17 - PULMONARY AUSCULTATION – A MULTIPROFESSIONAL ANALYSIS

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INTRODUCTION

According to Auada, Vitória and Barros (1998), the pulmonary auscultation is a functional method performed with a stethoscope that allows normal or pathological hearing noises, which are produced inside the respiratory tract by the breathing inspiration and expiration areas. It is used to evaluate the patient's condition, and the therapy effects.

At the beginning of 19th century, the diagnosis of the auscultation was almost useless, because there was discomfort for doctors and patients, and with the difficulty caused by female patients in their breasts, increasing the infection risks, because in this period of time, the pulmonary auscultation was performed by chest percussion, by the vibrations transmitted through the bronchopulmonary system until the chest, and the direct auscultation, by putting the ears on the person's chest. (Basso et al., 2008).

As the terminology of pulmonary auscultation was confusing and imprecise, in 1985 the search for pulmonary sounds' names resulted in the "International Symposium in Lung Sounds," which made experts from various countries get together to standardize and improve the classification of pulmonary auscultation, with the aim that all health professionals knew how to report the diagnosis better and easily (STASKZO et al., 2006).

Over the years the terminology used in the auscultation was translated into several languages and many classifications had been used, making the pulmonary sounds confused, pulmonary auscultation becomes a simple, cheap and effective, besides being essential for the indication of other complementary exams (CARVALHO; SOUZA, 2007).

Being a semiological basic method in pulmonology, pulmonary auscultation in some research has shown inaccurate diagnoses. There is the diagnosis of adventitious sounds in pulmonary disease or when there is pulmonary sounds changed in its frequency, amplitude and intensity compared to the normal sound, this way, it becomes subjective making the method undervalued (CARVALHO; SOUZA, 2007).

Pulmonary auscultation is important to identify and to understand the patients' pulmonary sounds, but the classification and the lack of literature consensus, result in understanding and identifying many times the sounds to mistaken denominations (TARANTINO, 2002).

According to Basso et al. (2008), pulmonary auscultation is one of the most important tools available both in specific evaluation, analysis of the patient's evolution with pulmonary dysfunction, and in analyzing a treatment session of bronchopulmonary clearance (chest clearance physiotherapy).

For any professional in health care area to get a good pulmonary auscultation is necessary to have a completely good quality stethoscope, proper to the examiner's normal hearing, standardization of examination and knowledge of respiratory sounds that are called normal noises, like those ones who hear a murmuring sound, whose inspiration is longer and sharper, and in expiration is shorter, weaker and less clear. The sounds of normal breathing result of vibrations caused by the current air as it goes through the tube and alveolar systems. The adventitious noises appear when the respiratory sounds are not audible under normal conditions, it may be the source of bronchial tree, alveoli or pleural space (AUADA; VICTORIA and BARROS, 1998).

In 1997 the American Thoracic Society (ATS) had a pattern to recognize the pulmonary sounds into two categories: the normal respiratory sounds and the adventitious sounds. Among the normal respiratory noises, the sounds were named as tracheal sound, vesicular murmur and bronchial respiratory sounds. Among adventitious sounds, they were classified by snoring, wheezing, crepitated and sub crepitated rales, and pleural rub (POSTIAUX, 2000).

METHODOLOGY

It was made a descriptive study, based on bibliographic research published from January 1980 to December 2008. It was selected periodic national and international articles available in databases of PubMed, LILACS (Latin American and Caribbean Health Science), SciELO (Scientific Electronic Library Online) and CAPES directory and book quotes from Faculdade Assis Guracz FAG, in Cascavel city, Parana state, during the period of August until October 2009. The collection of data was performed with two objectives. First of all, it was made the selection of articles to study. The second objective was analyzed without considering the title and the abstract of all the articles published to select the potential ones, in other words, articles about pulmonary auscultation, and yet, it was obtained the total number of articles and the original number articles. It had been used the following keywords to search for articles of interest: pulmonary auscultation, pulmonary sounds and quotes from books on health area. The articles selected for the research had inclusion criteria such as: to present a title "pulmonary auscultation", sequence of points of auscultation, pulmonary auscultation diagnosis, text in English and Portuguese being available in electronic format and books that were available in the College Library Assis Gurgacz - FAG for the research. It was found 26 articles available to analyze, which were included 08 articles and 03 book chapters fit in the research criteria. We excluded articles that did not fit the inclusion criteria.

