Original Article

An Outcome Review of Conventional Surgical Treatment of Angiofibroma

1. Imran Saeed 2. Kashif Iqbal Malik 3. Muhammad Rashid

1. Assoc. Prof., CPMC, Lahore 2. Assoc. Prof., AIMC, Lahore 3. Consultant in ENT, CMH, Lahore

ABSTRACT

Objective: To determine the efficacy of conventional surgical treatment for juvenile nasopharyngeal angiofibroma, in terms of morbidity and recurrence.

Study Design: A descriptive study

Place and Duration of Study: This study was conducted at ENT Unit I, Allama Iqbal Medical College/Jinnah Hospital, Lahore, from September 2007 to September 2010.

Patients and Methods: Fifty patients with juvenile nasopharyngeal angiofibroma treated surgically were analyzed. For each patient, data were obtained regarding the symptoms, extension of the lesion, various surgical approaches and rate of recurrence. Preoperatively, all the patients were evaluated with detailed history, endoscopic nasal cavity and nasopharyngeal examination and computed tomography. Age, gender, main symptom leading to consultation, any previous surgical treatment performed, various surgical approaches, duration of hospital stay and recurrence were evaluated. Follow-up examinations were performed in the first, three and six months postoperatively. All patients had CT scan after 6 months interval to rule out any recurrence.

Results: All the 50 patients were male either adults or adolescents. The age of the patients ranged from seventeen years.

The most common symptom was nasal obstruction with repeated episodes of epistaxis, seen in all the patients. The other associated symptoms seen were nasal discharge snoring in 20 %, headache in 10%, speech defects (rhinolalia clausa) in 20%, facial asymmetry in 40 %, deafness unilateral (on the side of disease) in 10%, bilateral in 10% and orbital pain in 10% of the patients. The clinical examination demonstrated mass in the nasopharynx in all patients (100%), and nasal fossa in 30 patients (60%). The other less common signs included external nasal deformity in 10%, palatal displacement in 20%, cheek swelling in 40%, proptosis in 20% and conductive deafness in 20%.

Lateral rhinotomy Transmaxiliary via midfacial degloving and Lateral rhinotomy and Subtemporal preauricular infratemporal fossa approach was used in 22%, 60% and 18% patients respectively. In 6 patients tracheotomy was done per operatively and all of them were decanulated after removal of pack. Per operative exposure and temporary closure of external carolid artery was done in 8 patients who had extensive disease and bleeding pre-operatively.

Five units of whole blood were arranged for each patient pre-operatively. Hypotensive anesthesia was used in all patients to minimize the blood loss. The blood loss ranged from 150 ml to 2.3 liters with an average loss of 400 ml. The average duration of hospital stay was 15 days, with shortest stay of 8 days with the maximum stay of 32 days. All patients had a minimum follow up for six months. 8 patients had recurrence for which they were operated again.

Conclusion: Conventional surgical procedures still have their place in the treatment of the JNF.

Key Words: Juvenile, Nasopharynx, Angiofibroma.

INTRODUCTION

Juvenile nasopharyngeal angiofibroma (JNA) is histologically benign yet locally aggressive vascular head and neck tumor. It affects almost exclusively adolescent males. JNA is an uncommon tumor, with reported incidence between 1 in 5000 and 1 in 60,000 otolaryngology patients.[1] It is estimated to account for only 0.5% of all head and neck neoplasms, but is nevertheless considered the most common benign neoplasm of the nasopharynx.[2] The histogenesis and pathogenesis of JNA are unclear. The site of origin of JNA is usually broad, on the postrolateral wall of the nasal cavity. This area forms the superior aspect of the sphenopalatine foramen at the posterior end of the middle turbinate.[3]

The diagnosis of nasopharyngeal angiofibroma is based on history, physical examination and radiographic studies. Biopsy of these tumors is hazardous.[4] The most common presenting symptoms are nasal obstruction and episodes of spontaneous epistaxis. Symptoms have usually been present for several months before the patient is seen. Other less common symptoms include diplopia, blindness, hearing loss, otitis media, rhinorrhoea, anosmia, nasal speech, mouth breathing, eye pain, and headache. On examination, virtually all patients have a nasopharyngeal pinkish to purple mass.[5] Juvenile nasopharyngeal angiofibroma has several characteristic radiographic features. CT scan, MRI,

