NASOPHARYNGEAL FIBROMA*

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Nasopharyngeal fibroma is a comparatively rare type of vascular benign tumour occuring in both sexes, but more frequently in young males during puberty. These tumours tend to regress during the ages of 25-30. The management of 3 cases diagnosed as nasopharyngeal fibromas during the last 4 months at the Groote Schuur Hospital forms the basis of this paper, and will be described; 2 cases turned out to be genuine nasopharyngeal fibromas and the 3rd case was found to be a huge cyst and was only diagnosed at operation.

Although we have seen 2 cases in quick succession recently, this condition is not very prevalent in South Africa as compared with the Americas and Mexico, according to Acuna[1] of Mexico, who states that they see an average of 12 cases a year. On the other hand Martin,[2] of the Hull Royal Infirmary, writing in 1954, states that only 6 cases had been traced in the literature since 1930. Handousa, Farid and Elwi,[3] in going through the records, found only 1 case of nasopharyngeal fibroma amongst approximately 50,000 patients examined in Egypt, whereas Allen observed the tumour in about 1 in 16,000 E.N.T. patients in New York.

The aetiology of the tumour is unknown. It seems to be generally accepted that its origin is in the periosteum or perichondrium of the basi-occipit or basisphenoid, the ethmoids or vomer, or any other situation in the neighbourhood of the nasopharynx. This, according to Morrison,[4] is probably the result of irregular development of the skull base during puberty, whereby the periosteum hypertrophies abnormally. Ossification of the basisphenoid and basi-occipit takes place in about the 25th year in males and earlier in females.

Pathology. The tumour is essentially a dense hard fibrous tissue, covered with nasopharyngeal mucosa of stratified columnar epithelium, with numerous blood channels running through it, often resembling cavernous tissue. Sometimes one finds cell nests of undifferentiated connective-tissue cells. Areas of necrosis may be seen and leucocytic infiltration in the presence of infection. The tumour may grow for a number of years and suddenly undergo degeneration and retrogression and disappear. There is no conclusive evidence that malignant changes ever occur in these cases.

Symptoms. Nasal obstruction is present in all cases, with resultant nasal speech. The patient may complain of repeated attacks of severe haemorrhage from the nose or nasopharynx. Also a purulent nasal discharge may be seen, with symptoms of eustachian obstruction, deafness, tinnitus and signs of middle-ear involvement. Lateral spread of the tumour into the maxillary antrum and ethmoids will cause facial deformity. If growth extends into the nose the septum will be pushed over to one side or the other and the growth may even present at the anterior nares. Upward extension of the tumour into

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the base of the skull or the sphenoid region may cause pain from pressure on the fifth nerve and even blindness from optic atrophy. There may also be downward pressure into the nasopharynx, with dysphagia. The patient is usually very pale from loss of blood and secondary anaemia. The growth may invade the dura and destroy the sella turcica; secondary infection may lead to meningitis and fatal complications.

Differential Diagnosis

The diagnosis of a nasopharyngeal tumour should not be very difficult, but a biopsy should always be made as well as the clinical examination, so as to make quite sure what type of growth one is dealing with. Some authors do not favour a biopsy on account of haemorrhage and the possible formation of adhesions, which may render a subsequent operation more difficult. To my mind, the advantage of knowing what type of tissue one is dealing with far outweighs the possible risk of haemorrhage and adhesions.

One should suspect any firm tumour partly or completely filling the nasopharynx of a young person as a fibroma. It exerts enormous pressure with the finger-like processes it sends out, pushing the structures in its neighbourhood and causing atrophy and ulcerations. There is no involvement of the upper deep cervical glands as in malignancy. The tissues of the nasopharynx at the attachment, show no sign of infiltration on inspection with a post-nasal mirror or on palpation.

Choanal polyps should not be mistaken for this tumour if one remembers that they usually have a long stalk and are pale and whitish with a soft consistency like adenoids. Other tumours, such as sarcomas, carcinomas and mucus-gland tumours and teratomas, occur in the nasopharynx, and a biopsy usually clears up the diagnosis. A huge dermoid cyst, the third case in our series, was mistaken for a nasopharyngeal fibroma (see below).

Radiological appearances give a soft uniform shadow in the nasopharynx and also show extensions into the nose, sinuses and base of skull.

TREATMENT

Nasopharyngeal fibromas have been treated differently by various schools. Hayes Martin *et al.*[5] described the sex-hormone therapy, which is still in the experimental stage. They hold that spontaneous regression occurs at the time of sexual maturity and that the tumour can be controlled by moderate irradiation and limited surgery.

Radiotherapy has been widely used for nasopharyngeal fibroma, including the use of radium needles and the implantation of radon seeds and deep X-ray therapy. It is stated that irradiation reduces the vascularity of the tumour and diminishes its size. It is a good substitute for cases which refuse or are unfit for surgical intervention.

