

IMPACT OF COVID 19 ASSOCIATED MUCORMYCOSIS ON QUALITY OF LIFE AT A TERTIARY CARE CENTRE

Anusha Anwar¹, Joseph J Menacherry², Lyra Joy³, Vivekanand Ashok⁴

¹Junior Resident, Department of ENT, Manipal Hospital, Bengaluru, Karnataka, India

²Consultant Surgeon, Department of ENT, Vikram ENT Hospital, Coimbatore, Tamil Nadu, India.

³Assistant Professor, Department of ENT, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Tamil Nadu, India.

⁴Assistant Professor, Department of ENT, Karuna Medical College, Palakkad, Kerala, India.

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Corresponding Author:
Dr. Vivekanand Ashok,
Email: avivekanand9@gmail.com

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Abstract

Background: COVID 19 pandemic led to the emergence of many opportunistic infections in the world, irrespective of socio geographical factors. This exponential rise in the occurrence of certain diseases was more common in immunocompromised patients. One such disease was Mucormycosis, a debilitating acute fungal infection, involving more of sino nasal region and with extension to nearby anatomical region. The aggressive nature of this condition leads to tissue destruction that ultimately end up in morbidity, organ damage and need of extensive and complicated surgical procedures. All these factors ultimately affect the quality of life in these patients. Our study is intended to find out how much deterioration in Qol can be caused by mucormycosis. **Materials and Methods:** The study was conducted at tertiary care centre in southern India. Patient with histopathological diagnosis of mucormycosis were given a questionnaire to evaluate Qol, at the time of admission. The questionnaire consisted of 20 questions with each parameter having a score ranging from 0 to 5. The data were analysed using SPSS software. **Result:** A total of 100 patients were included in the study, with male to female ratio of 3:1. Majority of the patients were in the age group of 40-60myeras of age. Rhino orbital mucormycosis was the most common type in all the age groups. The mean Qol score wa41.7 out of 100. The females reported better Qol than males. Patients win the age group older than 60 years had higher score than in the age group less than 60 years. It was noted that the quality of life is very much decreased when the disease is involving orbit or cerebrum along with sinonasal region. **Conclusion:** Mucormycosis can significantly affect the quality of life when involving the Sinonasal, orbit, or intracranial sites. This observation emphasizes the need for better counselling and psychosocial support after the diagnosis, during pre-surgical counselling and post-surgical rehabilitation.

INTRODUCTION

The world health organization defined Quality of life (Qol) as 'individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'.^[1] One's health status at a point of time may not reflect the QoL in most of cases as it is determined by various factors and circumstances in patient's life, the same which may he/she can only describe.

Mucormycosis, a type of acute/fulminant invasive fungal sinusitis caused by fungi of the order Mucorales, causes significant impact on psychological well-being and quality of life in patients. The other form of invasive fungal sinusitis is caused by fungal group organism aspergillosis.^[2]

The recent pandemic COVID-19 has been associated with a multi fold rise in cases of Mucormycosis and invasive aspergillosis.^[3]

The usual presenting symptoms of this condition are facial pain, nasal discharge, facial cellulitis, persistent headache and visual disturbances. Aggressive surgical debridement is needed in most of the cases. These surgical procedures often result in loss of palate, maxilla and orbit, followed by difficulties with speech, chewing, swallowing, vision and respiration.

Impairment of senses such as taste, smell, vision and hearing along with functional disabilities and compromised esthetics promotes a negative impact on QoL of patients.^[4,5]

Several tools have been developed across the world to assess the QoL. These help in better evaluation of

morbidity, disease progression and impact of different treatment methods. But none have been validated for the purpose of assessing psychological well-being in COVID-19 associated invasive fungal sinusitis (CAIFS) patients. This study is aimed at formulating a Qol assessment tool for CAIFS patients and to evaluate the same.

