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The incidence of maxillary sinus carcinoma in nasal mass

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Abstract--The external nose is pyramidal in shape with its root above and base directed downwards. The framework is composed of bones and cartilages. The bones are the two nasal bones articulating medially. Laterally they articulate with the frontal process of maxilla, superiorly to the medial part of nasal notch of frontal bone and inferiorly to the lateral cartilage of nose and posteriorly with the perpendicular plate of ethmoid bone. Considering the malignant conditions of nose & PNS, the most common is squamous cell carcinoma of maxillary sinus (37.5%), followed by squamous cell carcinoma of nose (25%), and then Adenocarcinoma of maxillary sinus (12.5%), Squamous cell carcinoma of Ethmoid sinus (12.5%) & adenoid cystic carcinoma of maxillary sinus (12.5%). These findings are comparable with reports of Cheesman (1957), who had noted that Squamous cell carcinoma comprised of 80% of cases & Bahadur et al (1984), who reported that most common was Squamous cell carcinoma (65%). Followed by adenocystic carcinoma (12%), Adinocarcinoma (12%) Meliginate lanoma (2%) olfactory neuroblastoma (2%).

Keywords--Cell Carcinoma, Maxillary Sinus, Adenocarcinoma

Introduction

1.1 Anatomy of External Nose:

The external nose is pyramidal in shape with its root above and base directed downwards. The framework is composed of bones and cartilages.[1]

1.2 Bones:

The bones are the two nasal bones articulating medially. Laterally they articulate with the frontal process of maxilla,[2] superiorly to the medial part of nasal notch of frontal bone and inferiorly to the lateral cartilage of nose and posteriorly with the perpendicular plate of ethmoid bone.[3]

1.3 Cartilages:

The cartilages are four paired cartilages and two unpaired cartilages. [4]Among paired cartilages there are two upper nasal cartilages, two lower nasal cartilages, and two or at times three small alar cartilages present lateral to greater alar cartilages embedded in fibrous tissue[5]. The septal cartilage and sub-vomerine cartilage are unpaired ones.[6]

1.4 Anatomy of Nasal Cavities:

These are two wedge shaped cavities divided from one another by the nasal septum. [7] The cavities are concave from side to side and slightly concave antero-posteriorly. Posteriorly it communicates with nasopharynx and in front with the exterior by way of the vestibule.[8] Each cavity consists of roof, floor, medial wall and lateral wall.[9]

1.5 Anatomy & Physiology of Paranasal Air Sinuses:

1.5.1 Anatomy

The paranasal air sinuses are frontal, maxillary, ethmoidal and sphenoidal.[9]

1.5.2 Frontal sinus:

The frontal sinus has got as it's convex outer part the anterior wall of the Frontal bone, which is diploic in nature and thickest of all the walls. Posterior wall is formed by a plate of compact bone.[10] The floor is formed by orbital roof which slopes medially downwards and backwards towards the opening of frontonasal duct.[11] The sinus opens into the middle meatus. Blood supply of the sinus is from the supraorbital artery and anterior ethmoidal artery. The nerve supply is from supra orbital nerve and direct branches from nasocilliary.[12]

1.5.3 Maxillary Sinus:

The maxillary sinus is the largest of all sinuses. It is pyramidal in shape.[13] The roof is formed by the orbital surface of maxilla, which forms the floor of the orbit and is ridged by the canal of the infraorbital nerve. The floor is formed by alveolar process of the maxilla. The anterior wall is formed by the anterior part of the body of the maxilla and is thick. The posterior wall is formed by a thin plate of bone which separates it from the infra-temporal fossa and pterygopalatine fossa. The medial wall is formed by the lateral wall of nasal cavity which contains the opening of maxillary sinus to the posterior part of the hiatus semilunaris. An accessory ostium may be present on this surface. The apex of the pyramid being directed laterally towards the zygomatic process of the maxilla and base towards the

nasal cavity. The mucous membrane of the sinus is supplied by branches from posterior superior dental branch of maxillary nerve. The blood supply is from posterior superior dental artery and from the spheno-palatine artery. [1 4]

1.5.6 Ethmoidal sinuses:

The ethmoidal sinuses consists of 3 to 18 numbers of thin walled small cavities of variable size and constitute the ethmoidal labyrinth which is suspended from the edge of the cribriform plate of the ethmoid bone and rests below on the maxilla and attached to the anterior aspect of sphenoidal concha. It has got six walls. The superior aspect of sphenoidal concha. It has got six walls. The superior wall is formed by the orbital plate of frontal bone and the cribriform plate of ethmoid. The interior wall is formed by orbital plate of maxilla and palatine bones. The lateral wall is formed by the lamina papyracea of ethmoid bone. The anterior wall is formed by frontal process of maxilla. The posterior wall is the spongy part of sphenoid bone. Medial wall is formed by superior and middle turbinates. The ethmoid cells have anterior, and posterior group of cells. They are separated by BASAL LAMINA. Anterior group open into middle meatus of the infundibulum, whereas posterior group opens into the superior meatus.

Blood supply of the sinus is derived from

sphenopalatine artery to the posterior group. The anterior group receive blood from the sphenopalatine artery and twigs from the anterior ethmoidal artery. Nerve supply to posterior group is derived from posterior ethmoidal nerve and by short sphenopalatine branches of sphenopalatine ganglion. The anterior group derive nerve supply from the anterior ethmoidal branches of nasociliary nerve.

