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Health Notions, Volume 2 Number 1 (January 2018) ISSN 2580-4936 131 | Publisher: Humanistic Network for Science and Technology http://heanoti.com/index.php/hn RESEARCH ARTICLE URL of this article: http://heanoti.com/index.php/hn/article/view/hn20126 Identification of Aspergillus Sp. on Sputum Patient Suspect Tuberculosis at Salotungo Public Health Center of Soppeng Regency Nurlia Naim1(CA) 1(CA)Health Polytechnic of Ministry of Health at Makassar, Indonesia; ardi_wq@yahoo.co.id (Corresponding Author) ABSTRACT Fungal infections not only occur in the sidelines of the hands, feet or skin but can also infect organs with mycotoxins produced and are carcinogenic.

Aspergillus sp can spread through the air and is an opportunistic infection after the lung perforation due to Mycobacterium tuberculosis, and if not handled properly can cause death. The purpose of this research is to know the existence of Aspergilus sp on sputum patient suspect tuberculosis at Salotungo Public Health Center of Soppeng Regency.

The type of this research is observational laboratory with culture and microscopic method. The sample selection was done by accidental sampling technique. Based on the results of this study it was concluded that Aspergilus sp found in suspect tuberculosis patients in Salotungo Public Health Center of Soppeng District, so it is advisable to conduct a deep identification process to determine the specific fungal species that infect tuberculosis patients Keywords: Aspergillus sp, Sputum, Tuberculosis INTRODUCTION Fungal infections occur not only on the sidelines of the feet, hands, or skin but may also infect the eyes, ears, airways, lungs, brain, stomach, and other organs. Therefore fungal infections should not be ignored as they may be deadly.

In the United States there are cases of women who die of heart failure without known

cause. After being autopsied, it turns out that her heart is covered by Candida(1). Systemic fungal infections in humans became a topic in a symposium and panel discussions organized by the Indonesian Society for Human Mathematics and Animal Societies (PMKI) in collaboration with the Faculty of Medicine, University of Indonesia.

The speakers and doctors of various skills agree that systemic fungal infections that are not handled will be fatal, can lead to disability and even death(2). Fungus can worsen asthma, especially for adults who suffer from this problem for years, and can cause allergies, sinusitis for vulnerable individuals. Fungus can also reach the throat cavity that causes tuberculosis, throat bleeding, and various diseases of plants and animals(3).

One of the diseases is bronchiectasis, there can be enlargement of the bronchus of medium size, but small bronchus that is under it often form scar tissue and narrowed. Sometimes bronchiectasis occurs in larger bronchials, as occurs in allergic bronchopulmonary aspergillosis patients (a condition caused by an immunological response to Aspergillus). Patients with bronchiectasis can be diagnosed through chest x-ray, CT scan, serum immuno globulin analysis, serum presipitin and sputum culture(4).

Toxins in the fungus may also infect the lungs, as in Aspergillus fumingatus, Aspergillus favus, Candida albicans, Criptococcus neoformans, Histoplasma capsulatum and Blastomyces dermatitis. Fungal infections in the lungs are mostly secondary infections after pulmonary tuberculosis, with symptoms such as fever, cough with phlegm, coughing of blood, shortness of breath(5). Toxic fungi commonly known as mycotoxins are produced by many types of fungi, commonly included in the species of Aspergillus, Penicillium and Fusarium.

Micotoxin is carcinogenic, which can stimulate the occurrence of symptoms or the process of cancer(2). Aspergillus is a very common type of fungus, spreading through the air and often found in basements, flower pots, compost, computers, or under a spice container. Lethal infections can occur if the fungus attacks the lungs and respiratory tract, although it can also spread to other organs such as the brain, and even spread to other individuals or patients around it, if transmission occurs in the hospital. The disease is difficult to treat.

One of the 25 patients who died at a hospital in Europe was due to the disease. Patients with weakened immune systems, Health Notions, Volume 2 Number 1 (January 2018) ISSN 2580-4936 132 | Publisher: Humanistic Network for Science and Technology such as new organs undergoing organ transplantation, AIDS or being on steroid therapy are also frequently attacked by pneumonia and sinusitis caused by Aspergillus(3).

