Adenoid and nasopharyngeal tumor

Adenoid

Anatomy

It is lymphoid tissue lined by epithelium which is thrown into numerous folds separating the lymphoid follicles. There are also deep crypts similar to those in the palatine tonsil. The lymphoid tissue consists of both T and B lymphocytes, with the latter (B) predominating.

Development

The adenoid is

- poorly developed at birth and is **not visible** on X-ray in infants under the age of 1 month.
- radiologically demonstrable in only 50% of infants under 6 months, and
- in all infants by the age of 6 months .

By the age of 2 years, hypertrophy and hyperplasia of the adenoid occurs. Rapid growth occurs from **3 to 5 years** with a consequent decrease in the nasopharyngeal airway. After that the adenoid size remains relatively constant while the nasopharynx increases in size. Involution of the adenoid occurs after puberty.

Any diminution in size or its absence could indicate an underlying immunodeficiency, for example familial hypogammaglobulinaemia. (*The presence of a nasopharyngeal mass in infants under the age of 1 month should raise the suspicion of a tumour such as encephalocoele, as the adenoids are not detectable at this age.)*

Enlargement of the adenoids

Causes

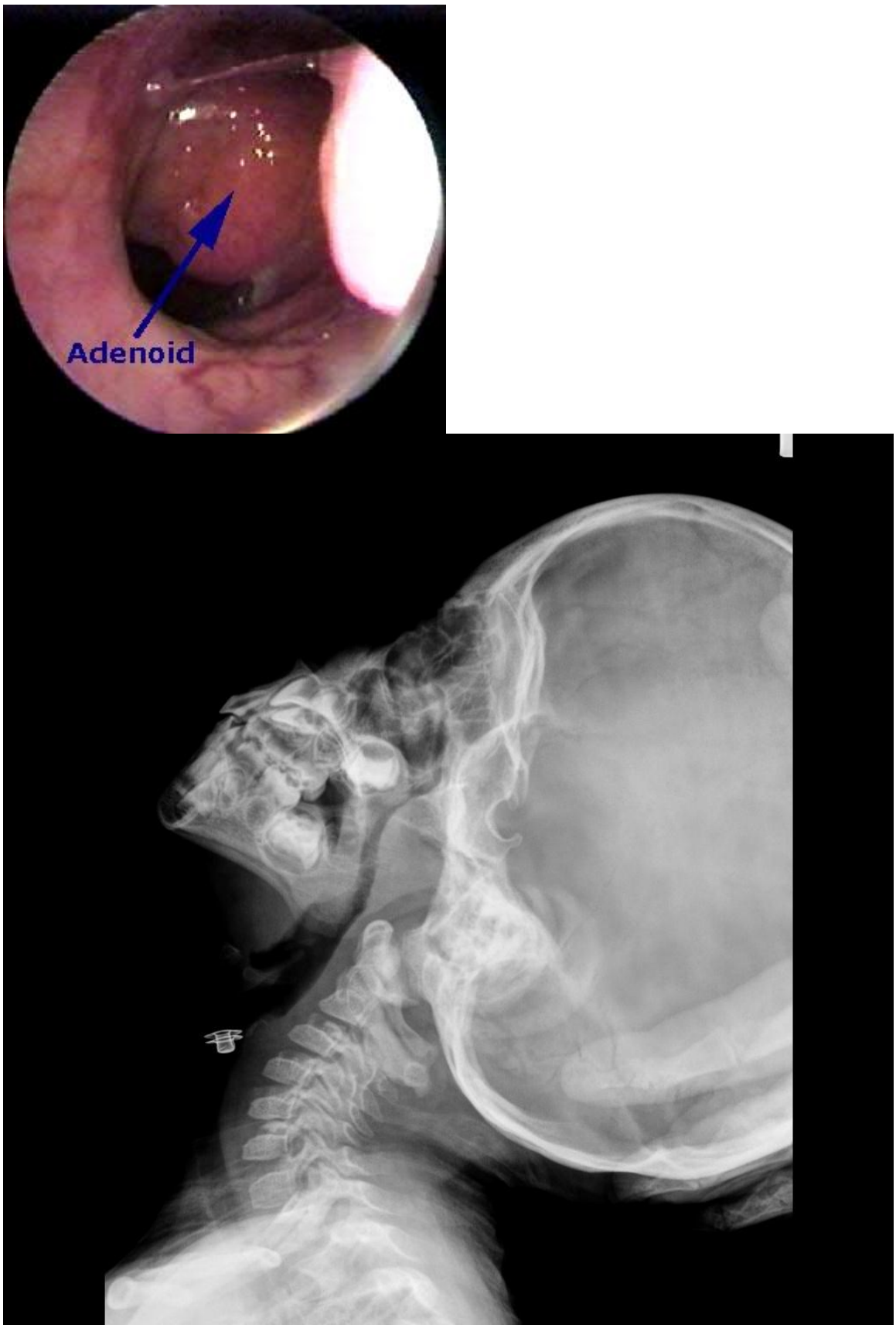
An acute upper respiratory tract infection affects the adenoids and results in hyperplasia with enlargement and multiplication of the lymphoid follicles.