1.5.7 Sphenoid Sinus:

It is variable in different individuals because of its development and variable centers of ossification. It at times extends from the body of the sphenoid bone laterally to greater and lesser wings and to the pterygoid plates also. Anteriorly the sinus is covered by a plate of bone named Sphenoidal Turbinate (bone of Bertin) at the ethmoid bone. Its relations are of importance as it is related laterally to optic nerve and cavernous sinus with its contents, superiorly to the under surface of frontal lobe of cerebrum and olfactory tracts, above and posteriorly to the pituitary gland. Nerve supply of the sinus is from the posterior ethmoidal branch of the nasociliary nerve and blood supply is from the branches of sphenopalatine artery.

The mucous membrane of the paranasal sinus is continuous with that of the nasal cavity through their openings. It is thinner than that of the nasal cavity and closely applied to periosteum with ciliated columnar epithelium with numerous goblet cells. The blood supply is poor and cilia are more prominent near the openings of the sinuses (Ostia) than elsewhere in the Sinuses.[15]

1.5.8 Physiology:

- Humidification and temperature homeostasis of the inspired air.

- Providing resonating chambers during vocalization thus, providing the resonance and timber to the voice.
They help make the head lighter in weight by virtue of their spongy structure.[16]

Method

Material and Methods

The present work comprises of clinical and histopathological assessment of mass in nose, amongst patients attending the Ear, Nose, and Throat out-door department of the V.S.S.Medical College Hospital, Burla during the period December 2009 to August 2011. Patients with a definite mass in nose are admitted to the E.N.T. ward for a thorough clinical study which includes detailed history, routine and special investigations and histopathological assessment of the lesion.

These cases are investigated under the following proforma.

1. Name, Age, Sex
2. Address
3. Religion
4. Registration Number
5. Occupation
6. Social Status
7. Chief complaints duration
 - a. Persistent progressive nasal congestion and stuffiness.
 - b. One side or both side nasal blockage.
 - c. Nasal drainage in the back of the nose and throat.
 - d. Nose Bleeds.
 - e. Pus draining from the nose.
 - f. Decreased sense of smell.
 - g. Numbness or pain in part of the face.
 - h. Lossening or numbness of the teeth.
 - i. Growth or mass in the face, nose or palate.

- j. Persistent tearing of the eyss.
 - k. Bulding of one of the eyes and/or visual loss.
 - l. Pain or pressure in one of the ears.
 - m. Difficulty opening the mouth.
 - n. Lymph node enlargement in the neck areas.
8. History of present illness.
 9. Past history.
 10. Family history.
 11. Personal history

Observation and Results

Table – I
Incidence of various types of nasal
mass

| Si .No. | Type of Mass | Total no. of Case | Percentage |
|---------|-------------------------------|-------------------|------------|
| | <u>Non- neoplastic</u> | | |
| 1 | Rhinosporidiosis | 45 | 34.61 |
| 2 | Antrochoanal polyp | 22 | 16.92 |
| 3 | Ethomoidal polyp | 18 | 13.84 |
| 4 | Cyst | 5 | 3.84 |
| 5 | Fungal granuloma | 4 | 3.07 |
| | Begming Tomours | | |
| 6 | Hemangioma | 10 | 7.7 |
| 7 | Squamous cell papillima | 6 | 4.6 |
| 8 | Fibroma | 3 | 2.3 |
| 9 | Angiofibroma | 3 | 2.3 |
| 10 | Inverted Papilloma | 3 | 2.3 |
| 11 | Neurofibroma | 1 | 0.76 |
| 12 | Ossifying fibroma of maxilla | 1 | 0.76 |
| 13 | Pleomorphic adenoma | 1 | 0.76 |
| | Malignant Tumours | | |

| | | | |
|----|--------------------------------|---|-------|
| 14 | Sq.Cell CA maxillary sinus | 3 | 2.3 |
| 15 | Sq. Cell CA Nose | 2 | 1.53 |
| 16 | Sq. cell CA Ethmoid | 1 | 0.769 |
| 17 | Adenoid cystic CA Maxilla | 1 | 0.769 |
| 18 | Adenocarcinoma maxillary sinus | 1 | 0.769 |

From the table I Rhinosporidiosis was the most common nasal mass (34.61%), followed by AC Polyp (16.92%), Ethmoidal Polyp(13.84%) hemangioma (7.7%), malignant conditions of nose & PNS (6.15%) Sq. cell papilloma (4.6%), cyst (3.84%), inverted papilloma (2.3%). These findings are slightly different from that of TONDON (1970)who had found polyp in 47.7% of cases & rhinosporidiosis in 17.9% .



Palatal involvement in maxillary sinus carcinoma



Results

Considering the malignant conditions of nose & PNS, the most common is squamous cell carcinoma of maxillary sinus (37.5%), followed by squamous cell carcinoma of nose (25%), and then Adenocarcinoma of maxillary sinus (12.5%), Squamous cell carcinoma of Ethmoid sinus (12.5%) & adenoid cystic carcinoma of maxillary sinus (12.5%). These findings are comparable with reports of Cheesman (1957), who had noted that Squamous cell carcinoma comprised of 80% of cases & Bahadur et al (1984), who reported that most common was Squamous cell carcinoma (65%). Followed by adenocystic carcinoma (12%), Adenocarcinoma (12%) Meliginate lanoma (2%) olfactory neuroblastoma (2%)

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