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PROTOCOL OF MASTER

DEGREE IN E. N. T.

The Title

Value of radiology in diagnosis of chronic sinusitis.

The introduction

In some cases of chronic sinusitis the radiological finding donot coinsid with both the clinical diagnosis and the results of antral wash-out.

Aim of study

The aim of this work is to study the radiological finding with the clinical diagnosis and the results of antral wahout.

Material and Methods

30 Cases of clinically diagnosed chronic maxillary sinusitis will be studded through the following steps :



(2)

1. Clinical assesement as :-

age, sex , signs , and symptoms, leucacytic count and eosinophilic count, treatment given.

2. Radiological examination including :

both plain and some with lipidol injection into the antrum.

3. Antral puncture will be done for all cases.

4. In cases of failur of Medical treatment and antral washout, Biobsy from the mucous lining of the sinus should be examined under microscope.

5. The results of the clinical with the radiological and antral Puncture will be consulted together.

Summery

References

Anatomy of maxillary antrum

The antrum of Highmore, the largest of the sinuses at birth, is located in the maxilla lying along side the nasal cavity, it may be as large as small bean.

As the maxilla develops, the antrum enlarges laterally and downward until in adult life it occupies most of the maxilla.

It overlies the bicuspid and molar Teeth and its full development downward and posteriorly is conditioned by the eruption of the permanent bicuspid and molar teeth, especially the 3rd molar.

The antrum, the largest of the accessory sinuses consist usually of single cell (the ostium which is near its roof). Inadequate drainage is a factor in its frequent involvement in suppurative processes.

Its wall may be thick or thin, depending on the extent of pneumatization of the maxilla, but its pneumatization pattern is much simpler than is case with ethmoid or sphenoid sinuses, its relations are fewer and simpler and its complication less frequent.

The most important relation of the antrum is with teeth of the upper jaw, the 2 Bicuspid teeth and the

1st and 2nd molar teeth.

The floor of the antrum overlying the teeth may be several millimeters thick so that the relation between the roots of the teeth and the cavity is not a close one, or the floor may be very thin so that the roots of the teeth protrude into the cavity itself.

Under that condition apical disease of the under teeth frequently causes disease of the antrum from 20% to 50 % or 60% of cases.

The roof of the antrum is formed by the orbital surface of the maxilla and is rigid by the canal of infra - orbital nerve.

The anterior wall is fairly thick and is formed by the anterior part of the body of the maxilla.

The medial wall, however is thin and composed of nasal surface of the maxilla, descending part of the lacrimal bone, the uncinat processes of the ethmoid, the maxillary processes of the inferior concha, and the perpendicular plate of platine bone.

The opening of the sinus is small silte between the middle turbinate, its maxillary process, the uncinat process of ethmoid bone and perpendicular plate of

process of ethmoid bone and perpendicular plate of palatine bone and found in the posterior part of the hiatus semilunaris in the middle meatus.

The adult sinus is about the following average:-

Height : opposite first molar tooth 3.5 cm.

Breadth : 2.5 cm.

Depth : 3.2 cm.

A large sinus in the adult may hold 30 ml.

The mucous membrane of the maxillary sinus is supplied by Branches from the posterior superior dental branch of the maxillary Nerve.

The blood supply is from the posterior superior dental artery and from the sphenopalatine artery.

Physiology of the sinuses

1) Air conditioning

They serve as supplementary chambers for conditioning the inspired air by heating and moistening.

2) Vocal resonance

The sinus may act as resonance chamber and affect the quality of voice.

3) Vestigial olfactory organs

In the lower animal the sinus may contain complex olfactory organs and contribute a portion of the olfactory receptor surface.

4) Thermal insulators

The paranasal sinuses serves as temperature buffers, protecting the structures in the orbit and cranial fossa from the intranasal temperature variations.

5) Aid to balance of head

It has been claimed that the sinuses aid in the balance of the head by reducing the weight of the bones of the face.

Ciliary action in the clearance of mucus

The clearance of the mucous covering the maxillary sinuses is carried out by ciliary propulsion as spiral pathway towards the ostium.

This ciliary action will maintain a constant direction of beat, that is, toward the natural ostium, even when an artificial antrostomy opening has been made.

Symptomatology of chronic maxillary sinusitis

Emerson (1927) suggested that the varying symptomatology of chronic maxillary sinusitis dependent on the pathological condition present.

recognised 4 types:

- (1) Chronic maxillary sinusitis as result of catarrhal process.

In this type only the surface mucosa is involved and it is greatly thickened.

Discharge is persistent but pain is rare, though vague discomfort about the orbit may be present.

The patient has marked increased susceptibility to colds.

- (2) Chronic maxillary sinusitis as result of suppurative process, the secretion may be foetid mucopurulent, purulent.

The patient complain of dry throat, persistent Cough marked pharyngitis with irritation.