RESULTS AND DISCUSSION

Pulmonary auscultation is an unpredictable part in the chest history and in the diagnosis of pulmonary diseases. To achieve this such aim, is important to identify and understand the breathing sounds. Several authors describe pulmonary auscultation as an important instrument from semiology in the patient's research; these authors also claim that there are differences in sounds heard by many professionals who use this instrument as a diagnosis method.

According to Auada, Victoria and Barros (1998), pulmonary sounds nomenclature becomes confusing and inaccurate for the experts in health care area. Since 1985 there is a work on terminology standardization, based on physical parameters such as frequency, duration and sound amplitudes.

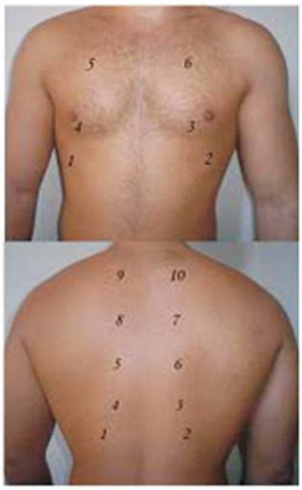
The invention of the stethoscope by Lannenc allowed a diagnosis of pleuropulmonary diseases. This method is still used by experts in health care area, even with technological advances (STASZKO et al., 2006).

With all the invention of technology, with more accurate imaging exams, the pulmonary auscultation becomes a way of low-cost and practical, being essential part to discover pulmonary diseases. Many times the clinical diagnosis remains unclear, complicating the identification and understanding of pulmonary sounds for experts in health care area. (BASS0 et al., 2008).

Inadequate use and poor knowledge in translated new terms describing pulmonary sounds about adventitious noises on pulmonary auscultation, becomes responsible for the lack of this nomenclature standardization, making it difficult to communicate about medical education and practices.

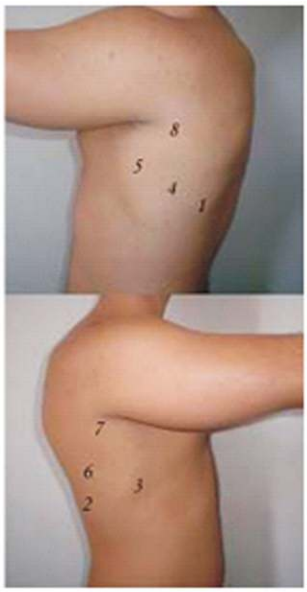
Pulmonary auscultation terminology becomes confused, contributing to pulmonary function devaluations. The importance of pulmonary auscultation standardization is its contribution to understand better the medical education, and its further spread in daily practice. The aim of standard terminology tends to prioritize the standardization of pulmonary interpretation sounds, as it happens in the cardiac auscultation, which relates their findings to physiological and hemodynamic patterns (JANSEN et al., 2006).

Picture 1. Points of Pulmonary auscultation.



SOURCE: Carvalho and Souza, 2007.

Picture 2. Points of pulmonary auscultation from the chest's lateral faces



SOUCER: Carvalho and Souza, 2007.

For the evaluation of respiratory disease, it is necessary that the patient stay sited down, if he does not stay in this position, it would be put in another position which will be possible to do the auscultation with no interruption. The patient must be with his chest naked for the perfection stethoscope coupling. Give instructions for the patient to breathe a little deeper with his mouth opened, on the lateral auscultation of his chest. Ask him to flex his shoulder for better access, if it is possible, auscultation must be performed in horizontal lines. Evaluate at least two respiratory cycles in each position from the stethoscope. Avoid putting the stethoscope on the scapula, jag bones or the breasts. Compare the intensity, sharpness and quality from respiratory sounds between right and left lungs and each part must be examined carefully (CARVALHO; SOUZA, 2007). (Figures 1 and 2).