MRA and angiography are currently the mainstay of diagnosis of nasopharyngeal angiofibroma. MRI is considered superior to CT scan in delineating the margins of tumor and revealing tumor vascularity.[1] The predominant blood supply of most nasopharyngeal angiofibromas is the ipsilateral internal maxillary artery. As the tumor grows, it may get bilateral arterial supply from the nearby vessels. Arterial embolization has been shown both to decrease intraoperative hemorrhage and to lower rate of tumor recurrence.[6]

The two primary therapeutic modalities for nasopharyngeal angiofibroma are surgery and radiotherapy. Several adjuvant measures have been tried, including hormonal therapy and chemotherapy. Surgical treatment is preferred in all patients with extracranial disease, and radiation is reserved usually for unresectable intracranial tumors. Many surgical approaches like transantral approach, lateral rhinotomy approach, transmaxillary via midfacial degloving approach, and the subtemporal preauricular infratemporal fossa approach have been used for nasopharyngeal angiofibroma. The decision regarding approach is made after reviewing radiographic studies to assess tumor extent, blood supply, and presence or absence of intracranial extension.[5]

PATIENTS AND METHODS

This is a prospective descriptive study of fifty cases of nasopharyngeal angiofibroma (JNA) treated surgically in ENT-I unit of Jinnah Hospital, Lahore from September 2007 to September 2010. Most of the patients presented in outpatients department while five patients were admitted through emergency with recent episode of epistaxis, which was controlled by conservative measures and later examination revealed a nasopharyngeal mass. Preoperatively, all the patients were evaluated with detailed history and clinical examination. The diagnosis was confirmed by endoscopic nasal cavity and nasopharyngeal examination and computed tomography was done to see the extent of the tumor and staging was done. MRI and Angiography were done in patients with intracranial extension. All patients had routine hematological investigations (blood complete & clotting profile) and underwent surgical removal of JNA. None of the patient had pre-operative embolization due to lack of facility in our set up. Per operative exposure and temporary closure of external carotid artery was done in 8 patients who had extensive disease and bleeding pre-operatively. The factors like age, gender, main symptom leading to consultation, previous surgical treatment performed, duration of hospital stay and recurrence were evaluated. The patients were discharged on fourth day after the removal of nasal pack (which was done on third post operative day). Patient was given oral first generation cephalosporin for five days, analgesics as per requirement and nasal douching for seven days. Follow-up examinations were performed in the first, three and six months postoperatively. All patients had CT scan on their last visit to rule out recurrence.

RESULTS

All the 50 patients were male either adults or adolescents. The age of the patients ranged from 10 years to 22 years with peak incidence between 13-18 years. The average age incidence as calculated in our patients was seventeen years. The age distribution of the patients is given in Table No.1

Table No.1: Age

Age	No. of Patients	Percentage
10 – 14	14	28%
15 – 18	25	50%
19 – 22	11	22%

The most common symptom was partial to complete unilateral and sometime bilateral nasal obstruction with repeated episodes of epistaxis, seen in all the patients. The other associated symptoms included nasal discharge in 10 (20 %), nocturnal snoring in 10 (20%), headache in 5 (10%), speech defects (rhinolalia clausa) in 10 (20%), facial asymmetry in 20 (40 %), deafness unilateral (on the side of disease) in 5 (10%), bilateral in 5 (10%) and pain deep to eyes in 5 patients (10%). The important signs on clinical examination demonstrated mass in the nasopharynx in all patients (100%), and nasal fossa in 30 patients (60%). The other less common signs included external nasal deformity in 5(10 %), palatal displacement in 10 (20%), cheek swelling in 20(40%), proptosis in 10 (20%) and conductive deafness in 10 (20%) patients. Temporal fossa fullness, reduced visual acuity, mild optic atrophy and papilloedema were noted in 5 (10%) patient suspected of having intracranial extension.

