

STUDY OF THE INCIDENCE OF DIFFERENT
GRANULOMAS OCCURRING IN THE UPPER RESPIRATORY
TRACT

THESIS

SUBMITTED BY

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M B, B. CH.

FOR THE DEGREE OF M. S.

(PATHOLOGY)

UNDER THE SUPERVISION OF

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PATHOLOGY DEPARTMENT
FACULTY OF MEDICINE
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INTRODUCTION

Previous studies dealt with many types of granulomas occurring in the upper respiratory tract. These granulomas included, among many diseases, the infective type, the foreign body and allergic type as well as the granuloma of unknown etiology.

As has been recorded in the literature, there is a wide variety of granulomatous lesions affecting the upper respiratory tract. These lesions, included mostly rhinoscleroma and then comes in the order of decreasing frequency, tuberculosis, leprosy and intubation granuloma. Other granulomas which were also recorded with a low incidence, and these included syphilitic mycotic, allergic and sarcoid granulomas.

The present study deals with the incidence of different granulomas affecting the upper respiratory tract in patients admitted in our hospital, Ain Shams University. This was achieved by clinical examination of the patients, confirmation of clinical diagnosis was done by laboratory investigations including haematological, serological, radiological and histopathological examination.

The work done is aiming at finding which type of granuloma is prevailing in our country, as proved by the technique just mentioned.

ANATOMY OF THE UPPER RESPIRATORY TRACT

Anatomy and Histology of the Upper Respiratory Tract

I. Anatomy

The upper respiratory tract begins at the nose and continues with the lower respiratory tract at the lower border of the cricoid cartilage.

1. Anatomy of the nose:

The nasal cavity extends from the nares anteriorly to the choana, through which it opens into the nasopharynx, posteriorly. It is divided by a median septum into two lateral halves or fossae. The inferior region of each fossa is somewhat expanded and is named the vestibule. This leads into the major cavity, which is named the respiratory region in contrast with the olfactory region in the upper part of each fossa.

The medial wall of each fossa (the septum) is smooth, but the lateral wall has an irregular contour because of the presence of horizontal scroll-shaped structures i.e. the conchae. Each concha is attached along its upper margin to the lateral wall, and the space beneath each concha is known as a meatus. There is superior, middle and inferior meatus.

Above the superior concha is the spheno-ethmoidal recess. A single opening exists in this recess which is the ostium of

the sphenoidal air sinus. Superior meatus drains the posterior ethmoidal air cells. The middle meatus presents a convex bulge beneath the concha which is the "bulla" of the ethmoid. It is produced by the bulging middle ethmoidal air cells, whose ostium opens on the bulla. The middle meatus also receives the opening of the maxillary antrum, frontal and anterior ethmoidal ostia. The inferior meatus receives the nasolacrimal duct. The bony lateral wall of the nose is formed by the frontal process of the maxilla and nasal bones in front. Behind these is the superior and middle conchi of the ethmoid, inferior concha, perpendicular plate of the palatine bone and medial pterygoid plate. The medial wall of the orbit is separated from the lateral wall of the nose by the ethmoidal air cells.

The nasal septum consists of two bones and a septal cartilage. This cartilage is anterior and extends forward to give shape and prominence to the external nose. The vomer and vertical plate of the ethmoid composes the back part of the septum. The vomer forms the posterior border of the septum and slotted into a grooved reidges on the hard palate. The perpendicular plate of the ethmoid forms a suture with the upper border of the vomer. The septal cartilage fills the angle between the bones.

The floor of the nose is the roof of the mouth, the hard

palate, formed of the horizontal plate of the palatine bone and the palatine process of the maxilla.

The roof of the nose is formed by the nasal bones, cribriform plate of the ethmoid, two alae of the vomer and the vaginal process of the ethmoid.

The lateral wall and the septum are close together at the narrow roof and further apart at the broader base.

Blood and nerve supply:

We can divide the lateral wall of the nose by a longitudinal and transverse lines into four quadrants.

The posterior superior quadrant is supplied by the posterior superior lateral nasal vessels and nerves from the maxillary artery and pterygopalatine ganglion.

The posterior inferior quadrant is supplied by multiple branches of the greater palatine artery and anterior palatine nerve.

The anterior superior quadrant is supplied by the anterior ethmoidal nerve and blood supply from the anterior ethmoidal artery assisted by the posterior ethmoidal and some branches from the facial artery.

The anterior inferior quadrant is supplied by the anterior superior alveolar nerve, facial and perforating branches from

the greater palatine arteries.

The septum is supplied by the anterior ethmoidal nerve and artery in it's anterior superior part, while the posterior inferior part is supplied by the sphenopalatine artery and nasopalatine nerve.

