tuberculosis (TEIXEIRA et al, 2007).

Currently,, the sputum smear microscopy exam is the main diagnostic method used in the Brazilian public health that has demonstrated to be efficient, given the easiness of its execution. It is a laboratory procedure that is simple, reliable and cheap (IGNOTTI, et al, 2007); MATTOS, et al, 2006; NOGUEIRA, et al, 2004). Further research is needed, therefore, to evaluate the impact that the different diagnostic methods have on the early and efficient detection of TB. Also, the development of new diagnostic methods that are inexpensive and more sensitive, and that provide better results than the conventional methods, constitutes a priority for the control of TB (SILVA, et al., 2007).

In recent times, however, there has been increased worry world wide with the virus H1N! pandemic. However, it has been observed that tuberculosis has been responsible for more deaths than the swine flu. It is therefore appropriate to stat that besides the challenges of rapid detection of TB, of quality service and of the health professionals, it is necessary that the disease be recognized worldwide as a public health problem that affects the population without distinction. It is necessary that viable measures be undertaken that will guarantee the global control of TB. It is necessary, therefore, to know the state of the art available regarding the early diagnosis of tuberculosis, especially the most viable efficient methods, as an important measure for the purpose of control.

In sum we found that the means for tuberculosis control is the early diagnosis. The course of the problem is reversible as long as urgent measures are undertaken. In order to solve the problem it is necessary to treat the diagnosed cases in an adequate way, to investigate the symptomatic respiratory patients, prevent the disease among healthy people and protect those already infected (FREIRE, et al, 2007).

The diagnostic methods with little specification that ar e still in use, do not alter the control of the infection by the M. tuberculosis. For these reasons, the utilization of more specific and sensitive methods, as well as a greater understanding of the molecular and cellular mechanisms that regulate the interaction between the parasite and the host , might contribute to the efficient controla of the tuberculosis. (TEIXEIRA, et al, 2007).

Therefore, it is necessary that research be conducted with the idea to evaluate the impact that the different diagnositic methods in public health that propose the early and efficient detection of tuberculosis. Besides, the development of new technologies that are cheap and more sensitive to the diagnosis of tuberculosis, and that are able to provide better results than those conventional methods, is a priority for the control of tuberuculosis (SILVA, et al, 2007).

Currently,. the world public heath agencies are preoccupied with the recent H1N! pandemic; however it has been shown that tuberculosis has been the cause of death of more individuals than this flu strain. It is therefore pertinent to say that, besides the challenges of early TB detection, the quality of health series and the qualification of the professionals, it is important that tuberculosis be recognized worldwide as a public health calamity that affects the entire population without social distinction. It is important, therefore, that all possible measures be undertaken that will guarantee the control of TB incidence in the world.

CONCLUSION

Concomitantly with the increase of TB incidence, there have been considerable manual and automatic type, for the rapid diagnosis of the micobacterially affected. However, the techniques that use molecular and cellular tests for the diagnosis of TB, inspite of the advances, they need to be on and/or more sensitive. Therefore the access is more difficult because of the high cost and their higher complexity. For these reasons, the do not included in the contexts of the many developing countries that have high indices of TB cases, as in the case of Brasil.

Among other methods analyzed for the diagnosis of TB in this study, we evaluated the sputum baciloscopy as the priority and efficient method for the detection of the disease because not only is it efficient because of its quickness but also because of its cost (IGNOTTI, et al, 2007; BALDEVIANO, et al, 2007). It is interesting to note the realization of campaigns that value this diagnostic method, because many health workers and even TB patients do not value the test. Therefore, it is important that a multiprofessional team be present in the health units so as to expedite the baciloscopy exam and the culture in all symptomatic respiratory patients and their contacts.

Finally, we identified tuberculosis as a disease that needs to receive more public attention, given that it presents as a secular disease with high indices of new cases annually.

Even though many articles were read, we did not find any literature regarding the importance of the nurses´ work or her actions in the detection of TB cases in the communities. For this reason, we feel it is important that there be more incentive to the display of this study among the workers that act with the TB problem.

KEY WORDS: TUBERCULOSIS/DIAGNOSIS, BACILOSCOPY, NURSING

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ABSTRACT

Although tuberculosis is one of the oldest diseases afflicting humanity, it is not a disease of the past and now needs a new look. So the active pursuit of respiratory symptoms (SR), early diagnosis, completion of treatment and prevention of disease, are measures that need to be completed for the reduction and eventual eradication of TB. Our review aimed to find articles in the literature to refer to techniques used in diagnosis of the disease and assess what the most advantageous method for the detection of TB, seeking a faster result and concrete, since early diagnosis appears as an important measure for the control of TB transmission. The survey was conducted in VHL through descriptors: Tuberculosis and TB / sputum, and found 137 articles, of which only 12 were selected because they meet our criteria for inclusion. It has been found in the study that 50% of the literature cites the smear as the most used and effective in controlling the disease, PCR, in a ratio of 33.4% was mentioned in articles, the chest X-8, 3% and 8.3% refer to other types of diagnosis. Of all the methods analyzed to diagnose TB in this study, the sputum smear microscopy as the method of choice and effective method for detecting the disease, since it is efficient both for its rapidity and the cost.

KEY WORDS: tuberculosis/diagnosis, baciloscopy, nursing

RECHERCHE DE TECHNIQUES DE DIAGNOSTIQUES UTILISÉE EN DÉTECTION DE LA TB D'UNE FORME RAPIDE ET EFFICACE.