The stethoscope presents small limitations during the auscultation of respiratory sounds, due to the limitations from auricular human system to differ stereo headset sounds (POLART; GÜLER, 2004).

According Pasterkamp, Daien and Carson (1989), after the year 1950, equipment and techniques have being developed in order to define respiratory sounds associated with each respiratory disease, based on an acoustic analysis with graphic images and computer relieves.

To diagnose lung disease in practical evaluation, it is needed to have adventitious sounds or when the pulmonary sounds have changed their frequency, amplitude and intensity compared to what is considered normal for age and conditions. For these variables, the evaluation of pulmonary sounds is considered to be subjective. This subjectivity and uncertainty

eventually lead to methodological underestimation (RIELL; NOHAMA; MAIA, 2007).

During the pulmonary auscultation process, it is bound to happen possible mistakes in its assessment caused by a very superficial and arrhythmic breathing, breathing by the noose, swallowing noises, subcutaneous emphysema, crackles joints, friction from clothes and thoracic phaneros, the examiner's hearing disorders and the stethoscope flaws. (CARVALHO; SOUZA, 2007).

The importance of pulmonary auscultation is evident since the stethoscope's invention until the currently time in many published scientific articles. However, there is a difficulty in terms of the pulmonary auscultation terminology usage. This fact has inspired experts from several countries to simplify, to update and to adapt new pulmonary auscultation concepts (JANSEN et al., 2006).

The wrong used terms to describe adventitious sounds in pulmonary auscultation, especially the intermittent sounds, remains a common and widespread phenomenon in Brazilian medical publications.

According to Tarantino (2002), in some patients the intensity of bronchial obstruction is unnoticeable, underestimating dangers of the disease, And for this diagnostic, pulmonary auscultation has not been shown itself to be an accurate instrument to detect the gravity of obstructive disorders.

The International Lung Sounds Association (ILSA) was released in 1987, with the aim that all diagnoses obtained by pulmonary auscultation must be framed in categories of regular and irregular noises with its subdivisions: wheezing and rhonchus and thin and thick ratings. Many factors stay in the incorrect nomenclature usage of standardized pulmonary auscultation by ILSA in Brazil, that is, the lack of appearance from ILSA nomenclature, the unawareness advantages from this new nomenclature and the nothingness about how important it is to standard the description of pulmonary auscultation terms for the practice of professionals' health care (Staszko et al., 2006).

CONCLUSION

After being published by Laennec in 1819, the pulmonary auscultation had several

names that made the classification of pulmonary sounds confusing and inaccurate. These factors caused difficulties in nomenclature usage, as well as its daily usage by professionals and students in health care area.

This research does not provide any data to explain the causes of undisciplined factors that may be responsible for pulmonary auscultation difficulties and by professionals in healthcare areas, as insufficient points shown to be surveyed, the unawareness advantages from this new nomenclature and lack of description standardization of pulmonary auscultation terms for medical practice, physiotherapists and nurses.

For all that, technological advances have contributed to analyze the acoustic and digital sounds, making the auscultation method more and more practical and objective, helping to understand and teach pulmonary sounds. However, the conventional pulmonary auscultation is still an indispensable clinical practice, for its low cost, noninvasive, accessible in any situation, and very important for the identification of diseases and in patients' evaluation made by professionals in health care areas.

But the lack of consensus in classified respiratory sounds makes a learning disability in experts and even in some students in health care area, creating an impossibility to correct and effective diagnosis. With this, it would be ideal to have simplest terms, stating the pulmonary disease in a clear and objective way, making it possible to take an evaluation and a diagnosis, together with the therapeutic approach used for the respiratory therapist or another expert in health care area who uses pulmonary auscultation as an evaluation.