From the above description, it is necessary to conduct research on the presence of Aspergillus sp in sputum from suspected tuberculosis patients in Salotungo health center. METHODS The research methods applied in this study are presented briefly in Table 1. Table 1. Research methods Type of research Observational laboratory Sample Patients suspected TBC who came to visit at Salotungo Health Center, Soppeng District, South Sulawesi Province, Indonesia.

Sampling Accidental sampling Location Salotungo Health Center Laboratory and Laboratory of Health Analyst Department, Health Polytechnic of Ministry of Health at Makassar. Time December 2016 to January 2017 Data collection Examination of the presence of Aspergillus sp in sputum, using the sputum culture method Data analysis Descriptive statistics RESULTS In this research, there were 9 people as sample.

First examination of acid-fast bacillus (AFB) with Ziehl Nelseen staining to see the existence of Micobacterium tuberculosis, also to determine the possibility of fungus. The results of examination for the sample coded 01 are AFB +3 and hypha (+); the results for the coded samples 02, 03, 04, 05, 06, 07 and 08 are AFB (-) and hypha (+); the results for the sample coded 09 are smear (-) and hypha (-).

Furthermore, a direct examination was done using a microscope with 40x magnification which had previously been spilled with 10% KOH and Blue Parker added to see the spores, hyphae and so on. The results for the coded samples 02, 05 and 09 are (-); while the results for the coded samples 01, 03, 04, 06, 07 and 08 are (+) hyphae and spores.

Then do the identification through culture using saboraud media. The growing colony was taken and added with 0.9% NaCl, covered with a glass deck and examined using a microscope with 40x magnification. Hasill for the coded samples 01, 02, 03, 04, 05, 06, 07 and 08 were positive Aspergillus Sp and the result for the sample coded 09 was negative Aspergillus Sp.

Table 1. Results of staining and sputum culture DISCUSSION This study aimed to determine the presence of Aspergillus sp in a suspected tuberculosis sputum or a verification test from previous research which states that Aspergillus sp can infect the lungs and cause abnormalities, is an opportunistic infection after pulmonary tuberculosis.

Of the 9 examinations there are 8 examinations with positive results obtained Aspergillus sp and 1 examination with the results of negative Aspergillus sp. From the literature study it has been found that about 200,000 species of fungi are in this nature, but the pathogenic to humans is about 100,000 species. To ensure its survival, fungi

require habitats with high humidity and available oxygen and organic materials.

Most of the fungus lives from dead or decaying organic Sample Ziehl Nelseen Stain with 10% KOH + Blue Paker Sputum cultures (Aspergilus sp) Another fungus AFB Fungus 01 +3 + hypha + Aspergillus +/ pos Aspergillus 02 Negative + hypha Negative +/ pos Aspergillus 03 Negative + hypha + Spores +/ pos Aspergillus Penicillium notatum 04 Negative + hypha + Spores +/ pos Aspergillus 05 Negative + hypha Negative +/ pos Aspergillus 06 Negative + hypha + hypha +/ pos Aspergillus 07 Negative + hypha + hypha +/ pos Aspergillus 08 Negative + hypha + Aspergillus +/ pos Aspergillus 09 Negative Negative Negative +/ pos Aspergillus Health Notions, Volume 2 Number 1 (January 2018) ISSN 2580-4936 133 | Publisher: Humanistic Network for Science and Technology matter, but some live on the tissues of living organisms such as plants, animals and even humans.

Fungi that live on human tissue are usually found on the surface of the skin (superficial), under the skin (sub cutaneous) and in the internal organs (profunda). Fungi are opportunistic means easily enter the body of a person affected by certain diseases and can cause abnormalities. Mechanisms of fungal infections generally occur when humans are in a humid environment and high temperatures.

