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Research Article

### ANALYSIS OF SINO-NASAL ABRASIONS RELATED WITH CHRONIC RHINOSINUSITIS THROUGH HISTOPATHOLOGY AND ITS COMPARISON WITH THE DIAGNOSIS THROUGH CT SCAN

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**Abstract:**

**Objective:** CRS (Chronic Rhino Sinusitis) is a condition with inflammation of paranasal sinuses and lasting of nasal passage greater than 3 months either without or with the sino-nasal polyps. The aim of this research work was to examine the sino-nasal abrasions related with Chronic Rhino Sinusitis in accordance with the results of histopathology, to compare between the diagnoses conducted clinically and histopathological and provide a comparison between diagnoses with radiology and histopathology of sino-nasal abrasions.

**Methodology:** This retrograde research work was carried out with the examination of the electronic records of eighty-two patients identified with chronic rhino sinusitis nasal polyps. All the patients had to undergo sinus surgery through endoscopy and histopathological assessment of biopsies with surgical intervention. We used the SPSS program for the statistical analysis of the collected information. We also performed the comparison between the histopathological and clinical diagnoses. This research work was carried out at Allied / DHQ Hospital Faisalabad.

**Results:** Out of eighty-two patients, the range of the age of the patients was from 4 to 90 years with an average age of  $34.48 \pm 17.74$  years. There were 54.880% female patients. Most common lesions were inflammatory polyps (31.40%), followed by allergic polyps (30.50%). NPC (Naso-pharyngeal Carcinoma) was detected in total 9.80% abrasions and all of these were unilateral. The findings showed consolidate compatibility between diagnoses conducted clinically and histopathological. ( $P < 0.0010$ ,  $\kappa = 0.2150$ ), and strong compatibility between diagnosed conducted as radiologically and through histopathology ( $P = 0.0070$ ).

**Conclusion:** Most common benign abrasions (bilateral) are the inflammatory & allergic polyps related with the chronic rhino sinusitis, which can be diagnosed rightly in majority of the patients. There are high malignancy rates in the unilateral nasal polyps and these should be examined meticulously with the help of histopathology and endoscopy. There are some pitfalls in the diagnosis of fungal sinusitis with the help of CT (Computed Tomography).

**Keywords:** Computed Tomography, Diagnosis, Nasal Polyp, Histology, Inflammatory, Allergic, Chronic Rhino Sinusitis.

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**INTRODUCTION:**

Chronic Rhino Sinusitis is the inflammation of paranasal sinuses and nasal passage remaining greater than 90 days with at least 2 or more than 2 manifestations; discharge from nasal cavity, inflamed nasal mucosa, impaired smell and pain [1, 2]. This is much frequent occurring disease which occurs in greater than ten percent population of Europe [3]. There is division of CRS into 2 phenotypes, either CRS-wNP (CRS with Nasal Polyps) or CRS-sNP (CRS without Nasal Polyps) [1, 2, and 4]. In many countries of the west, about 80.0% CRS are the CRS-sNP and CRS-wNP are about remaining 20.0% [5]. CRS-wNP can be further separated into two other groups on the basis of the eosinophilic swelling; eosinophilic (Eos-CRS-wNP) & non-eosinophilic (Non-Eos-CRS-wNP) [4, 6]. Tear drop like developments in the nasal cavity or in PNS (Paranasal Sinuses) are the nasal polyps. There is existence of chronic infection and allergies with this complication [7]. Detection and therapy of the airway complications has become much vital as various phenotypes are elaborated [6, 8]. Recurrent symptoms can characterize the asthma and CRS leading to high prescription costs and frequent treatment. Approximately fifty percent patients suffering from Chronic Rhino Sinusitis have asthma and eighty percent patients of asthma are present with CRS [9]. There is rise in their clinical condition with impaired quality of sleep and symptoms of depression with them [10, 11].

Both types of CRS can be identified with the utilization of the nasal endoscopy [3]. European guidelines on nasal polyps and rhino sinusitis (EPOS-

2012) described CT (Computed Tomography) as primary modality of imaging to evaluate the intensity of inflammatory abrasions of PNS and note. Most suitable is the bone window to avoid missing abrasions in PNS [12]. The main aim of this research work was to report the common reasons of sino-nasal abrasions in suspected cases of CRS-wNP with the help of the results of histopathology, to compare the diagnoses carried out clinically and through histopathology and to compare the diagnoses of sino-nasal abrasions conducted through radiology and histopathology.