REFERÊNCIAS

AUADA, M. P.; VITÓRIA, G. L.; BARROS, J. A. A confusa nomenclatura da ausculta pulmonar brasileira. **Jornal de Pneumologia [periódico on line]** 1998. Disponível em <
http://www.jornaldepneumologia.com.br/PDF/1998_24_3_7_portugues.pdf> Acesso em: 10 de set. 2009.

BASSO, R. P. et al. AUSCULTA PULMONAR: uma perspectiva teórica. **Fisioterapia em Movimento [periódico on line]** 2008. Disponível em <http://www2.pucpr.br/reol/index.php/RFM?dd1=2455&dd99=view> Acesso em: 12 de out. 2009

CARVALHO, V. O.; SOUZA, G. E. C. O estetoscópio e os sons pulmonares: uma revisão da literatura. **LILACS [periódico on line]** 2007. Disponível em <http://bases.bireme.br/cgi
-bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&src=google&base=LILACS&lang=p&nextAction=lnk&exprSearch=498945&indexSearch=ID> Acesso em: 25 de set. 2009.

EMMERICH, J. C. **Monitorização respiratória:** fundamentos. 2. ed. Rio de Janeiro: Revinter, 2001.

JANSEN, J. M. et al. Ausculta pulmonar e diagnóstico de obstrução brônquica. **LILACS [periódico on line]** 2006. Disponível em < http://bases.bireme.br/cgi
-bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&src=google&base=ADOLEC&lang=p&nextAction=lnk&exprSearch=2477&indexSearch=ID> Acesso em: 22 de out. 2009

PASTERKAMP, H; CARSON, C; DAIEN, D. O. Y. Digital respirosonography. New images of lung sounds. **J . CHEST [periódico on line] 1989.** Disponível em < http://chestjournal.chestpubs.org/content/96/6/1405.abstract> Acesso em: 19 de set. 2009.

POLAT, H; GÜLER, I. A simple computer-based measurement and analysis system of pulmonary auscultation sounds. **Journal of Medical Systems [periódico on line] 2004**. Disponível em
<http://www.springerlink.com/content/l4745t28q35v7057/> Acesso em: 14 de out. 2009.

POSTIAUX, G. A. Ausculta pulmonar da criança. In: POSTIAUX, G. A. **Fisioterapia respiratória pediátrica:** o tratamento guiado por ausculta pulmonar. 2. ed. Porto Alegre: Artmed, 2000.

RIELLA, R. J; NOHAMA, P; MAIA, E. J. M. Nova metodologia para isolar sons adventícios em sons pulmonares. **SpringerLink [periódico on line]** 2007. Disponível em
<http://www.springerlink.com/content/g358852r35174050/fulltext.pdf?page=1> Acesso em: 15 de set. 2009.

STASZKO, K. F. et al. Terminologia da ausculta pulmonar utilizada em publicações médicas brasileiras, no período de janeiro de 1980 a dezembro de 2003.

Scielo 2006. Disponível em <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806
-37132006000500005&lng=pt&nrm=iso&tlng=pt> Acesso em: 05 de out. 2009.

TARANTINO, A. B. **Doenças Pulmonares**. 5. ed. Rio de Janeiro: Guanabara Koogan, 2002.

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PULMONARU AUSCULTATION – A MULTIPROFESSIONAL ANALYSIS

SUMMARY:

Pulmonary auscultation is an important evaluation instrument of pulmonary functions; it presents the advantage of being a low cost instrument and of easy applicability. Generally auscultation sounds differ from occupations that use it as diagnostic technique. Objective: to make a bibliography review in health area to see if it shows any differences in pulmonary auscultation between experts in health care area. Methodology: it was made a descriptive study, based on bibliography data of studies published from January 1980 to December 2008. It was selected national and international periodic articles, available in the databases of PubMed, LILACS (Latin American and Caribbean Health Sciences), SciELO (Scientific Electronic Library Online), the directory CAPES and quotes from books obtained at Faculdade Assis Gurgacz FAG, in Cascavel city, Parana state, during the period from August to October 2009. The data collection had aimed to select scientific articles analyzing them not irrespective of its title and abstract from all articles published to select the potential articles. The articles selected for the survey had as inclusion criteria: to present title "pulmonary auscultation", sequence points from auscultation, pulmonary auscultation diagnosis, English and Portuguese essay and be available in electronic format, books, besides including one of the keywords in the research. It was found 26 items entirety available. It was included 08 articles and 03 chapters' book that fit the inclusion criteria. Results: the lack of translation knowledge of new terms describing pulmonary sounds about adventitious noises end up becoming responsible for the lack of nomenclature standardization, making it difficult to communicate in medical practice and education. Conclusion: The inappropriate terms used in the evaluation from pulmonary auscultation, keeps being results from imprecise evaluation among professionals in health area.

KEY-WORDS: pulmonary auscultation, pulmonary sounds and auscultation of pulmonary sounds.

AUSCULTE PULMONAIRE – UNE ANALYSE MULTIPROFISSIONAL

SOMMAIRE:

L'ausculte pulmonaire est un important instrument d'évaluation de la fonction pulmonaire. Présente l'avantage d'être un instrument de bas coût, et facile d'application. Souvent les sons auscultés différem entre les professions qu'utilisam comme technique de diagnostic. Objective: Réaliser une révision bibliographique dans l'aire de la santé pour vérifier s'il y a différence d´ausculte pulmonaire entre professionnels de l'aire de la santé Méthodologie: Un étude descriptif a été réalisé fondé dans l' élévation bibliographique des travails publiés entre janvier de 1980 et décembre de 2008. Ont été selectioné articles périodiques nationales et internationales, desponibles dans les bases de données PubMed, LILACS (Littérature Latine-Américain et des Caraïbes en Science de la santé), SCIELO (Scientific Electronic Library Online), dans le directoire du CAPES et citations en livres obtenues na FAG, ille de Cascavel, dans l´état du Paraná, durant le période d'août a octobre de 2009. La collecte de dés avoir comme objectifs selecionér articles scientifique en analysant indépenanteman du titre et résumé de tout lês articles publiés pour selecioner lês articles potentiels Les articles qu'ils ont été sélectionnés pour la rechercheils ont eu comme critère d'inclusion: presénter titre “ausculte pulmonaire”. Séquence de points de l'ausculte, diagnostic de la ausculte pulmonaire, texte dans portugais et angles et etre desponible dans format eletronique et livres, au dela de constatar une des paroles clef dans la recherche. Sont allés inclus 08 chapitrês de livres que qui s'encadrent nos criterium d'inclusion. Résultats: la peu de connaissance de la traduction de nouveaux termes en décrivant les sons pulmonaires sur les bruit adventices ils se finissent en devenant responsable pour la faute de la padronisation de cette nomenclature difficultando la communication na pratique et enseignement medicales. Conclusion: L'utilisation inadéquate des termes de l'évaluation dans ausculte pulmonaire, continuent à en être des résultats d'évaluations inexactes entre les professionnels du secteur de la santé.

MOTS-CLÉS: ausculte pulmonaire, sons pulmonaire et sounding de sons pulmonaire

AUSCULTA PULMONAR – UN ANÁLISIS MULTIPROFESIONAL

RESUMEN:

La ausculta pulmonar es un importante instrumento de evaluación de la función pulmonar, pues presenta la ventaja de ser un instrumento de bajo costo y de fácil aplicabilidad. Muchas veces los sonidos de auscultados difieren entre las profesiones que utilizan como técnica de diagnóstico. Objetivo: realizar una revisión bibliográfica en el área de la salud para verificar si existe diferencia de la ausculta pulmonar entre profesionales del área de la salud. Metodología: fue realizado un estudio descriptivo, basado en levantamiento bibliográfico de trabajos publicados en el periodo de enero de 1980 a diciembre de 2008. Fueron seleccionados artículos de periódicos nacionales e internacionales, disponibles en la base de datos PubMed, LILACS (Literatura Latinoamericana y de Caribe en Ciencias de la Salud), SciELO (Scientific Electronic Library Online), en el directorio CAPES y citaciones de libros obtenidos en la Facultad Assis Gurgacz/FAG, en la ciudad de Cascavel, en la provincia Paraná, durante el periodo de Agosto a Octubre de 2009. La coleta de datos tuvo como objetivo seleccionar artículos científicos analizando independientemente del título y del resumen de todos los artículos publicados, para seleccionar los artículos potenciales. Los artículos que fueron seleccionados para la investigación tuvieron como criterios de inclusión: presentar título: “ausculta pulmonar”, secuencia de puntos de ausculta, diagnostico de la ausculta pulmonar, texto en portugués e inglés y estar disponible en el formato electrónico y en libros, además de constar una de las palabras clave en la búsqueda. Fueron encontrados 26 artículos disponibles en su totalidad. Fueron incluidos 08 artículos y 03 capítulos de libros que se encuadraron en los criterios de inclusión. Resultados: el poco conocimiento de la traducción de nuevos términos describiendo los sonidos pulmonares sobre los ruidos adventicios, se acaban tornando responsables por la falta de estandarización de esta nomenclatura, dificultando la comunicación en la práctica y enseñanza médica. Conclusión: El uso inadecuado de los términos de evaluación en la ausculta pulmonar siguen siendo resultados de evaluaciones imprecisas entre los profesionales del área de la salud.

PALABRAS CLAVE: Ausculta pulmonar, sonidos pulmonares y auscultación de los sonidos pulmonares

AUSCULTA PULMONAR – UMA ANÁLISE MULTIPROFISSIONAL

RESUMO:

A ausculta pulmonar é um importante instrumento de avaliação da função pulmonar, apresenta a vantagem de ser um instrumento de baixo custo e de fácil aplicabilidade. Muitas vezes os sons auscultados diferem entre as profissões que utilizam como técnica de diagnóstico. Objetivo: realizar uma revisão bibliográfica na área da saúde para verificar se existe diferença da ausculta pulmonar entre profissionais da área da saúde. Metodologia: foi realizado um estudo descritivo, baseado em levantamento bibliográfico de trabalhos publicados no período de janeiro 1980 a dezembro de 2008. Foram selecionados artigos periódicos nacionais e internacionais, disponíveis nas bases de dados PubMed, LILACS (Literatura Latino-Americana e do Caribe em Ciências da Saúde), SciELO (Scientific Electronic Library Online) , no diretório CAPES e citações de livros obtidos na Faculdade Assis Gurgacz/FAG, na cidade de Cascavel, no estado do Paraná, durante o período de Agosto a Outubro de 2009. A coleta de dados teve como objetivos selecionar artigos científicos analisando independentemente do título e do resumo de todos os artigos publicados para selecionar os artigos potenciais. Os artigos que foram selecionados para a pesquisa tiveram como critérios de inclusão: apresentar título “ausculta pulmonar”, seqüência de pontos da ausculta, diagnóstico da ausculta pulmonar, texto em português e inglês e estar disponível no formato eletrônico e em livros, além de constar uma das palavras chave na busca. Foram encontrados 26 artigos disponíveis na íntegra. Foram inclusos 08 artigos e 03 capítulos de livros que se enquadraram nos critérios de inclusão. Resultados: o pouco conhecimento da tradução de novos termos descrevendo os sons pulmonares sobre os ruídos adventícios, acabam-se tornando responsáveis pela falta de padronização desta nomenclatura, dificultando a comunicação na prática e ensino médicos. Conclusão: O uso inadequado dos termos da avaliação na ausculta pulmonar continuam sendo resultados de avaliações imprecisas entre os profissionais da área da saúde.

PALAVRAS-CHAVE: ausculta pulmonar, sons pulmonares e auscultação dos sons pulmonares.

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