



Otorhinolaryngology

SURGICAL REMOVAL OF JUVENILE NASOPHARYNGEAL ANGIOFIBROMA : A RETROSPECTIVE REVIEW OF 62 CASES

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ABSTRACT Selective per-operative hypotensive Anesthesia plays an important role in reducing intra- operative blood loss during the surgical clearance of the juvenile nasopharyngeal angiofibroma. It gives excellent surgical field and precise working during surgery. In this article, we report the result of our series with hypotensive Anesthesia without preoperative embolization of the tumor of angiofibroma surgery.

KEYWORDS : Juvenile nasopharyngeal angiofibroma, Hypotensive Anaesthesia

Introduction

Hippocrates described the tumor in the 5th century BC, but Chaveau introduced the term juvenile nasopharyngeal angiofibroma (JNA) in 1906. This benign tumor is characterized by aggressive local invasiveness and a tendency toward local recurrence after incomplete resection². Juvenile nasopharyngeal angiofibroma (JNA) accounts for 0.5% of all head and neck tumors. A frequency of 1:5,000-1:60,000 in otolaryngology patients has been reported. Juvenile nasopharyngeal angiofibroma (JNA) occurs exclusively in adolescent males. Females with juvenile nasopharyngeal angiofibroma (JNA) should undergo genetic testing. Many studies have indicated that JNA originates in close proximity to the posterior attachment of the middle turbinate, near the superior border of the sphenopalatine foramen, in the pterygopalatine fossa at the aperture of the pterygoid canal³. From there, it can extend to surrounding structures, including the nasal cavity, sphenoid sinus and sella, infratemporal fossa, inferior orbital fissure, and intracranial area⁴. A diagnosis of JNA is by clinical features suggested by the classic triad of epistaxis, nasal obstruction, and a nasopharyngeal mass. The presence of other symptoms depend on the direction and extent of tumor spread^{5,6}. Contrast enhance C.T. Scan is investigation of choice. (Fig.1) Biopsy is contraindicated. Several staging systems have been proposed, but the Fisch classification seems to be the most robust. JNA is a nonencapsulated, submucosal, spreading tumor made up of fibrous connective tissue and an abundance of endothelium-lined vascular spaces devoid of muscle layer and fibrous tissue⁷. The treatment of choice for localized primary tumors is surgical resection. Despite the advances, JNAs continue to be a challenge because of vascularity, their proximity to vital neurovascular structures, and their difficult anatomic location. Hypotensive anaesthesia is required to assist in decreasing blood loss and providing a bloodless, clear field to facilitate surgery. A hormonal theory has been suggested because of the lesion's occurrence in adolescent males. Differential diagnosis are Infected Antrochonal polyp, Malignancy, Rhinosporidiosis, Chondroma and Craniopharyngioma.



fig 1. Axial section CECT nose and pns.

Method

This retrospective study was conducted in our institute. A total 62 cases were operated by department of E.N.T.. Cases were included which were without intracranial extension. The medical records of patients with JNAs who had undergone surgical excision of their tumours within the last fifteen years were reviewed retrospectively. Data were collected on the patient's age, sex, preoperative investigations, preoperative imaging and staging of the tumours according to size. Anaesthetic charts were reviewed and information collected on anaesthetic technique, intraoperative monitoring, deliberate hypotension technique, requirement of blood and any other complications.

Results: Sixty two cases of proved nasopharyngeal angiofibroma without intracranial extension after clinical evaluation and imaging were subjected for the surgical resection. All 62 patients were male. Age distribution is given in table 1. Maximum no of patients were in age group of 14-16 yrs. All the patients present with nasal obstruction with or without epistaxis.

Table 1:

| Age group(yrs) | No of cases |
|----------------|-------------|
| 11-13 | 05 |
| 14-16 | 34 |
| 20-22 | 15 |
| 23-25 | 08 |

Every patient underwent routine laboratory tests (haemogram, prothrombin time, and liver and renal function tests). The diagnosis of JNA was made from the history and radiological examination i.e. contrast enhanced computed tomography and classified using Fisch's staging system (TABLE 2). Out of 62 cases, 39 were classified as stage I, 14 as stage II and 09 as stage III (table 3). No case of intracranial spread included in the study.