MATERIALS AND METHODS

The study was conducted among patients who were admitted in a tertiary care centre in Karnataka for the treatment of COVID-19 associated invasive fungal sinusitis in the department of ENT during the period June 2021 to August 2021. After getting clearance from the Institutional Research Ethical Committee, a questionnaire made by the investigators to assess the Quality of life in patients of COVID-19 associated invasive fungal sinusitis (Table 1) was given to all laboratory confirmed cases of CAIFS. The questionnaire included various 20 parameters, with each parameter assigned a value from 1 to 5, with 5 denoting very severe reduction in Qol and 1 denoting no and mild reduction respectively. A case of CAIFS is defined as a person who was infected with SARS Cov-2 virus in the past 8 weeks or an active case of COVID-19 at the time of hospital admission who was diagnosed with acute invasive fungal sinusitis, the diagnosis of which is confirmed by histopathological examination of infected tissues or fungal culture. Once the diagnosis was confirmed, based on the anatomical extension of the disease, the disease was categorized into various types based on the system involved. Patients who underwent any surgical procedure were excluded from the study. The results tabulated and analyzed using Microsoft Excel and latest version of SPSS.

RESULTS

A total of 100 cases of mucormycosis were included in the study, within the age group 25 – 76 years who were admitted in the tertiary care center during the period of June 2021- August 2021. Majority of the patients were in the age group 40-60 years. 75 out of 100 cases were males (Male: female ratio – 3:1) [Table 2,3]. Rhino orbital invasive fungal sinusitis was the most common clinical type followed by the sinonasal type in both gender groups. Palatal involvement was seen in total of 10 cases. Out of 10 palatal cases, 9 cases were with involvement of sinonasal and one case with rhino orbital involvement [Figure 1]. Rhino-Orbital type of was the most common among the age group of 41-60 years [Figure 2]. The most common variant was rhino-orbital type in all the three age groups followed by the sino-nasal variant. A total of 10 cases had associated palatal involvement. But the p value was found to be statistically insignificant. Out of the 100 patients, 33 of the male and 15 of the female population had acquired rhino-orbital type of

mucormycosis followed by sino-nasal variant [Figure 3].

The mean Qol score was 41.7 out of 100 (SD-13.7) [Table 4]. The mean Qol score was higher in males as compared to females with a mean difference of 0.34 [Table 5]. Age above 60 years showed to have a higher Qol score as compared to age less than 60 years [Figure 4]. Patients with sino nasal disease had less Qol score as compared to other clinical types and the data was statistically significant (P-0.002) [Table 6].

