



## Profile of chronic suppurative otitis media patients with positive fungal culture in Medan, Indonesia

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### ABSTRACT

Chronic Suppurative Otitis Media (CSOM) is the biggest public health problem in some populations in the world that can cause morbidity and mortality. Fungus is rare except when there is a super fungal infections of the outer ear canal. The purpose of this study was to know the profile of CSOM patients with positive culture results using KOH examination and Saboroud dextrose agar. The age of CSOM patients most are in the age group 22-31 years old (38,7%), men 50,7% and women was 49,3%. The amount of positive fungal culture was 54,7%, and the culture of the fungus *Aspergillus Sp* was the most (31,4%), consisting of *Aspergillus niger* (18,7%), *Aspergillus fumigatus* (8,7%), *Aspergillus flavus* (4,0%), and *Candida sp* (24,0%).

**Keywords:** CSOM, tubotympanic, atticofurcal, fungal, *Aspergillus*, *Candida*

### INTRODUCTION

Chronic suppurative otitis media (CSOM) is defined as persistent or intermittent infected discharge of more than three months duration through the perforated or non intact tympanic membrane caused by bacteria, fungal and virus resulting in inflammation of mucosal lining that often result in partial or total loss of the tympanic membrane and ossicles [1]. It also can be defined as a chronic inflammation of the middle ear and mastoid cavity, which presents with recurrent ear discharge or otorrhoea through a tympanic perforation [2]. CSOM is common in the developing countries, owing to poor nutrition, unhygienic living conditions, lack of health education and scarcity of care services [3]. The prevalence as high as 6-11% across various groups as in developed countries [4] and the disease may begin in childhood or as the result of complication of untreated or inadequately treated acute suppurative otitis media or may be chronic from onset [5]. In some cases its caused by the nasopharyngeal disease and in children it is usually the adenoids. The disease is more common in children included in lower socioeconomic group [6]. The common microorganism found in CSOM are *Pseudomonas sp*, *Staphylococcus aureus*, *Eschericia coli*, *Klasiella pneumonia* and *Proteus mirabilis*. The fungi also found in CSOM mainly *Candida* and *Aspergillus* species [7]. The increasing use of broad spectrum antibiotics, cytotoxic chemotherapy, corticosteroid, may caused the increasing of fungal infections incidence [2]. Acharya et al [8] reported that *Scedosporium apiospermum* largely cultured in brain abscess associated with chronic suppurative otitis media as a risk factor. Microorganisms culture is very important because it will be a guideline for further management of CSOM. The aim of this study was to identify of fungal profile in the middle ear in patients with CSOM in H. Adam Malik Hospital in Medan, Indonesia

## EXPERIMENTAL SECTION

### Population and sampling

The population in this study were all patients who came to the polyclinic Department of Otolaryngology in H.Adam Malik hospital, Medan, with symptoms of runny ear with suspected chronic suppurative otitis media based on anamnesis and ENT examination. The number of patients who met the inclusion criteria were 75 patients. The inclusion criteria were : (1) persistent otorrhoea for more than three months, (2) obtained central tympanic membrane perforation, sub total or total, tamper or marginal with secretions, mucoid, mucopurulent or purulent, (3) the age over 12 years old, (4) willing to join the study.

### Fungal identification

the ear canal was cleaned using a sterile swab moistened with alcohol 70%. The sample was obtained by using microscope otology and intravenous catheter number 22 connected with 1 ml syringe. Further session was the diagnostic sensitivity of microscopy wet preparation using 10% KOH and comparing its positivity with fungal culture positive cases. Fungal culture was performed on Saborauds dextrose agar and analyzed under a microscope

## RESULT AND DISCUSSION

There were 75 patients involved in the study. The age ranging from 12 to 71 years old and the highest percentage was in the age group of 22-31 years old (38,7%). The result was shown in **Table 1**.