It has been suggested that allergic disorders also result in adenoidal enlargement.

Clinical features

1- ***Nasal obstruction*** can lead to snoring, hyponasal speech and forcing the child to breathe through his mouth.

Examination of the nasal cavities by anterior rhinoscopy may be normal or may show increased secretion, hypertrophy or congestion (hyperaemia or blueness) of the inferior turbinate

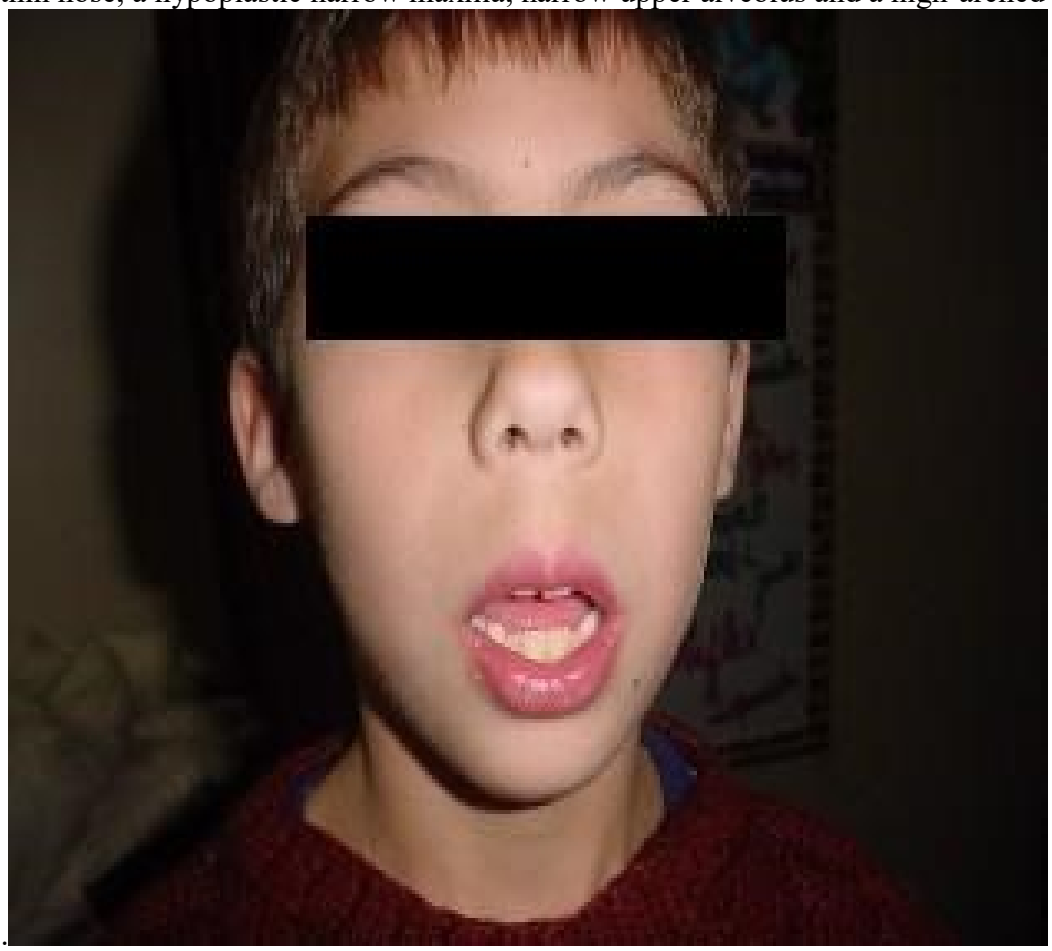

Adenoid

2- Adenoid facies

It is generally accepted that a child with enlarged adenoids has a characteristic facial appearance resulting from the effect of nasal obstruction and mouth breathing on the growth of the maxilla. This facial appearance consists of:

(1) An open lip posture with prominent upper incisor teeth and a short upper lip;

(2) A thin nose, a hypoplastic narrow maxilla, narrow upper alveolus and a high-arched palate.



