ORIGINAL RESEARCH PAPER

Otorhinolaryngology

A RETROSPECTIVE STUDY OF VARIOUS FACTORS CAUSING RISE IN FUNGAL SINUSITIS POST COVID 19 SECOND WAVE IN A TERTIARY CARE CENTRE.

KEY WORDS: Fungal Sinusitis, COVID 19.

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ABSTRACT

Objective- To study various factors causing rise in Fungal Sinusitis post Second COVID-19 wave. **Methods-** 36 patients diagnosed with fungal sinusitis based on histopathological reports were included in the study. All 36 patients were retrospectively evaluated for their comorbidities, anatomical variations of nose, past history of COVID-19 infection and COVID 19 vaccination status. **Results-** Mean age of patients included in the study was 56.5years. Male to Female ratio was 7:5. All patients had PNS involvement. 1 patient had intracerebral involvement. 27 patients were Diabetic. 21 were Hypertensive. 33 patients had Deviation from Normal Anatomy of Nose and PNS. 24 patients had history of COVID 19 infection in the last 2 years. 33 patients had history of COVID 19 vaccination with at least one dose.

INTRODUCTION

The world came to a standstill during COVID 19 pandemic. In India, during the second wave, we fought 2 battles - one with COVID 19 and second with rising cases of Invasive Fungal Sinusitis. Some attributed this rise to the indiscriminate use of steroids during the pandemic, some to the evolution of Delta variant of SARS CoV 2 virus, some to the use of industrial oxygen in medicine due to shortage.

Due to mass vaccination, the occurrence and severity of both COVID 19 infection and Invasive Fungal Sinusitis has reduced. But we have witnessed a rise in the number of Fungal Sinusitis cases in clinical practice than the pre pandemic levels.

OBJECTIVES -

To study factors such as Comorbidities, Anatomical Deviations of Nose and PNS, COVID 19 infection history and COVID 19 Vaccination status in the increase in number of Fungal Sinusitis cases more than the pre pandemic levels.

MATERIALS AND METHODS-

36 Patients presenting with Sinusitis were surgically treated with FESS and Histopathological Reports confirming Fungal Etiology were included in the study. All 36 patients were retrospectively evaluated for their comorbidities, anatomical variations of nose,past history of COVID-19 infection and COVID 19 vaccination status.

Inclusion Criteria -

Patients with Histopathologically confirmed diagnosis of Fungal Sinusitis were included. Patients of all age groups, irrespective of occupation and irrespective of history of COVID 19 infection and COVID 19 vaccination status were included in the study.

Exclusion Criteria -

Patients of Bacterial Sinusitis or Allergic Sinusitis were excluded. Patients with Sinonasal Masses such as nasal polyps, inverted papilloma or malignancies were excluded.

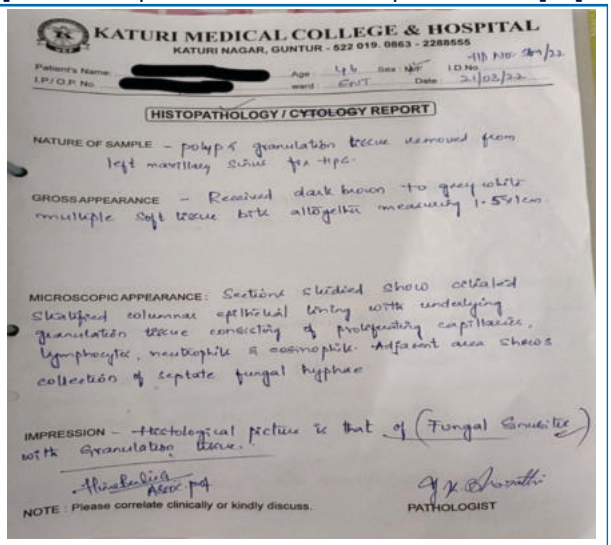
All 36 patients were retrospectively evaluated for their comorbidities, anatomical variations of nose,past history of COVID-19 infection and COVID 19 vaccination status.

Observations-

36 cases were included in the study. Mean age of 56.5 years. Male to Female ratio is 7:5. 33 patients (91.6%) had Anatomical Deviations such as Deviated Nasal Septum (30 patients), Inferior Turbinate Hypertrophy (27 patients), Concha bullosa (CT scan findings) (27 patients). 27 patients (75%) were Diabetic. 21 patients (58.33%) were Hypertensive. 24 patients (66.66%) have history of COVID 19 infection in the last 2 years. 33patients(91.6%) were vaccinated with at least one dose of AntiCOVID19 Vaccine. All patients (100%) had PNS involvement. 1 unvaccinated patient (2.7%) development intracerebral involvement.

