Role of Spiral C.T in Diagnosis of Nasopharyngeal Masses

Essay

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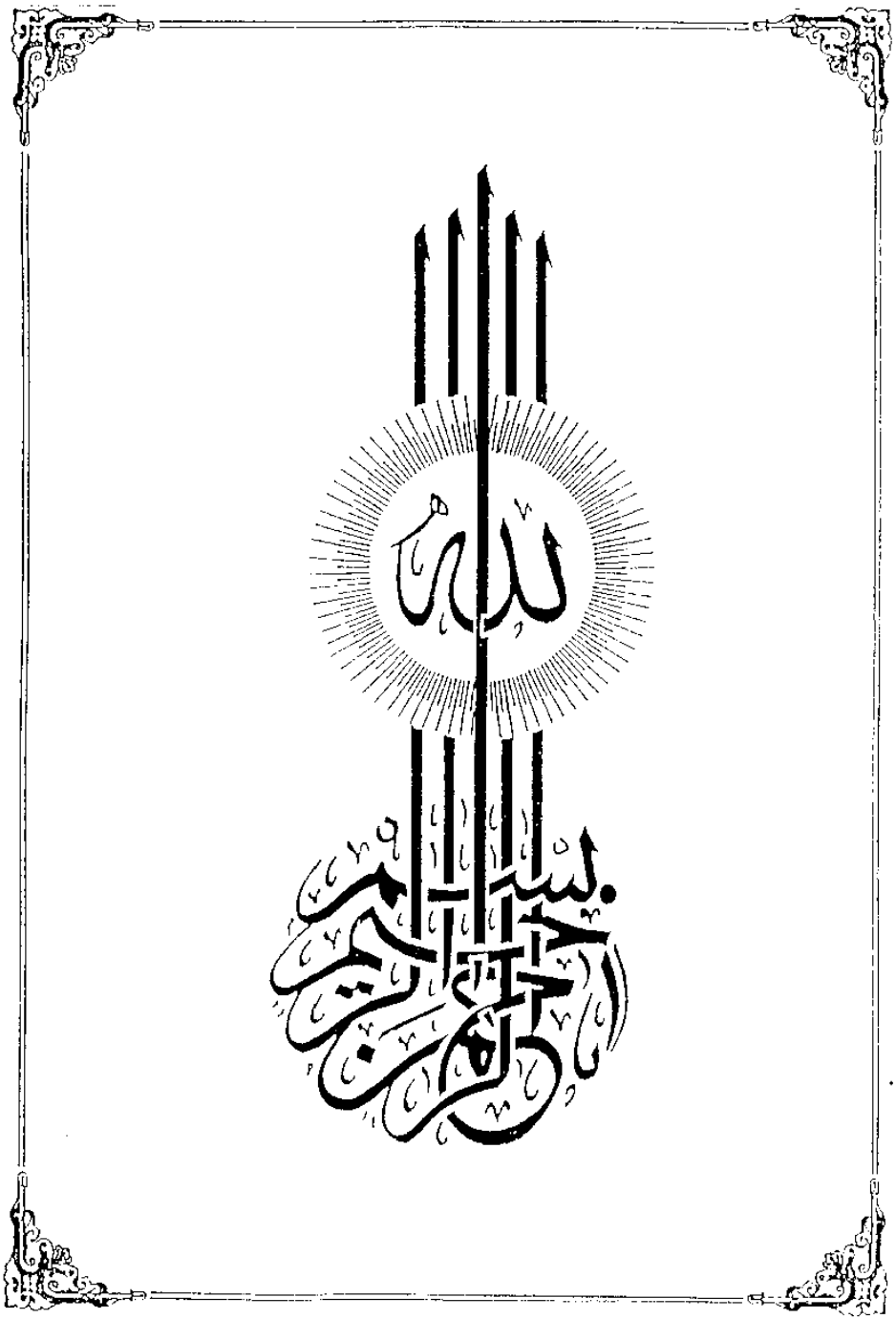

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Introduction and Aim of the Work

INTRODUCTION AND AIM OF THE WORK

Computed tomography has greatly altered the diagnostic approach to the nasopharyngeal masses.