Indonesia is a potential area for fungus transmission since it is supported by a tropical climate that has good moisture for fungi growth. Aspergillus is a very common mushroom, easy to spread through the air, often found in basements, compost, in flower pots, kitchen spice containers, or on onions, corn, hazelnut, rice and so on. Aspergillus sp may be allergenic or pathogenic. As an allergen, Aspergillus causes local allergic reactions such as asthma symptoms.

As a pathogen, Aspergillus can cause primary or secondary infection. The disease is caused by predisposing factors, in which the abnormality may be local and cause an abscess or as an aspergilloma that occupies the cavity as a result of tuberculosis (caverna) or enlargement of the bronchial cavity (bronchiectasis)(4).

The Aspergillus species can be attributed to a broad spectrum of diseases affecting humans. Aspergillus colonization and exposure to normal hosts may lead to allergic diseases such as asthma to ABPA (Allergic Broncopulmonary Aspergillosis). Aspergilloma can develop in the paranasal sinus or lung cavity.

Invasive Aspergillosis (IA) is a major infection in patients with impaired immune function, but some infections may also be a chronic disease such as in diabetics, cancer, and alcohol users. IA also develops in patients with postoperative complications or

superinfection due to antibiotic therapy and catheter use. Infection will be rapid at exposure to Aspergillus conidia in large quantities.

Aspergillus fumingatus is the cause of saprophytic, alllergic, invasive disease, and others. Although Aspergillus fumingatus is a major aetiology of ABPA, but other species such as Aspergillus terreus, Aspergillus flavus, Aspergillus nidulans, Aspergillus oryzae, and Aspergillus niger are also associated with this disease. Some of the diseases included in aspergillosis include: a.

Aspergilloma is a fungus ball that is a saprophytic manifestation of the growth of fungi in areas that lack the flow of blood in the lungs, where Aspergillus sp colonization occurs in the intrathoracic cavity, parenchymatous bronchioulus and pleura. Aspergillus species can grow in lungs for months or years. Aspergilloma is a development of pulmonary tuberculosis, chronic pulmonary sarcoides with cystic spaces and ectatic bronchi accompanied by ABPA.

Some of the diseases that precede Aspergilloma are hemoptysis, a cough accompanied by purulent and sputum production, fever, weight loss and malaise; b. Alllergic disease consisting of allergic asthma is characterized by an increased response of various stimuli, especially allergens. This disease usually occurs in children.

In some geographic areas, alllergic rhinitis caused by fungi is usually indistinguishable from AR caused by flattening, dust and insects. These disorders are nasal obstruction, nasal disorders, prunitis and eye irritation. Spore exposure will cause sneezing and coughing during the night. Allergic sinusitis is characterized by the formation of fungus ball and alllergic fungal sinusitis.

This will form plugs containing fragments of fungi, eosinophil-containing sinus exudates, charcot-leyden crystal, epithelium cells, debris cells and abundant hyphae from the fungus; c. Allergic bronchopulmonary Aspergillus is characterized by severe bronchitis and is accompanied by asthma symptoms. ABPA occurs from hypersensitivity to Aspergillus Sp in patients with atopic asthma who are old and usually acute(6).

The predominant species as a cause of invasive aspergillosis are Aspergillus flavus, Aspergillus glaucos, Aspergillus niger, Aspergillus nidulans and Aspergillus terreus. Conidia Aspergillus Sp, where dirt, closed environments (plant houses), carpets, etc. are the supporting factors for Aspergillosis. Preventive efforts can be attempted by avoiding the contaminated environment of Aspergillus Sp spores in large quantities, and avoiding exposure.

CONCLUSION Based on the results of the study concluded that in the majority of sputum suspected tuberculosis who visited Salotungo Public Health Center, Soppeng District obtained Aspergillus sp. REFERENCES 1. Suriawiria U. The Basic Microbiology (Mikrobiologi Dasar). Jakarta: Papas Sinar Sinanti; 2005. 2. Suriawiria U. Mycotoxins in Foods Cause Most Malignant Cancer (Mikotoksin pada Makanan Penyebab Kanker Paling Ganas) [Internet]. Pikiran Rakyat. 2004 [cited 2008 Jan 26].

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