Venous drainage:

Veins accompany arteries and pass to the pterygoid plexus. Posterior veins reach the pharyngeal plexus, while anteriorly they pass out to the facial vein.

Lymphatic drainage:

Lymphatic drainage from the frontal half of the nose passes to the submandibular lymph nodes. Those from the back half and nasopharynx pass to the retropharyngeal and anterior superior deep cervical lymph nodes.

II. Paranasal Sinuses:

Certain of the bones that form the boundaries of the nasal cavities are hollowed and the cavities so produced are lined with respiratory mucous membrane. They communicate by relatively tiny apertures with the nasal cavity.

There are four (bilateral) sinuses. The maxillary and ethmoid sinuses are beyond the lateral wall of the nose. The frontal and sphenoidal sinuses abut at the midline separated by a thin bony septum.

III. Nasopharynx:

It lies behind the nose, separated from the oropharynx by the soft palate which forms the floor of the nasopharynx. The wall of the nasopharynx is the rigid pharyngobasilar fascia. This rigid fascia is further stiffened behind by the midline pharyngeal ligament. Thus the air way is maintained patent at all times. Inside this wall are structures that project the lining mucous membrane into folds and ridges. Muscular ridges running vertically are produced by the longus capitis ridges, and the lateral recess of the pharynx lies behind the salpingopharyngeus ridges.

The opening of the Eustachian tube lies above the soft palate in the lateral wall. It is in the shape of an inverted J. The opening shows prominent rounded lips, formed by the trumpet shaped medial end of the tube, which is here covered by lymphatic tissue, the tubal tonsil. Further collections of lymphatic tissue lies posteriorly i.e the nasopharyngeal tonsil or adenoid. The collections of the lymphatic tissue constitute, with the palatine and lingual tonsils, the Waldeyer's ring.

IV. Palatine tonsil:

Is a large collection of lymphatic tissue which projects into oropharynx from between the anterior and posterior faucial pillars. It is covered by mucous membrane which in many places is invaginated into deep crypts whose mouths are visible to the naked eye.

It is supplied by the tonsillar branch of the ascending palatine branch of the facial artery and its tissue fluids drain into the jugulodigastric nodes. It have no afferent lymphatics.

V. Eustachian tube:

Connects the nasopharynx, by way of the middle ear with the mastoid air cells. It has a bony part which is one cm. long and tapers down from the anterior wall of the middle ear to its orifice, and a cartilagenous part which is two cm. long and joins the bony orifice and terminates in the nasopharynx.

VI. Middle ear:

Is an air containing cavity in the petrous bone. It is the intermediate portion of a blind diverticulum that leads out from the respiratory mucous membrane of the nasopharynx. The diverticulum consists of the Eustachian tube the middle ear and the mastoid air cells .

VII. Mastoid air cells:

It lies in the petrous part of the temporal bone and become pneumatized in the first year of life.

VIII. Larynx:

The Skeleton of the larynx is formed of:

The cricoid cartilage:

It is a complete cartilagenous ring. The anterior part is known as the arch, posteriorly it projects upwards into a quadrangular flat part which is the lamina.

Arytenoid cartilages:

These are two small cartilages, articulating with the upper border of the lamina of the cricoid, serve for the attachment of the vocal folds and of many muscles. The superior process of the arytenoid articulates with a small cartilage, the corniculate cartilage, to which is attached the aryepiglottic fold.

Thyroid cartilage:

Formed of two lamini attached anteriorly by the laryngeal prominence and above it is the thyroid notch. Their posterior borders are free, project upward and downward as the superior and inferior cornua. Each inferior cornu articulates with the cricoid.

Epiglottis:

Is a leaf-shaped cartilage, it is prolonged below into a slender process that is attached to the upper border of the thyroid cartilage.

Conus elastics:

Projecting upwards from the arch of the cricoid is a fibro-elastic membrane which is attached anteriorly in the midline to the lower border of the thyroid notch. This part is very thick and strong, and forms the cricothyroid ligament. The upper portion of the conus elasticus is hidden beneath the laminae of the thyroid cartilage. It's upper border is unattached on each side, constituting the vocal folds whose anterior ends are attached to the thyroid cartilage at the cricothyroid ligament and the posterior ends are attached to the vocal processes of each arytenoid cartilage. The slit between these free edges is known as the rima glottidis which is the narrowest part of the larynx.

The quadrate membrane:

Extending between the arytenoid cartilage and the epiglottis is a fibroblastic membrane. It's anterior border is attached to the side of the lower half of the epiglottis. It's posterior