RÉSUMÉ

Malgré que La tuberculose soit une des maladies lês plus anciennes affligée a l'humanité, elle n'est pás une maladie du passe et aujourd'hui a besoin d'um nouveau regard. Pour cela la recherche active de symptomes respiratoires(SR), Le diagnostique precoce,Le bom suivis Du traitement, et La prévention de la maladie sont dês mesures qui doivent être suivies et appliquées pour La diminution et La future éradication de La maladie.Notre révision a eu pour objectif de rechercher dans La litérature articles qui recherchent les techniques de diagnostique les plus utilisées, et évaluer quelle est La méthode la plus avantageuse de détection de La TB, visant um résultat plus rapide et concret em tenant compte que Le diagnostique precoce apparait comme une mesure importante sur Le controle de La transmition de La tuberculose.La recherche fur rélisée à" La Biblioteque Vituelle de La santé" au travers de descriptifs:Tuberculose / dignostique et tubercilulose /toux Ont été trouvés 137 articles mais à peine 12 furent sélectionnés afin de répondre à nos critères d'inclusion. Il fut constaté lors de nos études que sur 50% de La litérature rxplorée cite La baciloscopie comme La méthode La plus utiliséeet La plus efficace pour Le controle de La maladie. La reaction em chaîne des polimerases, sur une proportion de 33,4 % furent mentionés lês articles: La rafiographiedu thorax à 8,3 % et 8,3% renvoient a d'autres types de diagnostiques entre toute lês methodes utilisées pour diagnostiquer La tuberculose Durant cette étude. Nous écaluons La basiloscopie de La toux comme prioritaire et efficace pour

La détection de La maladie. Em effet elle se montre efficace tant par sa rapidité comme son coûpt.
MOTS CLEFS: tuberculose/diagnostique:baciloscopie: soins infirmiers

TÉCNICAS DE DIAGNÓSTICO UTILIZADAS EN LA DETECCÍON DE LA TB DE FORMA RÁPIDA Y EFICIENTE: UNA REVISIÓN DE LA LITERATURA

RESUMO

Apesar de la tuberculosis ser una de las enfermedades más antiguas que afligem la humanidad, ella no es una enfermedad del pasado y hoy se necesita de una nueva mirada. Por eso la búsqueda activa del sintomático respiratorio (SR), el diagnóstico precoz, la finalización del tratamiento y la prevención de la enfermedad, son medidas que necesitan ser cumplidas para la disminuición y futura erradicación de la TB. Nuestra revisión tuvo como objetivo buscar en la literatura artículos que se referieron a las técnicas de diagnósticos de la enfermedad más utilizadas y evaluar que método traería más ventajas para la detección de la TB, teniendo como objetivo un resultado más rápido y concreto, ya que el diagnóstico precoz surge como una medida importante para el control de la transmisión de la TB. La búsqueda ha sido hecha en la BVS por medio de los descriptores: tuberculosis/diagnóstico y tuberculosis/esputo, siendo encontrados 137 artículos, pero sólo 12 fueron seleccionados por atender nuestros criterios de inclusión. En la pesquisa fue percebido que un 50% de la literatura buscada cita la baciloscopia como el método más utilizado y eficaz para el control de la enfermedad; el PCR, en un de 33,4%, ha sido referido en los artículos; la radiografia del tórax en 8,3%; y 8,3% se refieren a otros tipos de diagnóstico. Entre todos los métodos analisados para diagnosticar la TB, durante este estudio, evaluamos la baciloscopia del esputo como el método prioritario y eficaz para la detección de la enfermedad, pues se muestra eficiente tanto por la rapidez cuanto por el costo.
PALAVRAS-CLAVE: tuberculosis/diagnóstico; baciloscopia; enfermería.

TÉCNICAS DE DIAGNÓSTICO UTILIZADAS NA DETECÇÃO DA TB DE FORMA RÁPIDA E EFICAZ: UMA REVISÃO DA LITERATURA

RESUMO

Apesar de a tuberculose ser uma das doenças mais antigas que afligem a humanidade, ela não é uma doença do passado e hoje necessita de um novo olhar. Por isso a busca ativa do sintomático respiratório (SR), o diagnóstico precoce, a finalização do tratamento e a prevenção da doença, são medidas que necessitam ser cumpridas para a diminuição e a futura erradicação da TB. Nossa revisão teve como objetivo buscar artigos na literatura que remetem às técnicas mais utilizadas de diagnósticos da doença e avaliar qual o método mais vantajoso para a detecção da TB, visando um resultado mais rápido e concreto, visto que o diagnóstico precoce aparece como uma medida importante para o controle da transmissão da TB. A pesquisa foi realizada na BVS por meio dos descritores: tuberculose/diagnóstico e tuberculose/escarro, sendo encontrados 137 artigos, dos quais apenas 12 foram selecionados por atenderem nossos critérios de inclusão. Foi constatado no estudo que 50% da literatura pesquisada cita a baciloscopia como o método mais utilizado e eficaz para o controle da doença; o PCR, em uma proporção de 33,4%, foi referido nos artigos; a radiografia de tórax em 8,3%; e 8,3% remetem a outros tipos de diagnóstico. Dentre todos os métodos analisados para diagnosticar a TB, durante esse estudo, avaliamos a baciloscopia de escarro como o método prioritário e eficaz para a detecção da doença, pois se mostra eficiente tanto pela rapidez quanto pelo custo.
PALAVRAS-CHAVE: tuberculose/diagnóstico; baciloscopia; enfermagem.

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