MYCOBACTERIUM TUBERCULOSIS (MTB) DETECTION USING ZIELH-NEELSON (Z-N) STAIN TO IDENTIFY ACID FAST BACILLI.

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SOURCE

Mohammed SS Ansari, Mohammed Hidayath, Waseem Kawoosa, and Arif Ghouse A comparative study of sputum induction in suspected pulmonary tuberculosis, Department of Pulmonary and Critical Care Medicine, Mahavir Hospital and Research Centre,10-1-1,Mahavir Marg, AC Guards, Hyderabad 500004, Andhra Pradesh, India. Volume 5, pages 83-90, 2013, Indexed by Scopus (Elsevier), Co-Publisher: OMICS Group, www.omicsonline.org.

KEYWORDS:-

Tuberculosis, Sputum, Pulmonary induction, Nebulisation, Mahavir Hospital, Acid Fast Bacilli

INTRODUCTION

The review of the article identifies Tuberculosis (TB) as an infectious disease which is known worldwide with reference to India being the second largest populated country in the world. Secondly it identifies Acid Fast Bacilli using Zielh-Neelson (Z-N) staining in a clinical laboratory for the identification of TB using the best possible method to obtain secretions from the lower airways of patients as compared to bacterial identification which is normally used.

Various diagnostic methods and materials used to evaluate the article authority and accuracy will be outlined which includes sample study, period of examination, ethical practices prior starting the study, study protocol, study design, inclusion and exclusion criteria carried out systematically under sterile conditions.

Analysis of AFB smear will be explained and presented using tables which are instrumental in the identification of other diagnostic methods like sputum smear microscopy and X-ray method. Conclusion of the study will be based on the safest method for identification of the organism, which is cost effective and has the potential to offer treatment to the suspected patients. On the other hand, the article has obtained its objectivity and coverage by using various ethical committees and by declaring no conflict of interest among the authors who have contributed equally to the study.

Finally, the evaluation of the article will be carried through the use of well designed and précised questionnaires, a case sheet proforma plus relevant referees attached to the article to aid more understanding.

REVIEW OF LITERATURE

ARTICLE SUMMARY

The aim of the article review is to carry out a comparative study of sputum induction in suspected pulmonary tuberculosis in India. The recommendation made by WHO in the detection of Acid Fast Bacilli is the initial approach to the diagnosis of TB. A comparison done between three groups, each consisting of forty TB patients has given the article its authority in the identification of the organism among diverse number of people. The estimation of article accuracy has been demonstrated by the use of different study protocol i.e. nebulised levasolbutamol, 0.9% normal saline & 3% hypertonic saline plus a detailed history and thorough clinical examination of the patient.

A well designed questionnaire was used to collect information on respiratory symptoms and to identify patients who are suspected of pulmonary TB. Nebulisation as a collection method was chosen due to its safety on children, postprandial, cost effectiveness and less time consuming.

Depending on hydration level of the patient, samples were collected under sterile conditions. Analysis of sputum was carried out under sterile conditions and to prevent contamination of the sample and materials were sterilized and disinfected over night.

The results were calculated, tabled and ranked in percentages showing the strengths and limitations of the three smear gradings. Sputum induction has been used for studying various diseases and also for the development of standardized procedure which improve the quality and reproducibility of the sputum sample.

ARTICLE STRUCTURE

The introduction of the article with an abstract, which is short and précised to the point motivates the reader and makes it easy to understand the entire content of the article within a short period of time.

The justification and importance of the article is well explained in simple scientific terms highlighting the need for the comparative study of sputum.

The article comprises of both long and short paragraphs which captures more details, provides more relevant information and can serve as references of the study. The headings and subheadings did actually reflect the informational content covered and provide a clear practical identification of the findings. The development of the paragraphs are systematic hence provides a flow of information linking paragraphs with the headings, subheadings and the titles and eventually with the conclusion.

The collection of information from reliable primary sources "Mahavir Hospital and Research center, WHO and the Revised National Tuberculosis Control Programme makes the article more reliable. The author also cited relevant information and references from the secondary sources making the article objective in its judgment. The findings were accurate based on the comparison between different solutions, calculated and measured giving fair and actual results.