**METHODOLOGY:**

This is a transverse retrograde research work conducted at Allied / DHQ Hospital Faisalabad. In this research work, we retrieved the data of eighty-two patients suffering from CRS who underwent diagnosis through histopathology from Radiology Department from June 2017 to June 2020. We reviewed those records of the patients and collected information about diagnoses through clinical approach and histopathology. The clinical diagnosis of the patients present with CRS-wNP was performed by a skillful otorhinolaryngologist. All the patients had to undergo histopathological assessment of biopsies by skillful pathologist with more than twenty years of experience. Only thirty patients underwent NECT (Non-enhanced CT) of PNS. A highly experienced radiologist performed the radiological diagnoses having ten years of experience. We compared the clinical & histopathological diagnoses. In this research work, we included the patients clinically detected with CRS-wNP and they underwent surgery through endoscopy and collection of biopsies, all the patients identified with the CRS-sNP with no interventional method.



Figure 1

Ethical review board of the hospital gave the permission to conduct this research work, we assured the confidentiality of all the patients included in this research work. We presented the data in frequencies, percentages, averages and standard deviations. Cross-

tabulation was carried out with the utilization of the Chi-square method. We used the SPSS V. 23 for the statistical analysis of the collected information. P value of less than 0.050 was considered as significant.

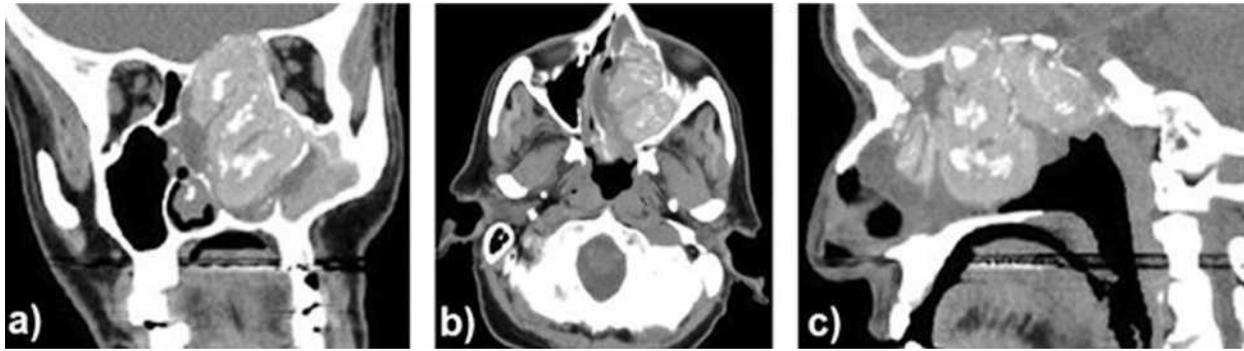


Figure 2

**RESULTS:**

There were eighty-two patients suffering from CRS in this research work. The range of the age of these patients was 4 to 90 years with an average age of  $34.480 \pm 17.740$  years. 54.88% (n: 45) patients were females. The age distribution of the patients is present

in ( $P < 0.0010$ ) (Table-1). Inflammatory polyps were the most common abrasions (31.40%) followed by allergic polyps (30.50%). The percentage of NPC (Nasopharyngeal Carcinoma) was 9.80% of lesions (Table-2).

**Table-I: Sociodemographic Distribution of The Patients**

Variable	No.	Percentage	Significance
Female	45	54.88%	$p=0.377$
Male	37	45.12%	
First decade	6	7.30%	$p < 0.001$
Second decade	11	13.40%	
Third decade	25	30.50%	
Fourth decade	13	15.90%	
Fifth decade	14	17.10%	
Sixth decade	8	9.80%	
Seventh decade	2	2.40%	
Eighth decade	3	3.70%	

**Table-II: Histopathologic Results of The Lesions Associated With CRS.**

Diagnosis	Number	Percentage
Chronic sinusitis only	12	14.6
Inflammatory polyp	26	31.7
Allergic polyp	25	30.5
Antrochoanal polyp	3	3.7
NPC	8	9.8
Others	8	9.8
Total	82	100

The findings showed strong compatibility results of histology and clinical diagnoses ( $P < 0.0010$ ) and measurement of agreement kappa = 0.2150 (Table-3). The findings are also described the significant compatibility between the diagnoses of computed tomography and results of histopathology ( $P < 0.0010$ ) (Table-4).