Electrocoagulation. Figi[6] suggests the use of electrocoagulation for the destruction of the tumour, working through the hard palate and nasopharynx and performing the operation in several stages. He prefers this to surgical removal.

Surgical excision seems to be the only ideal method of cure. When the tumour is still small simple removal can be done with a cold wire snare in the nasopharynx. In the presence of a large tumour with infiltrating finger-like processes and destruction of neighbouring regions, the condition becomes much more dangerous. In this type of case an extended Denker operation or a Moure's lateral rhinotomy will suffice. If a satisfactory exposure, which is essential, cannot be obtained by this route, the palate may be split vertically, or a transpalatal approach may be made. Alternatively a combination of the oral route with an external approach, as preferred by Handousa *et al.* can be used.

In our 2 cases, the first tumour was removed externally by the lateral rhinotomy incision and the second one was dealt with adequately by the transpalatal route. The growth is grasped in heavy forceps and held firmly. A curved periosteum elevator and the finger are used, with gauze dissection, to try and separate the growth from the underlying bone. As soon as the whole growth with the finger processes is set free it is removed and the bed is packed with a strip of vaseline gauze. For fear of excessive bleeding, care should be taken not to tear through the tumour mass before the whole growth is delivered.

The operation is performed under general anaesthesia and the patient should be intubated and the pharynx packed off to prevent blood entering the trachea. Tracheotomy is not necessary in these cases. During the operation a blood transfusion is given as a routine measure to make up for blood lost. Antibiotics should be given for 5-7 days after the operation. The nasal septum should be corrected a few months after the operation. A Boyle-Davis gag is used to keep the mouth open if necessary and to keep the tongue out of the way. Diathermy is used for haemostasis.

CASE REPORTS

Case 1

L.T. a male Native aged 16, was first seen in the E.N.T. outpatients on 31 January 1957, with a 2 years' history of left nasal obstruction at first and afterwards complete nasal obstruction. There had been frequent epistaxis during the last few months. He also complained of dimness of vision in the right eye.

Examination. He was poorly developed, with a broad nasal bridge but no frog face. Nothing abnormal was found on examination. B.P. 100/70 mm. Hg. The nose showed the septum badly deviated to the right, with the left nasal fossa filled with a firm smooth mass. This could also be seen in the post-nasal space as a smooth round mid-line mass filling the nasopharynx and pushing the soft palate downwards. The ophthalmologist examined him and reported an early optic atrophy of the right eye with defective vision, counting fingers at 2 feet. The left eye was normal as were the peripheral visual fields.

X-ray of the skull showed a mass in the nasopharynx and left nasal cavity displacing the septum and the left ethmoids. The sphenoid sinus was eroded and the pituitary fossa was displaced upwards and the clinoid processes spread apart.

A biopsy was taken, after which severe bleeding took place, which was controlled by a bipp pack. The pathological report confirmed the diagnosis of a juvenile nasopharyngeal fibroma.

The patient was treated for 1 week before the operation with tonics, vitamins and blood transfusions to raise his resistance.

At operation the patient was anesthetized and a cuffed endotracheal tube was inserted, with a throat pack. Two blood drips were erected and held in readiness for the expected haemorrhage. The tumour was exposed by a left lateral rhinotomy incision and the medial wall of the antrum, the frontal process of the maxilla and the left nasal bone were removed to improve the exposure. The tumour was freed by blunt dissection. An uneventful recovery followed. The septum was corrected and displaced to the left 4 weeks after the operation.

Comment. This patient lost quite a lot of blood at the operation and was given 3 pints of blood during the procedure.

Case 2

J.C., a male European aged 28, was admitted on 27 March 1957, complaining of left nasal obstruction for about 3 years with severe intermittent bouts of massive epistaxis on occasions

as much as one pint. A respite of a few months had been followed by recurrence of symptoms. For 6 or 9 months he had suffered frontal headaches with left earache, tinnitus and deafness. Part of the growth in the nasopharynx was removed in August 1956 by the cold snare and evulsion method.

On examination of the anterior nares a polypoidal mass could be seen occluding the left nasal cavity posteriorly and partially occluding the right side. A small, round-looking polyp was seen under the right middle turbinate. In the nasopharynx a mass was observed occluding the posterior nares, more marked on the left and obscuring the left eustachian cushion. The left ear-drum was indrawn. The right ear was normal. On perimetry the visual fields appeared normal.

X-ray Report (27 March): (1) There is veiling of the left ethmoid cells. (2) Sphenoid sinuses are large and floors are intact. The anterior aspects of each sphenoidal sinus are veiled. There is well defined soft-tissue swelling in the nasopharynx which occludes the normal air space. *Conclusion:* There is encroachment of the left nasopharyngeal air space and the right nasal cavity by a soft-tissue tumour.

