



MUCORMYCOSIS: AN EPIDEMIC AMIDST PANDEMIC - A QUESTIONNAIRE STUDY

Periodontics

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ABSTRACT

Background: A catastrophic COVID-19 wave has struck and left the whole world erroneously affected. Midst COVID-19 a rapid rise in mucormycosis cases in India was noticed and caused a large number of mortality and morbidity cases.

Aim: To assess the Knowledge and attitude among the Dental, medical and ayurveda interns regarding COVID-19 associated mucormycosis.

Materials And Methods: An online English questionnaire google form was created and distributed among dental, medical and ayurveda interns. Questions were categorized under three groups- demographic data, knowledge and attitude. A total of 19 closed ended questions related to covid 19 associated mucormycosis were prepared and each question was assigned a score and the results were tabulated.

Results: Upon statistical analysis a total knowledge score was better among medical interns followed by dental and ayurveda interns. Knowledge score based on dental symptoms associated with mucormycosis questions were better among dental interns.

Conclusion: Mucormycosis a rare and a rapidly spreading fungal infection and can manifest dental symptoms mimicking periodontal infection. Hence, timely and correct diagnosis can reduce the mortality risk.

KEYWORDS

Mucormycosis, COVID-19, knowledge, attitude, corticosteroids

INTRODUCTION

Corona-virus disease (COVID-19) has emerged as a global public health catastrophe amalgamated with eventful mortality and morbidity worldwide. Corona-virus is an enveloped, single stranded RNA virus that has the proficiency of infection with a wide spread among the population.^{1,2} When cases with respiratory tract infections were delineated in Wuhan, China. In spite of the fact that COVID-19 principally exerts its influence on the lungs, there are other disease complications that have been proclaimed.^{3,4} Apart from alveolar damage and severe inflammatory exudation, COVID-19 patients also have been typically revealed with immunosuppression. The most frequently affected cells being Helper T-Cells, with a decline in number of CD4⁺T and CD8⁺T cells can open the door for co-infections to arise.⁵

Systemic glucocorticoids were used as one of the treatment options to ameliorate the present COVID-19 situation. Other factors such as prolonged hospital stay, intensive care support, or a variety of immunocompromising illnesses such as cancer, diabetes, and retroviral disease have been enmeshed in the development of opportunistic fungal infections.⁶

Mucormycosis belongs to the order Mucorales which are ubiquitous in nature, especially in soil. These fungi develop rapidly and release large numbers of spores into the air. Human beings are often exposed to these fungi through inhalation. Mucormycosis is a rare acute invasive and life-threatening fungal infection that affects immunocompromised patients. Rhino-orbital involvement is a time-sensitive condition that must be recognized and treated promptly to avoid mortality and morbidity.⁷

METHODOLOGY

STUDY DESIGN

A customized questionnaire written in the English language was prepared which included 19 closed ended questions. The questions were framed as demographic data, knowledge and attitude based questions. Ethical committee approval was obtained from the Institutional Review Board (PMNMDCH/951/2021-22) taken. A Consent was taken from all the study participants before commencing the study which was included in the beginning of the google form.

SAMPLE SIZE CALCULATION

Sample size was determined using the estimated
n=170 (Sample size)

DATA COLLECTION

Questionnaire forms were distributed through online mode in the configuration of google forms. Based on respondents knowledge, a total knowledge score was estimated. For every negative response 0 score was assigned, and a positive response was given score 1, and the total score of the participants was determined by calculating sum of all responses, which ranged from 0 to 9. Based on Bloom's criteria scores were added and subjects with (80%–100% accurate scores; 7–9 score) were considered to have a high level of knowledge, moderate level (60%–79% accurate scores; 5–7 scores), and (≤59%; 0–5 scores) as low level knowledge. Dichotomous scale was used for questions which included YES or NO options. Dental, medical and ayurveda interns were included for the study.

Statistical Analysis

All the data obtained was subjected to statistical analysis using SPSS v 26.0 software. Descriptive statistics like frequencies and percentage for categorical data, Mean & SD for numerical data was depicted.

RESULTS

Demographic Data

A total of 198 interns responded to the survey among which 56 were dental, 92 medical and 50 were ayurveda interns. Mean age of the participants was around 24.5 years and of total interns 56.1% were females and around 43.9% were males.

Knowledge About COVID-19 Associated Mucormycosis

A total knowledge score was computed and established on the grounds of answers from respondents. There was a statistically highly significant difference seen for the values between Dental and ayurveda interns as well as medical and ayurveda interns. But there was a statistically non significant difference between the groups dental and medical interns. Total knowledge score was found to be highest among medical interns i.e 7.9 and followed by dental interns i.e 7.11 that was considered as high level of knowledge and a moderate level of knowledge was seen among ayurveda interns with an overall

knowledge score being 5.96.(Table 1) However, when the knowledge score was calculated only for questions related to dental signs and symptoms it was highest among dental interns followed by medical and ayurveda interns.