Sr. no.	Age/ Sex	Comorbidities		Nose Anatomical Variations			COVID-19 infection history	COVID -19 Vaccination status
		DM	HTN	DNS	Conc haBull	ITH		
1.	32/ M	NonDiabetic	NonHypertensive	Present	Absent	Present	Negative	Vaccinated
2.	70/ M	Diabetic	Hypertensive	Absent	Present	Present	Positive	Unvaccinated
3.	52/F	Diabetic	NonHypertensive	Present	Absent	Absent	Positive	Vaccinated
4.	58/ M	Diabetic	Hypertensive	Present	Absent	Absent	Positive	Unvaccinated
5.	63/ M	Diabetic	Hypertensive	Present	Present	Present	Positive	Vaccinated
6.	46/F	Diabetic	NonHypertensive	Present	Absent	Present	Negative	Vaccinated
7.	54/ M	Diabetic	Hypertensive	Absent	Absent	Absent	Positive	Vaccinated
8.	57/F	Diabetic	Hypertensive	Present	Absent	Present	Positive	Unvaccinated
9.	44/ M	NonDiabetic	NonHypertensive	Present	Absent	Present	Negative	Vaccinated
10.	68/F	Diabetic	Hypertensive	Absent	Present	Present	Positive	Vaccinated
11.	54/ M	Diabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
12.	65/ M	Diabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated

13.	50/F	Diabetic	NonHypertensive	Present	Absent	Present	Positive	Vaccinated
14.	56/M	Diabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
15.	45/F	NonDiabetic	NonHypertensive	Absent	Absent	Present	Positive	Vaccinated
16.	60/F	Diabetic	Hypertensive	Present	Present	Absent	Negative	Vaccinated
17.	62/M	NonDiabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
18.	68/M	Diabetic	Hypertensive	Present	Present	Present	Positive	Vaccinated
19.	55/F	Diabetic	NonHypertensive	Present	Absent	Absent	Negative	Vaccinated
20.	49/M	Diabetic	Hypertensive	Present	Absent	Absent	Negative	Vaccinated
21.	53/F	NonDiabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
22.	64/M	Diabetic	NonHypertensive	Present	Absent	Present	Positive	Vaccinated
23.	72/M	Diabetic	NonHypertensive	Present	Absent	Absent	Negative	Vaccinated
24.	50/F	NonDiabetic	Hypertensive	Present	Absent	Absent	Negative	Vaccinated
25.	52/F	Diabetic	NonHypertensive	Absent	Present	Present	Positive	Vaccinated
26.	68/M	Diabetic	NonHypertensive	Present	Absent	Present	Positive	Vaccinated
27.	65/F	NonDiabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
28.	54/M	Diabetic	Hypertensive	Absent	Absent	Present	Negative	Vaccinated
29.	45/F	Diabetic	NonHypertensive	Present	Absent	Absent	Positive	Vaccinated
30.	73/M	Diabetic	Hypertensive	Present	Present	Present	Positive	Vaccinated
31.	48/F	NonDiabetic	Hypertensive	Present	Absent	Present	Negative	Vaccinated
32.	38/M	NonDiabetic	NonHypertensive	Present	Absent	Absent	Negative	Unvaccinated
33.	65/M	Diabetic	Hypertensive	Present	Absent	Present	Positive	Vaccinated
34.	58/F	Diabetic	NonHypertensive	Present	Present	Present	Positive	Vaccinated
35.	59/M	Diabetic	Hypertensive	Present	Absent	Present	Negative	Vaccinated
36.	62/M	Diabetic	NonHypertensive	Present	Present	Present	Positive	Vaccinated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HISTOPATHOLOGY / CYTOLOGY REPORT

NATURE OF SAMPLE - polyps & granulation tissue removed from left maxillary sinus for HPE.

GROSS APPEARANCE - Received dark brown to grey white multiple soft tissue bits altogether measuring 1.5x1cm

MICROSCOPIC APPEARANCE : Sections studied show ciliated Stratified columnar epithelial lining with underlying granulation tissue consisting of proliferating capillaries, lymphocytes, neutrophils & eosinophils. Adjacent area shows collection of septate fungal hyphae

IMPRESSION - Histological picture is that of (Fungal Sinusitis) with Granulation tissue.

NOTE : Please correlate clinically or kindly discuss.

PATHOLOGIST

DISCUSSION -

During the second wave of COVID 19 pandemic, India witnessed an alarming rise in the number of Invasive Fungal Sinusitis cases. Pre COVID 19 pandemic, Fungal Sinusitis was more commonly seen in patients with poorly controlled Diabetes, immunocompromised state and Leukaemia. A study by deShazo RD et al. proposed the combination of hyperglycemic environment, hypoxia and immunosuppression compounded by steroid use , creates an ideal environment for fungal elements to thrive.

At our Tertiary Care Centre, patients diagnosed with Fungal Sinusitis, 75% had Diabetes Mellitus and 66% had history of COVID 19 infection. The criteria of Hyperglycemia and Hypoxemia were fulfilled by this observation. Due to vaccination against COVID 19 in 91.6% patients, immunity against the disease prevented fungal invasion beyond the PNS.

The unvaccinated patient with Diabetes and Hypertension history and Nose Anatomy Deviation developed intracerebral invasion of the fungal growth. In all other vaccinated patients and patients with no Comorbidities, the disease was limited to the PNS. This indicates the effectiveness of vaccination in restricting the severity of the disease.

CONCLUSION-

Occurrence of Fungal Sinusitis has increased more than the pre pandemic levels. Type 2Diabetes , Anatomical Deviations of Nose and PNS , History of COVID 19 infection are compounding factors in this rise in occurence.

Vaccination has reduced the severity of the Disease in this study.

Abbreviations -

PNS: Paranasal sinuses
DM: Diabetes Mellitus
HTN: Hypertension
DNS: Deviated Nasal Septum CB: Concha bullosa
ITH: Inferior Turbinate Hypertrophy.

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