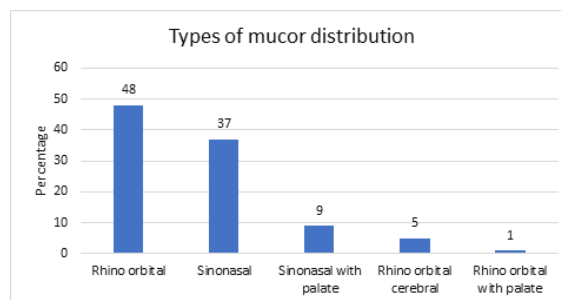


Figure 1: Types of mucormycosis distribution

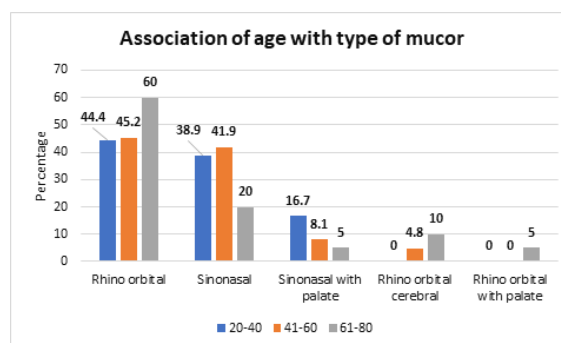


Figure 2: Type of mucormycosis with age wise distribution

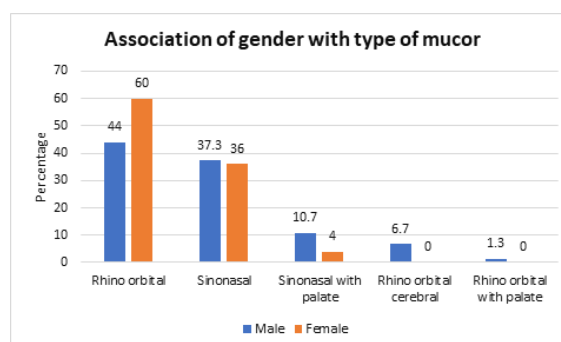


Figure 3: Type of mucormycosis with gender wise distribution

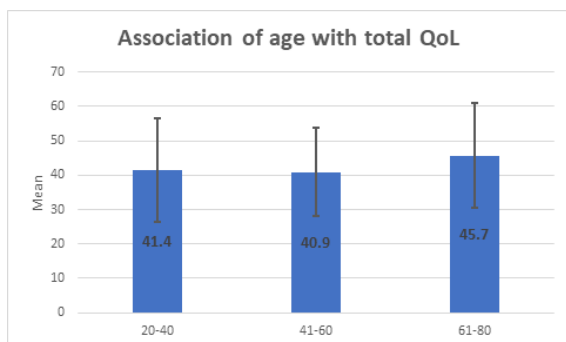


Figure 4: Age wise distribution of QoL Scores

Table 1: Quality of life questionnaire

QoL	0	1	2	3	4	5
Nasal blockage						
abnormal smell/taste						
Post nasal discharge						
Thick nasal discharge						
Pain in facial region						
Bleeding through nose						
Sleep disturbances						
Difficulty in vision						
Restriction of daily activities						
Headache						
Fatigue/Tiredness (more than 50 percent bed occupant in day time)						
Feeling of reduced productivity at work						
Feeling of sadness						
Feeling of Embarrassed						
Feeling of Restless						
Reduced concentration during daily activities (e.g. Reading newspaper)						
Limited activities						
Involvement in social activities						
Feeling of nervousness						
Loss/ reduced appetite						

Table 2: Gender distribution (N= 100)

Gender	N	%
Male	75	75.0
Female	25	25.0
Total	100	100

Table 3: Age distribution (N= 100)

Age in years	N	%
20-40	18	18.0
41-60	62	62.0
61-80	20.0	20.0
Total	100	100

Table 4: Distribution QoL responses (N= 100)

QoL	0	1	2	3	4	5
Nasal blockage	2 (2.0)	5 (5.0)	32 (32.0)	57 (57.0)	4 (4.0)	0
abnormal smell/taste	25 (25.0)	18 (18.0)	40 (40.0)	14 (14.0)	3 (3.0)	0
Post nasal discharge	42 (42.0)	22 (22.2)	28 (28.0)	6 (6.0)	1 (1.0)	1 (1.0)
Thick nasal discharge	33 (33.0)	20 (20.0)	31 (31.0)	13 (13.0)	3 (3.30)	0
Pain in facial region	52 (52.0)	18 (18.0)	17 (17.0)	9 (9.0)	4 (4.0)	0
Bleeding through nose	27 (27.0)	11 (11.0)	17 (17.0)	21 (21.0)	23 (23.0)	1 (1.)
Sleep disturbances	6 (6.0)	17 (17.0)	38 (38.0)	19 (19.0)	13 (13.0)	7 (7.0)
Difficulty in vision	33 (33.0)	11 (11.0)	20 (20.0)	7 (7.0)	11 (11.0)	18 (18.0)
Restriction of daily activities	12 (12.0)	6 (6.0)	32 (32.0)	23 (23.0)	25 (25.0)	2 (2.0)
Headache	3 (3.0)	4 (4.0)	22 (22.0)	40 (40.0)	28 (28.0)	3 (3.0)
Fatigue/Tiredness (more than 50 percent bed occupant in day time)	0 (8.0)	11 (11.0)	36 (36.0)	28 (28.0)	14 (14.0)	3 (3.0)
Feeling of reduced productivity at work	8 (8.0)	10 (10.0)	39 (39.0)	25 (25.0)	14 (14.0)	4 (4.0)
Feeling of sadness	7 (7.0)	15 (15.0)	34 (34.0)	28 (28.0)	12 (12.0)	4 (4.0)
Feeling of Embarrassed	15 (15.0)	19 (19.0)	33 (33.0)	22 (22.0)	11 (11.00)	0
Feeling of Restless	13 (13.0)	15 (15.0)	35 (35.0)	25 (25.0)	12 (12.0)	0