It has proven itself capable of showing lesions that is undetectable by clinical examination and sometimes even by soft tissue exposure of the nasopharynx in plain radiograph. The information obtained by computed tomography will greatly affect the therapeutic approach to nasopharyngeal masses. C.T also has better evaluation for the nasopharynex as the radiologist can look beneath the nasopharyngeal mucosa, and assess the submucosa and muscles *(Bohman et al., 1988).*

Recently helical (spiral) C.T allows imaging of nasopharynx in only 30 seconds (one breath hold) and, by virtue of its volumetric acquisition, provides high quality axial and three dimensional images. It also adequately evaluates the vascular structures using C.T angiography.

Aim of the Work :

In this work we aim to emphasize the role that spiral C.T plays in the diagnosis of these lesions, and its advantage over conventional C.T *(Veico et al., 1995).*

C.T Anatomy of Nasopharynx

GROSS ANATOMY OF THE NASOPHARYNX

The nasopharynx occupies the most superior extent of the aerodigestive tract.

Although the anatomy of the nasopharynx including small part of extracranial head and neck soft tissues. Its close proximity to the critical neurovascular anatomy of the skull base, gives the nasopharynx special neuro-radiologic importance.

The jugular fossa (cranial nerve IX, XIII) foramen ovale (cranial nerve V), carotid canal, sellae turcica, cavernous sinus (cranial nerve III, IV, V and VI) and the clivus, all are within close proximity to the nasopharyngeal mucosa *(Last, 1972)*.

Boundaries of the Nasopharynx :

The nasopharynx is a relatively rigid tubular structure that form the most superior portion of the airway. The nasopharynx extends from the base of the skull to the upper part of the second cervical vertebra.

It is bounded posteriorly and superiorly by the upper clivus and sphenoid sinus. Laterally and anteriorly it is limited by the pterygoid plates. Laterally and posteriorly there are no

bony limits so the airway can remain somewhat flexible for its function during swallowing speech, and breathing.

Directly posteriorly the lower clivus, upper cervical spine and prevertebral musculature form the boundaries of the nasopharynx *(Mancuso et al., 1980).*

The characteristic landmarks of the nasopharynx :

(A) Torus tubarius :

The characteristic shape of the nasopharynx is nearly unmistakable on C.T. scan.

The most prominent landmark is the torus tubarius which represent a mucosal fold over the cartilaginous end of the Eustachian tube.

Despite of its cartilaginous nature it is rarely of a density greater than that of the surrounding soft tissues *(Silver et al., 1984).*

The paired tori are almost universally visible on C.T. scans of the nasopharynx although they may vary slightly in size from patient to patient. In individual patient they are symmetric in appearance but may appear slightly asymmetric as normal variant. *(Pogana & Shanmugeratnam, 1983).*

(B) The Eustachian Tube orifices :

The Eustachian tube orifices as visualized on C.T. lie just anterior to the torus tubarius. At physical examination,

they actually lie on the anterior inferior surface of the tori, that are always seen and usually appear symmetric. In scans made during quite respiration it is unusual to see air extending in the orifices beyond approximately 3 to 4 mm when the airway is distended *(Mancuso et al., 1980).*

(C)Lateral pharyngeal recess (Fossa of Rosenmuller):

Behind the torus tubarius lies the lateral pharyngeal recess (fossa of Rosenmuller).

Again these are paired air filled spaces. The lateral pharyngeal recess exists because the salpingopharyngeus muscle extends inferiorly from the cartilaginous end of the Eustachian tube and inserts along the wall of the nasopharynx forming the salpingopharyngeal fold.

They tend to be asymmetric in a given individual and the degree of distention varies greatly among different people. In children and young adults they are typically not seen because they are filled with lymphoid tissues.