The conclusion provides various current and future methods for the investigations giving their advantages and limitations. Clearing of the institutional ethics before carrying out the project and declaration of no conflict by the authors contributes to its compliance. Linking the article to different authors and references enable the reader to understand the publication in detail and the provision of the case sheet proforma together with the questionnaire are methods of evaluating the article.

ARTICLE CRITIQUE

AUTHORITY

The Department of Pulmonary and Critical Care Medicine, Mahavir Hospital and Research Center in Hyderabad, Andhra Pradesh India where the research was conducted is a reputable organization which has been acknowledged for the provision of adequate facilities. The article objectivity is outlined by the declaration of no conflicts of interest by the authors plus the clearance of the institutional ethics committee prior carrying out the research. The author's equal contributions and support from the World Health Organization (WHO) plus the Revised National Tuberculosis Control programme is accredit to the organization.

ACCURACY

The author demonstrated the best accurate methods of obtaining the right results using the latest methods and techniques, for obtaining secretions from the lower airways using the study sample from three groups consisting of forty TB suspected patients within one year duration.

The validation of the committee prior the study is part of quality standard for the publication plus collection of specimen from diverse number of people(gender, age and state condition of the patient) used for analysis.

Despite the entire process being carried out under sterile condition, including labeling, sterilization and disinfection of equipments and materials, the method has low sensitivity and has little value in patients who cannot produce sputum spontaneously.

CURRENCY

The article is current since it was published on the 5th August 2013 whereas it was accepted for publication on the 27th July 2013.
The current study involves diagnosis of HIV-Seronegative patients using AFB test and induced sputum test using normal saline, hypertonic saline in the chest symptomatic i.e. in young children, postprandial & OPD(out patients procedure departments) procedures with no to minimal adverse effects.

Different examinations being carried out for diagnosis of patients using the latest methods of analysis like the CVS/CNS test for respiratory system. The need of sputum induction to move from the research laboratory to the clinic and Beta2 –Agonists which enhances mucocilliary transport in healthy subjects is useful in improving quality microscopy.

RELEVANCE

The informational content of the article is relevant for the current research on TB and HIV related complexes. The aim of the research is for the detection and treatment of estimated TB cases in the community including HIV related cases.

The article explains the best procedure of obtaining secretions from the lower airways of individuals for early diagnosis. It further identified the safest method of collecting sputum from children, postprandial and OPD in a cost effective manner, within the shortest time. The different methods and materials used in sputum induction were compared.

A comparative study was also conducted amongst different age groups, gender and patients showing different signs and symptoms. The use of a case sheet proforma (annexure1) and the questionnaire in the study was designed to allow easy collection of information on respiratory symptoms and identified patients who were suspected of “pulmonary TB” both with dry cough and scanty sputum and this makes the article relevant for the current research work and students who are actually carrying out research on TB as an infectious disease.

OBJECTIVITY

WHO recommends the detection of AFB and also point out the benefits and limitations of using such procedures during analysis. The study method consist of three groups of forty TB suspected patients from different diverse groups in terms of age, condition of the patients i.e. those who have taken anti-tuberculosis treatment, other causes like chest pain, cardiac and renal.

Taking consideration of patient hydration level the procedure used in sample collection gives the article its objectivity for example:

- First nebulised spot sample
- Next day early morning home collection sample and
- Second nebulised spot sample

STABILITY

The publication is stable as it describe the process as being advanced and non invasive research tool providing information about inflammatory events in the lower airways and has been used for studying various disease. The development of standardized methods for sputum induction has improved the quality and production of sputum sample however the best possible dose for sputum induction needs to be improved consistently by further studies.

ANALYSIS OF GRAPH / IMAGE / TABLE

(Not applicable)

CONCLUSION

The article has given a comprehensive overview on "a comparative study of sputum induction in suspected pulmonary tuberculosis". The relationship between the components part of the article is consistent. The informational content of the article is relevant for current research and the language used is simple, understanding and relevant for the scientific research. The scope on which the article was created and used is relevant for health interventions and offer future development in research. The author summarized both advantages and disadvantages of the article and provides the available recommendations for future research.

Contributions from various recognized bodies like the Revised National Tuberculosis Control Programme (RNTCP), the management of Mahavir Hospital and Research Center plus the recommendations from World Health Organization (WHO) provide the authenticity of the article.

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