TABLE 2:

Fisch classification:

| stage | Description |
|-------|---|
| I | Tumours limited to the nasal cavity ,nasopharynx with no bony destruction |
| II | Tumours invading the pterygomaxillary fossa, paranasal sinuses with bony destruction |
| III | Tumours invading the infratemporal fossa, orbit a) without intracranial extension b) parasellar region remaining lateral to the cavernous sinus |
| IV | Tumours with invasion to the cavernous sinus, optic chiasmatal region and pituitary fossa |

Table 3:

| Fisch stage | No of cases |
|--------------------------|-------------|
| I | 39 |
| II | 14 |
| III(INFRATEMPORAL FOSSA) | 09 |
| IV | Excluded |

Table 4:

| | Anaesthesia | No of cases | Requirement of blood(average) |
|---------|---|-------------|-------------------------------|
| Group A | Normotensive (propofol+ 1% halothane) | 21 | 3.2 units |
| Group B | Hypotensive (hypotensive dose propofol+ 2% or more halothane) | 21 | 1.8 units |
| Group C | i.v. nitroglycerine | 20 | 1.7 units |

In our study we divided the cases in three groups as far as deliberate hypotensive anaesthesia is considered (table 4). In group A, patients were operated at normal B.P. while in other groups e.g. B & C Patients were operated in hypotensive state.

In group A, Propofol + 1% halothane at normotensive dose were used in 21 cases. Hypotensive dose propofol + 2% or more of halothane were used to produce hypotensive Anaesthesia in 21 cases in group B. Hypotension is induced & maintained with I.V. drip of nitroglycerine with very close monitoring of vitals of patients in 20 cases in group C.

Average blood requirement was 3.2 units in group A. Those cases of group B and C, who undergo hypotensive Anaesthesia, the average blood requirement was 1.75 units. The per operative Hypotensive Anaesthesia reduced intra-operative blood loss and consequently blood requirement significantly.

During hypotensive general anaesthesia, target mean blood pressure was 65 to 75 mm Hg that is safe for young, otherwise healthy patients. In our study, no patient experienced any anaesthesia-related complications.

Surgical excision is done by the following routes: Trans palatal approach, Tranpalatal+ sublabial approach, lateral rhinotomy, Extended denker's approach, Maxillary swing. Location of these tumors makes conventional surgery difficult. Each and every case was packed anteriorly and posteriorly for 48 hours post operatively for hemostasis. The post-operative recovery was uneventful. Out of 62 cases, recurrence occurred in 4 cases. All the 4 cases were reoperated.

Discussion :

Hypotensive anaesthesia is the usual modality followed to reduce blood loss. The common surgical approaches recommended are trans palatal, transantral, Lateral rhinotomy with medial maxillectomy, midfacial degloving, maxillary swing and endoscopic surgical excision. The surgical approach is planned according to the staging of the tumor. The per-operative hypotensive anaesthesia is must which will reduce intra-operative blood loss considerably with excellent and precise tumor mass clearance. A series of 150 patients with histologically confirmed angiofibroma from 1995 through 1983 was studied by bremer jw at al to contrast treatment methods and surgical approaches and advocated hypotensive anaesthesia 8. Hypotensive general anaesthesia may be appropriate for several types of operations including head and neck surgery, neurosurgery, large orthopedic procedures and a variety of plastic surgical procedures. As the prime concern in surgery of these tumors is the high vascularity and intraoperative bleeding, hypotensive anaesthesia provide a relative bloodless field to the surgeon and the tumor removal is easier, quicker and satisfactory⁹. The possible complications of hypotensive general anaesthesia primarily involve the nervous system. The most common are dizziness and cerebral thrombosis. Less common complications include hemiplegia, retinal thrombosis and even death. Fortunately we did not encounter any such complication. Interest in hypotensive Anaesthesia resection is increasing particularly for those institutions where endoscopic removal facilities are available.

We did not perform preoperative embolization because we believe that intraoperative bleeding can easily be controlled by good hypotensive

general anaesthesia. Another reason to avoid embolization is that it has potential complications of its own¹⁰. Also embolisation helps to obscure tumour extensions intraoperatively, increasing the likelihood of residual tumour¹¹.

Conclusion

Angiofibroma are quite common in hadoti region of rajasthan(india). These cases came from Hadoti region i.e. kota, Bundi, Baran, Sawai Madhopur, Jhalawar and also from adjoining districts of Madhyapradesh i.e. Guna, Shipur, Shivpuri.

Only adolescent males are affected.

Surgical excision is only definitive treatment.

It is safe in modern era of hypotensive anaesthesia & good blood bank services. Hypotensive anaesthesia have reduced the mortality and morbidity to a great extent. It reduces the recurrence rate because of total removal of tumor mass.

We recommend the surgical removal of juvenile nasopharyngeal angiofibroma (JNA) with hypotensive anaesthesia without preoperative embolization of the tumor.

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