Reduced concentration during daily activities (e.g. Reading newspaper)	9 (9.0)	9 (9.0)	38 (38.0)	27 (27.0)	16 (16.0)	1 (1.0)
Limited activities	6 (6.0)	13 (13.0)	37 (37.0)	24 (24.0)	17 (17.0)	3 (3.0)
Involvement in social activities	4 (4.0)	7 (7.0)	46 (46.0)	26 (26.0)	13 (13.0)	4 (4.0)
Feeling of nervousness	13 (13.0)	22 (22.0)	39 (39.0)	18 (18.0)	6 (6.0)	2 (2.2)
Loss/ reduced appetite	0	14 (14.)	47 (47.0)	32 (32.0)	7 (7.0)	0

Table 5: Association of gender with total QoL (N= 100)

Gender	N	Mean (SD)	Mean difference	T	P-value
Male	75	41.8 (12.9)	0.34	0.109	0.914
Female	25	42.2 (16.2)			

Table 6. Association of mucor with total QoL (N= 100)

Type of mucor	N	Mean (SD)	F	P-value
Rhino orbital	48	46.4 (14.9)	4.58	0.002
Rhino orbital cerebral	5	48.6 (13.5)		
Rhino orbital with palate	1	58.0 (0)		
Sinonasal	37	35.6 (10.2)		
Sinonasal with palate	9	38.8 (8.8)		

DISCUSSION

Mucormycosis is a life-threatening fungal infection, with very high mortality which should be managed with a multidisciplinary approach to achieve optimal results. The key to the diagnosis is the identification of common risk factors and characteristic symptoms. If there is a suspicion, early endoscopic biopsy is required to avoid fatal late consequences. Depending on the degree of immunosuppression and predisposing conditions, the progression of the disease can be acute, fulminant, or chronic.

In our study it was found that most of the patients belonged to the age group of 35-70 years with a mean age of presentation being 51 years.

It also showed male predominance (75%) which is in accordance with the studies done by Kiran Bala and Sandipta Mitra et al also found male predominance more than female i.e. around 71%.^[6,7]

In our study it was found that the most common type was rhino-orbital (48%) followed by the sino-nasal (37%) involvement which is similar to the percentages reported in the review by Jeong et al. were 34% for rhino-orbital mucormycosis.^[8]

Most of the patients who recovered from mucormycosis had post treatment nasal obstruction (52%), reduced productivity and lack of social involvement, depression and nervousness.

47% of the people had a loss of appetite and reduced food intake either due to their palatal involvement which required extensive debridement and usage of high dose anti-biotics and amphotericin-B for the management.

The mean Quality of life score was higher in females as compared to males with a mean difference of 0.34. Age above 60 years showed to have a higher QoL score as compared to age less than 60 years. Patients with sino nasal disease had less QoL score as compared to other clinical types and the data was statistically significant. This is in accordance with various other studies in literature high lightening the presence of depression and anxiety with a reduced

quality of life either due to post covid effect and the high dose medications to which the patient was subjected to during treatment.^[9-11]

The quality of life was found to be better in age group between 61-80 years post treatment but it was of not statistical significance.

Patients who suffered rhino-orbital type of mucor mycosis had a better quality of life post treatment with a statistical significance(p=0.002) than those who acquired the sino nasal or rhino-cerebral variant. Patients with reduced life quality had poorer coping methods due to various physical and psychological ailments that were present among them.

This is the first study in literature that deals with the quality of life in patients who have suffered from rhino-orbital mucormycosis and how it effects their social life and day to day functioning. The care givers of these patients were given counselling sessions on how to handle the patients and deal with the post-operative and treatment complications. The main limitation of the study was a small sample size and the results could not be deduce to the entire Indian population as it was conducted in a nodal tertiary health care center.

CONCLUSION

From the above study we were able to come to a conclusion that mucormycosis and its variants had a severe effect on the quality of the patient's life. It was mainly affected the extensive surgery and high dose antibiotics and anti-fungal that were given in order to manage the disease. It was also affected by the patients age, associated co-morbidities and also the reduced immunity of the patient.

Most patients were found to have a severe impact on their day-to day life having reduced concentration, loss of appetite, loss of social activity involvement, loneliness and sadness.

Hence there is an important role in post treatment counselling that should be given to both the patient as well as the patient bystanders which will help them

cope better with the associated problems and complications post treatment so that these patients can have a better quality of life.

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