3- Ear problems

The adenoids can mechanically obstruct the Eustachian openings, in association with infection, results in an increased incidence of acute otitis media and of non-suppurative otitis media (glue ear).

***4-* Sleep disturbances and apnea**

Apnoeic episodes may be obstructive, central or mixed. Obstructive apnea is when increasing respiratory effort produces no airflow; central apnea occurs when respiratory effort ceases and the defect is in the central control mechanism, either in the brainstem or chemoreceptors, or connections of these. Obstructive apnea can causes right ventricular failure and pulmonary edema

Adenoidectomy

Indications

a- Nasal obstruction

b- **Otitis media with effusion** Some surgeons advocate adenoidectomy as primary

treatment for otitis media with effusion, either alone or combined with insertion of ventilation tubes.

c- Recurrent acute otitis media

d- Sleep apnoea

Contraindications to adenoidectomy

a- Recent upper respiratory tract infection

b- Bleeding tendency

c- **Cleft palate** in certain instances the adenoids assist the soft palate in closure of the nasopharynx from the oropharynx during speech and deglutition, and removal of the adenoids may impair speech The adenoids should never be removed in a child who has had a cleft palate repair, one who has a congenitally short palate or in one who has a submucous cleft of the palate.

The complications of adenoidectomy

a- Excessive haemorrhage

b- **Surgical trauma** eustachian cushions, soft palate subluxation of the atlantooccipital joint about 10 days after surgery

c- Effect of adenoidectomy on speech

Hypernasal speech following adenoidectomy has been reported to occur.

d- Scarring following surgery

Rarely, adenoidectomy results in total obliteration of the nasopharynx by scar tissue. Some lymphoid tissue must remain in the nasopharynx following adenoidectomy and on occasions this tissue can undergo hypertrophy and cause nasal obstruction.

Tumours of the Nasopharynx

I Epithelial tumours

(a) Benign

(1) Squamous cell papilloma

(2) Pleomorphic adenoma

(b) Malignant

(1) Nasopharyngeal carcinoma

(2) Adenocarcinoma

(3) Adenocystic carcinoma

II Soft tissue tumours

(a) Benign

(1) Juvenile angiofibroma

(2) Neurofibroma
(3) Neurilemmoma (schwannoma)
(4) Paraganglioma (chemodectoma)

(***b) Malignant***
(1) Fibrosarcoma
(2) Rhabdomyosarcoma
(3) Neurogenic sarcoma

Nasopharyngeal carcinoma

It is important to keep in mind that in all painless head and neck lumps, malignancy must be suspected and a primary tumour in the nasopharynx should be excluded by investigations, including computerized tomographic study and biopsy.
Nasopharyngeal carcinoma is the most common form irrespective of geography and race. It constitutes more than **90% of all nasopharyngeal** cancers in most countries.

environmental agents/factors implicated in the aetiology

Epstein-Barr virus→ Raised antibody Viral genome in tumour cells
Chemical

- tobacco →Cigarette smoking
- drugs →Chinese herbal medicine
- plant products →Epstein-Barr virus activating properties/cofactors
- diet →Salted fish &Nitrosamines

Cooking habits Household smoke and fumes
Occupation Industrial fumes and chemicals
Others

- Socioeconomic status
- Previous otolaryngological ailments
- Nutritional deficiencies
- Metals (arsenic, chromium, nickel).

Histopathology

(1) squamous cell carcinoma

- well differentiated
- moderately differentiated
- poorly differentiated

(2) non-keratinizing carcinoma
(3) undifferentiated carcinoma.

Anatomical sites of origin

Primary tumour distribution is found in the following order of frequency:
(1) lateral wall
(2) superior-posterior wall
(3) more than one wall

(4) anterior wall and floor.
More than 80% of the tumours are unilateral. The right and left sides are equally affected. Most of the tumours arise from the lateral wall, especially the fossa of Rosenmüller and around the eustachian cushion.

Clinical features
Most patients have multiple symptoms which are insidious in onset and are sometimes disregarded by the patients and doctors.
The main symptoms are:

- cervical lymphadenopathy (60%),
- epistaxis and nasorespiratory symptoms (40%),
- audiological symptoms (tinnitus, otalgia, deafness) (30%),
- neurological symptoms (headache, cranial nerve palsies) (20%),
- and metastases which may be local (paranasal sinus, parapharyngeal space, infratemporal fossa, orbit and parotid) or distant (spine, lung and liver).

examination

By nasopharyngeal mirror (posterior rhinoscopy***).***
Nasal endoscopy. (ulcerative and infiltrative)
Also examination of the ear which may reveal middle ear effusion and CHL.
Examination under general anesthesia and nasopharyngeal biopsy.