Pathological examination show achronic inflammatory reaction of the mucosea with noticeable increase in connective tissue and thickening of the vessels entering the bone.

- (3) Chronic maxillary sinusitis with polypoid changes
Discharge is encountered and the symptoms are those of subacute nasopharyngitis.
- (4) Chronic maxillary sinusitis with degenerative changes in this type Emerson found that the lining may look smooth or it may be covered with small multiple abscess.

An isolated polyp may be seen here and there and the cavity may be filled with serum or gelatinous mass.

The mucosa is found to be loosened in the bowl of the antrum, pus may be found between the mucoperiosteum and the bony wall and osteitis may be present.

Polyps may be of the mucoid type or may contain a large amount of fibrous tissue.

The processes are generally diffused and not circumscribed.

He made statement that in these cases, the symptoms are of vasomotor type.

In a report of seven cases of chronic maxillary sinusitis with degenerative changes in the mucosa, the clinical history revealed the presence of asthma,

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hay fever or frequent colds in six out of the seven cases .

The existence of these manifestation suggested the strong possibility of allergy as an important factor in these cases.

In a study of (192) cases chronic maxillary sinusitis stevenson (1931) found that the chief complaint was frequent attack of common cold in the head. This being present in 102 cases.

Thirty patient in his patient in his series complained chiefly of discharge from the nose or post-nasal discharge.

Pain was present in 63 cases, the location of pain was definitely over the anterior wall of the wall of the sinuses extending into the upper teeth of the affected side.

In few case the patient stated that the teeth seemed too long on that side and that unconsciously they had formed the habit of chewing on the opposite side.

Several patient stated that the eye and orbit was sore and that moving the eye ball was painful.

Pain remotely located about the head was not encountered.

Subjective odour was present in 5 case.

Six patient complaint of sever frontal headache
One patient complaint the presence of mass growing in the nasal cavity , this proved to be a cyst which has broken down the naso - antral wall.

There were 30 cases who are conscious that their trouble had followed the extraction of diseased teeth.

Hind (1950) in review of 100 cases of chronic maxillary sinusitis pointed out that :-

Three) dominant complaints were the cause of the patient presenting himself for examination.

The symptoms and their incidence were as follows :-

- 1) Nasal discharge was presnt in 43 cases.
- 2) Nasal obstruction in 38 cases.
- 3) Frontal or maxillary headache in 19 cases.

Boies , L. R. (1954) reportet that the local symptoms of chronic sinusihis are not as frequent or severe as those seen in acute one. as follow:-

(1) Pain and Tenderness

Localized pain and tenderness are not usually present unless associated with an acute exacerbation of chronic inflammatory process.

(2) Headache

The severe headache so characteristic of acute sinus infection is not seen in chronic type except in acute exacerbation.

Headache when present is dull, persistent, less definitely and is usually indicative of some obstruction to drainage or ventilation.

(3) Nasal Occlusion

Nasal occlusion is a common symptom and may be due to hypertrophy of intranasal structure such as turbinates, uncinata processes, bulla ethmoidalis or Nasal Polyp as result of infection.

Deviation of the Nasal septum is frequently present and may be responsible for much obstruction.

(4) Discharge

Either anterior or posterior into pharynx were not always pathognomonic of sinus disease.

A common symptom usually present in some case in general it is purulent in character, as is the drainage from any infected area.

The point of appearance of the discharge in the nasal cavity is indicative of its source and hence of the sinus involved and apply equally to the location of the location of discharge in chronic sinusitis.

The post nasal discharge may cause chronic sore throat, laryngitis or Bronchitis with nocturnal cough.

Bartoff (1947) in his study of one hundred patients with chronic maxillary sinusitis stated that in 72% of cases studied, pus in the middle meatus, along the middle third or the posterior third of inferior meatus indicate that pus was present in the antrum.

Also the History was secured in all of the 100 cases studies, all stated that had head colds before the present symptoms arises.

Those patients complained of continuing anterior and posterior nasal discharge and patient had nausea and vomiting usually following breakfast some of them complain of sore throat without information of the

lateral bands, some complain of cough with no involvement of the larynx.

Diagnosis of chronic maxillary sinusitis

(I) In 1889 the polish laryngologist introduced the electric transillumination as a diagnostic aid in cases of maxillary sinusitis.

Transillumination can give some guidance but it is not conclusive.

Sir st. clair thomson stated in his text book (1948):-

" The evidences afforded by transillumination may be misleading, thus it may give positive result in absences of empyema owing to :-

- (1) small size of the sinuse.
- (2) abnormal thickness of bony sinuse.
- (3) Permanent thickness and opacity sometimes, remaining in the lining of the cavity of a complet cure of suppuration.
- (4) The presence of malignant or other neoplasm.

On the other hand transillumination may give negative evidence although the antral cavity is diseased. [Central Library \(Ain Shams University\)](#) owing to (a) the cavity happening to be more