**Table 1. distribution of age groups and gender of patient**

Age (years old)	Sex				number	%
	male	%	female	%		
12-21	11	20,4	4	7,4	21	27,8
22-31	8	14,8	11	20,4	29	38,7
32-41	4	7,4	5	9,2	12	18,0
42-51	5	9,2	1	1,9	6	8,0
52-61	2	3,7	2	3,7	6	8,0
62-71	1	1,9	0	0,0	1	1,3
total	38	50,7	37	49,3	54	100

In our study, the prevalence of CSOM was most in age age group children and young adult. The similar result was reported by several authors [1,4 9, 10]. CSOM was common in all age groups especially in childhood. Infants and children are more inclined to CSOM because of short, horizontal and floppy Eustachian tube [11]. In this study the otitis media patients consisted of 38 (50,7%) males and 37 (49,3%) females. The male ratio was higher than female. Saleh et al [12] reported the percentage of male patients of CSOM was higher than female (64% : 36%). It indicated that male were affected with CSOM more than female.

In this study we use KOH mount to determined the positive fungal culture from the patients. **Table 2** shows the result of fungal culture.

**Table 2. Incidence of positive fungal culture in samples**

Culture result	Samples	
	N	%
Positive fungal isolates	41	54,7
Negative fungal isolates	34	45,3
total	75	100,0

**Table 3: Distribution of type CSOM patient by fungal culture examination results**

Type of CSOM	KOH		Total n (%)
	Positive n (%)	Negative n (%)	
tubotympanic	18 (24,0%)	20 (26,7%)	38 (50,7%)
Atticoantral	23 (30,7%)	14 (18,7%)	37 (38,7%)
total	41 (54,7%)	34 (45,3%)	75 (100%)

Most of the patients (30,7%) had a atticofacial type of disease. It different with the finding of Wankar et al [13] which reported that tubotympanic type more common than atticofacial type. It may be due to the patients that seeking treatments at H.Adam Malik Hospital, Medan was the referral patients that could not be treated by class B hospital, and it also may be due to the difference in ethnic of population, substandard hygiene, under resourced health care and other socio economic factors [14]. CSOM is usually classified into two types: atticofacial type and tubotympanic type. Tubotympanic type is characterized by a perforation of the pars tensa. Atticofacial type most commonly involves the pars flaccida and is characterized by the formation of a retraction pocket in which keratin accumulates to produce cholesteatoma [15].

**Table 4. Distribution of fungal type in CSOM patient by culture examination result**

Fungal type		CSOM with positive culture of fungal	
		n (amount)	%
Candida sp		18	(24,0)
	<i>Candida albicans</i>	9	(12,0)
	<i>Candida tropicalis</i>	6	(8,0)
	<i>Candida krusei</i>	1	(1,3)
	<i>Candida parapsilosis</i>	2	2,7
Aspergillus sp		22	
	<i>Aspergillus niger</i>	14	(18,7)
	<i>Aspergillus fumigatus</i>	5	(8,7)
	<i>Aspergillus flavus</i>	3	(4,0)
Penicillium sp		1	(1,3)
total		41	100,0

**Table 4** showed the positive fungal cultures of 41 samples and most type of fungal are *Aspergillus* sp, consists of *Aspergillus niger* 14 samples (18,7%), *Aspergillus fumigatus* 5 samples (8,7%) and *Aspergillus flavus* 3 samples (4,0%). Followed by *Candida* sp 18 samples (43,9%), consists of *Candida albicans* 9 samples (21,9%), *Candida tropicalis* 6 samples (14,6%), *Candida parapsilosis* 2 samples (4,8%), *Candida krusei* 1 sample (1,3%) and *Penicillium* sp 1 sample (1,3%). The similar result was reported by Kailash et al [4], which reported *Aspergillus* spp and *Candida* spp were the most common incidence of fungal isolates in CSOM. Dhingra et al [16] reported that *Aspergillus niger*, *Aspergillus flavus* and *Candida albicans* were the main fungal that found in CSOM patients. Dhingra et al [17] also reported that *Aspergillus* was the most common fungus. Out of 36 fungal positives, 32 cases (88,8%) showed *Aspergillus* growth, only 4 cases (11,2%) showed *Candida* growth

## CONCLUSION

From 75 CSOM patients who come to H Adam Malik Hospital Medan, most of the patients are in the age range 22-31 years old. 54,7 % of the patients found positive culture of fungal. The dominant type of CSOM was atticofacial type . *Aspergillus* and *Candida* are the most common of fungi found in the patients

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