Operation. On 28 March the patient was operated on through the transpalatine approach to the nasopharynx. The posterior edge of the hard palate was identified and a cresentic transverse incision was made just above the junction of attachment of the soft palate down to the bone. The soft palate was freed from the posterior edge of the palate and the excision extended along the pterygo-mandibular raphe. No bone was removed from the hard palate. The fibroma was found attached to the root and left wall of the nasopharynx over the eustachian cushion. The tumour was freed by blunt dissection and avulsed with Moynihan's forceps. A small portion was removed anteriorly through the right nasal cavity after a right inferior turbinectomy. Paraffin mesh gauze was inserted and the palate closed in layers with catgut. Recovery was uneventful.

Comment. The reason why the retropalatine approach was used was that the tumour was located mainly in the nasopharynx.

Case 3

A.G., a 15-year-old European girl, was sent from the country complaining of a blocked nose for 18 months with frontal headaches and a purulent serosanguineous discharge from the right nostril. No deafness.

On examination a large firm reddish mass was seen in the left nasal cavity, pushing the septum over to the right and completely obstructing the right nasal cavity. In the post-nasal space there was a firm reddish mass filling the nasopharynx, especially on the right side. The eustachian tubes and the posterior choanae were not seen. On palpation of the post-nasal space a hard resistant growth was felt.

X-ray Report (2 April 1957): A large mass is seen in the left nasal cavity. This is responsible for displacement of the septum to the opposite side. The mass extends across the mid-line to fill the medial half of the right side. The basal view shows a large destructive mass filling the nasopharynx. In addition, there is evidence that there is extension of the process to involve the floor of the sella.

Operation. On 10 April a Moure's left rhinotomy was performed. The left nasal bone and the frontal process of the maxilla were partly nibbled away, and the mass was exposed in the left nasal cavity. During the attempt to mobilize this mass and determine its attachment, the mass suddenly ruptured, discharging yellow thick homogeneous fluid presenting all the features of pus. The cyst was found to be attached to the septum, which was defective posteriorly in the vomerine region, and it was removed completely. The mucosa and soft tissue of the lateral wall was closed with interrupted catgut sutures and the skin with fine dermalon. Two pints of blood was administered during and after the operation. A portion of the cyst wall was taken for histological examination and showed oedematous and vascular connective-tissue stroma, hyperplasia of the mucous glands, and infiltration with plasma cells, polymorphs and lymphocytes. The fluid showed protein content with no organisms.

Comment. Uneventful recovery. This case could very easily have been mistaken for a nasopharyngeal fibroma which would not have occurred had a proper biopsy been taken before operation.

DISCUSSION AND SUMMARY

The management of 3 recent cases diagnosed as nasopharyngeal fibromas forms the basis of this paper. Nasopharyngeal fibroma is a comparatively rare type of vascular benign tumour occuring most frequently in young males. The condition is not very prevalent in South Africa; in the Americas and Mexico it is more prevalent.

Although the aetiology is unknown it seems to be generally accepted that the origin of the tumour is from the basi-occiput or neighbourhood, probably as a result of irregular development of the skull during puberty, for ossification of the basi-occiput takes place about the 25th year.

It is a hard fibrous-tissue tumour interlaced with numerous blood channels, which is essentially benign, with locally invasive characteristics and may undergo involution and completely disappear.

The condition is manifested by recurrent severe epistaxes, nasal discharge, and nasal and eustachian obstruction with deafness and otitis media.

This tumour has to be differentiated from malignant disease of the post-nasal space, where regional glands are early involved, and choanal polypi, where there is a stalk and the tumour consistency is soft like adenoidal hypertrophy. Dermoid cysts also occur in this region but, like sarcomata, are well demarcated, without finger-like elongations extending into neighbouring tissues.

There are various schools of thought on treatment:

1. Hayes Martin's sex-hormone therapy, still in the experimental stage with hormonal therapy combined with limited surgery and moderate irradiation.

2. Deep therapy. It has been claimed that irradiation reduces the size and vascularity of the tumour. This is a good substitute in cases who refuse or are unfit for operation.

3. Figi advocates electrocoagulation for destruction of the tumour, destroying the tumour in several subsequent stages.

4. Surgical excision we regard as the best method for complete eradication of the tumour. Where the tumour is extensive, with large prolongations extending into surrounding tissues, a Moure's lateral rhinotomy or a transpalatal approach is indicated. Operation under general anaesthesia with intratracheal intubation and administration of blood during operation seems to us to be essential, but tracheotomy is not necessary. Two recent cases have been described in detail, as well as a third case which was diagnosed as a fibroma, but which at operation turned out to be a dermoid cyst.

Some surgeons refrain from making a biopsy in suspected cases of nasopharyngeal fibromas because of the possibility of severe haemorrhage or subsequent adhesions. We feel strongly, however, that a biopsy is essential to determine the nature of the tumour so that adequate planned treatment can be instituted to suit the needs of the individual case.

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