**Table-III: Cross Tabulation Between Clinical and Histopathologic Diagnoses. Clinical Diagnoses**

	Chronic sinusitis	Inflammatory polyp	Allergic polyp	Antrochoanal polyp	NPC	Others	Total
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
CRS	9 (22.5)	16 (40)	12 (30)	0 (0.0)	2 (5)	1 (2.5)	40 (100)
Polyposis	0 (0.0)	7 (58.3)	4 (33.3)	0 (0.0)	0	1 (8.3)	12
Antrochoanal	1 (12.5)	2 (25)	2 (25)	3 (37.5)	0	0 (0.0)	8
NPC	2 (22.2)	0 (0.0)	0 (0.0)	0 (0.0)	6	1 (1.1)	9
Others	0 (0.0)	1 (7.7)	5 (53.8)	0 (0.0)	0	5	13
Total	12 (14.6)	26 (31.7)	25 (30.5)	3 (3.7)	8	8 (9.8)	82

**Table-IV: Cross Tabulation Between Radiological and Histopathologic Diagnoses. CT Diagnoses**

Chronic sinusitis	Inflammatory	Allergic	Antrochoanal	NPC	Others	Total
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Nasal polyp	0 (0.0)	1 (50)	1 (50)	0 (0.0)	0 (0.0)	2 (100)
Fungal sinusitis	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)	3 (100)
Sino-nasal polyposis	1 (6.3)	5 (31.3)	9 (56.3)	0 (0.0)	1 (6.3)	16 (100)
Antrochoanal polyp	2 (50)	2 (50)	0 (0.0)	0 (0.0)	0 (0.0)	4 (100)
Carcinoma	2 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100)
Others	1 (33.3)	1 (33.3)	0 (0.0)	1 (33.3)	0 (0.0)	3 (100)
Total	6 (20)	10 (33.3)	10 (33.3)	1	3 (10)	30

**DISCUSSION:**

One of the widespread issues of the world is chronic rhino sinusitis. This complication has association with the sino-nasal polyps in twenty percent patients. This research work stated a positive relationship between bilateral sino-nasal abrasions and benignity as well as with vice versa with abrasions of malignant nature. These findings showed strong compatibility between histopathological & clinical diagnoses of sino-nasal abrasions. The results of current research work showed that most common type abrasions linked with the CRS were the allergic & inflammatory polyps. These findings are comparable with the findings of Stevens who stated that there is frequent association of the CRS-wNP with asthma and allergic rhinitis.

The relationship between asthma and CRS-wNP has been defined extensively. There were 26.0% to 48.0% patients reported with asthma in addition with CRS-wNP whereas there was an estimated occurrence of CRS-wNP in only 7.0% patients of asthma [13]. In this

current research work, majority of the sino-nasal abrasions were benign in nature. These results are compatible with the findings of Dutta who stated that most of the polypoid sino-nasal masses are benign in nature [14]. The findings of current research work showed that most common abrasion in this research work was inflammatory polyp and most common neoplasm benign in nature was hemangioma. These findings are also comparable with the results of the research work conducted by Singh who stated the similar findings [15]. This current research stated 8 patients of naso-pharyngeal carcinoma and they were unilateral. This finding is also consistent with the findings of Wong who stated that there are high malignancies rates due to unilateral nasal polyps as compared to the bilateral abrasions [16]. These results are also comparable with the findings of a research work conducted by Eckhoff who stated a significant relationship between diagnosis of malignant & benign neoplasm and unilateral sino-nasal abrasions [17].

These findings are also similar with the results of Arslan who stated that there should be histological examination of the any unilateral nasal mass for the exclusion of neoplasms. Belli also stressed upon the pathological examination at any age for the all unilateral Sino-nasal abrasions. In the results of this research work, we stated significant precision for computed tomography in the diagnosis of sino-nasal abrasions with 2 pitfalls in the diagnosis of fungal sinusitis. This finding is much consistent with the results of Kandukuri who declared the computed tomography as modality of the choice for the evaluation of the malignant, benign, inflammatory sino-nasal abrasions with potential pitfalls for the differentiation of the fungal sinusitis from the dense secretions [10]. Some other pitfalls of computed tomography were stated by Popolizio who recorded that FB (Foreign Body) in sinus with matted hyphae of fungi can be visible as a mass on computed tomography and also condensed swollen sinus mucosa may cause the enhancement after contrast management [2]. There are some limitations of this research work as this was conducted in a single center and it has a retrograde nature.

#### CONCLUSION:

Most common bilateral benign abrasions of the sino-nasal regions are the allergic and inflammatory polyps, which can be exactly detected clinically in most of the patients. There should be further confirmation with the utilization of histopathology for the patients in doubtful state. There are high malignancies rates for unilateral nasal polyps and these should be examined meticulously through histopathology and endoscopy. There are some pitfalls of CT (Computed Tomography) in the detection of fungal sinusitis.

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