Radiological investigations
Plain lateral skull ***X-ray*** may show a soft tissue mass obstructing the nasopharynx and displacing the soft palate anteroinferiorly.

The most useful investigation is the ***CT scan***. It provides information on the nature of the tumour, its site of origin and both its intra- and extracranial extension.

Treatment

1- **Radiotherapy**

2- **Role of surgery**

Surgery plays a minor role in the treatment of nasopharyngeal carcinoma. It is restricted to obtaining a biopsy and inspection of the nasopharynx, for example palatal fenestration, in selected patients.

Angiofibroma

The angiofibroma is a benign tumor originates almost exclusively from the **posterior nasal** and **nasopharyngeal** region in adolescent ***males***. Thus it has been known as juvenile angiofibroma, although cases have been reported in older adults and in females as well. The usual clinical behavior of the tumor is one of expansive growth with a potential for intracranial extension.

Histologically, angiofibroma is composed of **fibrous connective tissue** interspersed with variable proportions of **endothelium-lined spaces**. A preponderance of fibrous stroma may indeed allow surgical removal with relative ease in some cases.
However, even with advances in surgical and arterial embolization technique, the intra-operative blood loss is still a major concern. The capacity for spontaneous regression of angiofibroma at sexual maturity is doubtful.

Incidence and age

Angiofibroma is a relatively rare tumor and the age of onset is in the second decade between the ages of 11 and 21 (median age 14 years).
The reported incidence ranges from 1/5000 to 1/50.000 of otolaryngological patients in different countries .

Clinical features

Signs and symptoms

The most common presenting symptoms are:

- nasal obstruction and,
- epistaxis.

Less common symptoms include:

- tinnitus,
- eustachian dysfunction with conductive loss,
- facial swelling,
- proptosis and diplopia.

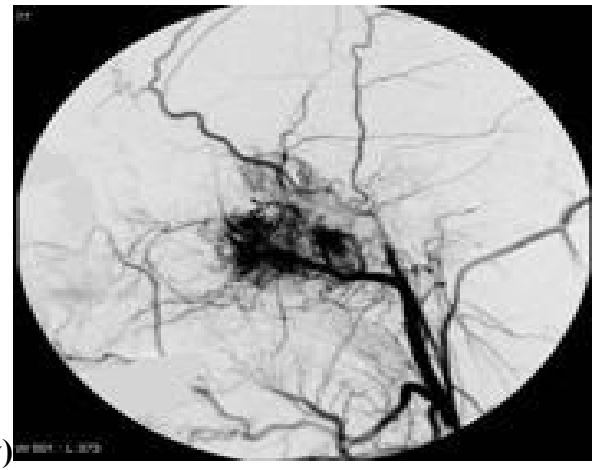
Clinically, the tumour appears as a reddish-purple nodular mass on one side of the posterior nares and nasopharynx. It may fill the nasopharynx completely, displacing the soft palate forward. The tumour can be examined quite easily by posterior rhinoscopy or transnasally with a flexible nasopharyngoscope

Diagnosis

Biopsy contraindicated because it can uncontrollable epistaxis

***Radiological investigations*:**

X ray of postnasal space→ nasopharyngeal soft tissue mass
CT- scan → anterior bowing of the posterior wall of the maxillary antrum
distortion of the nasal septum, erosion and opacification of the paranasal sinuses.



MRA (Angiography)
Angiography

Treatment

- **Surgery** is the treatment of choice for angiofibroma.
- **Radiotherapy** is generally reserved for unresectable lesions.
- **Cryosurgery**, **sclerotherapy** and **electrocoagulation** are used just for treating small accessible recurrences.
- **Androgens or oestrogens**, as adjuncts in inoperable and recurrent tumours, have produced variable results.

Paediatric nasopharyngeal tumours

Paediatric nasopharyngeal tumours are rare. They cause respiratory obstruction, and create problems in diagnosis and management.
The differential diagnoses of a nasopharyngeal mass include:

1. **Adenoid hypertrophy** (which is **unusual** in early infancy) and
2. Antrochoanal polyp,
3. teratoid: dermoids, teratoma,
4. neuroectodermal: encephalocoele, meningioma
5. dysontogenetic: chordoma, craniopharyngioma
6. miscellaneous: cysts, haemangioma, hamartoma, rhabdomyosarcoma.