Four fascial sheaths divide the soft tissue space deep to the nasopharyngeal mucosa and submucosa into compartments which appear symmetric in the vast majority of individuals. These sheaths are pharyngobasilar fascia, prevertebral fascia, buccophayrngeal fascia and the carotid sheath.

The prevertebral fascia is a well developed membrane that extends from the base of the skull to the lower limit of the

longus coli muscle at the T3 vertebral body. It provides a fixed base for the pharyngeal structures and carotid sheath to move easily over it. It is not normally visible on C.T.

The pharyngobasilar fascia separates 2 important compartments. The parapharyngeal space, and the inter pharyngeal structures.

The potential retropharyngeal space lies between the pharyngobasilar fascia, and prevertebral fascia. The prevertebral musculature produce most of the tissue density seen on C.T between the airway and spine.

The bucco-pharyngeal fascia covers the buccinator muscle and the outer surface of the constrictor muscles of the pharynx. A space is enclosed between the prevertebral fascia and the buccopharyngeal fascia on the back of the pharynx called the retropharyngeal space which contains the lymph nodes draining the nasopharynx.

The carotid sheath is a tube of fascia extending from the base of the skull down to the root of the neck and surrounds the internal jugular vein laterally and common carotid and internal carotid arteries medially, and the vagus nerve behind the interval between the internal jugular vein and common carotid artery *(Mancusa et al., 1980).*

fig (1)

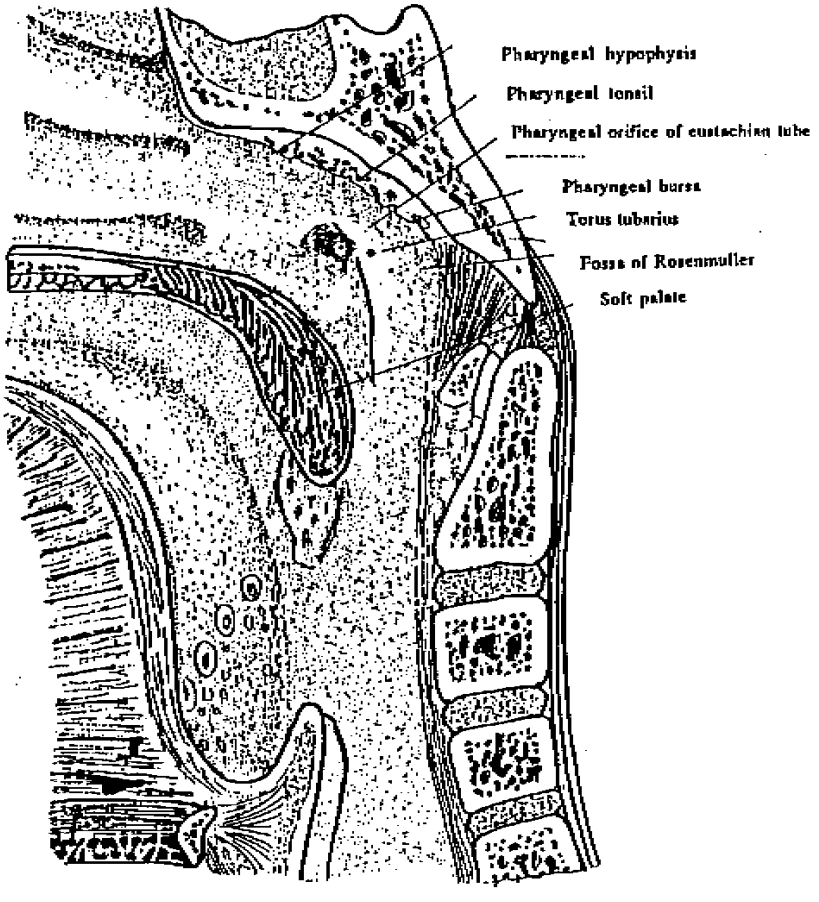

Fig. (1) :

Normal anatomy of the nasopharynx *(Quoted from Dillon, & Mancuso, 1988).*