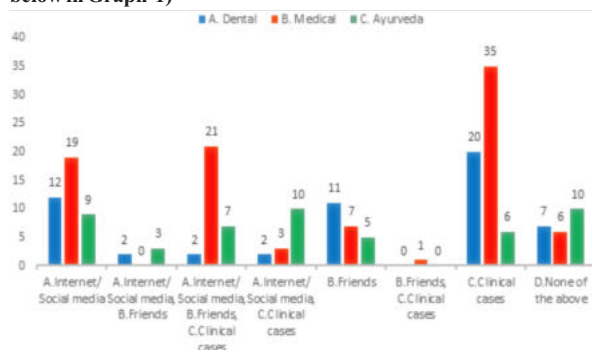
Table 1- Comparison Of Total Knowledge Score

(I) Course	(J) Course	95% Confidence Interval				
		Mean Difference (I-J)	Std. Error	p value	Lower Bound	Upper Bound
1	2	0.86	.98	.655#	.32	.15
	3	.776 [*]	.109	.000**	.52	1.03
2	3	.862 [*]	.095	.000**	.64	1.09

(p<0.05 - Significant*, p<0.001 - Highly significant**)

Attitude Towards COVID-19 Associated Mucormycosis

When attitude towards COVID-19 associated mucormycosis was seen among interns it was found to be less or more similar for all the group of interns except there was a statistically highly significant difference seen for the frequencies between the groups (p<0.01) with higher frequency for clinical cases examined and the webinars attended with medical interns followed by dental and ayurveda interns (Shown below in Graph-1)



Graph 1- Comparison of attitude towards COVID-19 associated mucormycosis among Dental, Medical and Ayurveda interns

A: Dental Interns, B: Medical Interns and C: Ayurveda Interns

There was also statistically significant difference seen for the frequencies between the groups (p<0.05) for the awareness of methods of diagnosis for mucormycosis with higher frequency for yes with medical interns.

DISCUSSION

COVID-19 has emerged as a pandemic and rapidly spreading, which manifests with mild to severe symptoms. Mucormycosis was considered as an epidemic in few of the states in India in COVID-19 pandemic.⁸ Glucocorticoids were found to be widely disseminated and to reduce the mortality rate in hypoxemic patients with COVID-19.⁹ Nonetheless, indiscriminate utilization of glucocorticoids had lead to increase likelihood of secondary co-infections. Additionally, diabetes mellitus perplexed the management of Covid-19 infection. Prompt surgical debridement, management of the underlying condition and systemic and local antifungal therapies can ameliorate the prognosis.¹⁰ Hence, this questionnaire study was planned to assess the knowledge and attitude of dental, medical and ayurveda interns about covid 19 associated mucormycosis.

In our study we found that among participated interns 56.1% were females and around 43.9% were males, this could be due to the more number of females in the healthcare profession than males. Medical interns had better knowledge than the dental and ayurveda interns. This could be attributed to the fact that the most of the medical interns during COVID-19 pandemic were posted in the COVID-19 wards and for emergency duties, therefore, the clinical cases of mucormycosis observed was might be more among medical interns. In a study conducted by **DK Limbu et al**,¹¹ it was found that doctors had better knowledge than other health care workers.

Despite that the overall knowledge score was highest among medical interns but when comparison was done for the questions based on

dental signs and symptoms of the disease, dental interns were found to have better knowledge than medical and ayurveda interns. This is possibly due to the fact that, most common form of mucormycosis is rhino-orbito-cerebral form, mostly involving the orbital and maxillary region and associated with tooth ache, periodontal abscess and mobility of the teeth, this could be the reason for better knowledge among dental interns. In a study by **Ke Yao et al**¹² they concluded that awareness of oral disease-systemic disease relationship knowledge was better in dental students than in medical students.

Regarding the questions based on attitude of the interns, it was more or similar for all the interns except that the webinars attended and the clinical cases observed by the medical interns were more followed by dental and then by ayurveda interns. This could be another reason for better knowledge scores among medical interns regarding COVID-19 and as well as its complications such as COVID-19 associated mucormycosis. **Nadama HH et al**¹³ has demonstrated that webinars are an effective way for medical students to strengthen their knowledge and thus could be used to increase students engagement with clinical academics.

Assessing the knowledge and attitude of budding healthcare workers may help in referral of the affected individuals to higher centers for the early diagnosis and prompt treatment of patients affected by mucormycosis.

CONCLUSION

With the advent of second wave of COVID-19, the resurgence of COVID-19 associated mucormycosis has been witnessed. Atypical Mucormycosis presentation can perpetuate various dental symptoms like multiple periodontal abscess, teeth mobility and pain mimicking periodontal infection. Thus, accurate and timely diagnosis of this rare and fatal fungal infection can reduce the risk of mortality and morbidity.

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