Table No.2: Surgical Approaches

Approach	No. of patients	Percentage
Lateral rhinotomy	11	22%
Transmaxillary via midfacial degloving	30	60%
Lateral rhinotomy & Subtemporal preauricular infratemporal fossa	9	18%

Different approaches used are summarized in Table No.2. In 6 (12%) patients tracheotomy was done per operatively and all of them were decannulated after removal of pack. Per operative exposure and temporary closure of external carotid artery was done in 8 (16%) patients who had extensive disease and bleeding pre-operatively.

Five units of whole blood were arranged for each patient pre-operatively. Hypotensive anesthesia was used in all patients to minimize the blood loss. The blood loss ranged from 150 ml to 2.3 liters with an average loss of 600 ml. The average duration of hospital stay was 10 days. After the removal of nasal pack on third post operative day, patients stayed for another 4 days to make sure that there was no bleeding. The average hospital stay of patients was 15 days, with shortest stay of 8 days with the maximum stay of 32 days. Nasal splints were placed in all patients to avoid synechia formation which were removed on tenth post operative day in outpatient. All patients had a minimum follow up for six months. 8(16%) patients had recurrence for which they were operated again.

DISCUSSION

JNF is the most common benign tumor of nasopharynx. Although it is a benign, but is biologically quite aggressive tumor. It originates almost exclusively in adolescent males or young adults. In our study of 50 patients, all were male, and the majority of them were around the age of puberty with mean age of 15 years, the peak incidence between 13-17 years and total age range of 10-22 years. Although cases have been reported in female patients as well, none of the female patient was encountered in this study. [7]

The most common mode of presentation of this tumor is recurrent epistaxis and nasal obstruction. In this study, 100% of the cases presented with recurrent nasal bleeding. This figure is near to the result of *93.9%* in another study.[5] Economou et al have presented a figure of *73%* patients who suffered from epistaxis.[8] This difference from other studies may be due to the fact that most of patients come late to the hospital. The other less common features are speech problems, snoring at night, deafness, cheek swellings, proptosis and rarely visual defects.

A fairly reasonable diagnosis of the tumor is made on the basis of history and clinical examination. Investigations are employed only to confirm the diagnosis and to determine the possible extensions. None of the study patients were biopsied pre operatively in our unit to confirm diagnosis. However, 4 of the patients who presented in emergency were biopsied in other hospitals and sent with complaint of profuse bleeding. MRI and angiography are certainly very helpful in determination of feeding vessels and collateral supply, localization of the site of the lesion and its relations to large vessels in the vicinity. But due to limited facilities and long waiting time for these procedures, they were performed only in the patients with aggressive disease and those with suspected intra cranial extension. 14 (28%) patients had MRI to rule out intracranial extension. 3(6%) patients had intracranial extrameningeal disease.

An appropriate management is based on precise diagnosis of the tumor and its extensions, correction of any pre-operative deficiency and with procedures for reducing intra-operative blood loss. Anemia is the most important preoperative deficiency that needs correction.[2] Most of our patients were anemic to whom 1-2 pints were transfused preoperatively. The cut off value of hemoglobin before taking the patient to operation room was 10 G %. On an average four pints of blood were arranged for surgery. Since most of these tumors bleed profusely at time of surgery and due to the non availability of the facility of pre operative embolization, the technique of hypotensive anesthesia along with rapid removal of the tumor were employed to reduce the blood loss. Average blood loss was 600ml.

The primary mode of treatment is mainly surgical intervention. Surgery provides more radical and safe clearance of the disease as evident from various reports e.g., 15 % by Zaidi and Jaffery.[9] Since most of the patients suffering from the disease are very young radiotherapy is only reserved for the cases with intra meningeal extension, since it may hamper the normal growth of facial skeleton or may induce secondary malignancy in later life.[10] Six patients during the study time were referred for radiotherapy due the advanced stage of the disease at the time of presentation. The average hospital stay was 15 days, which is slightly more than reported in other studies. This was because quite a significant number of patients came to hospital without an investigations and time was consumed in their pre operative investigations. 8 (16%) patients had second surgery for their recurrence. This incidence of recurrence is slightly higher as compared to the recent studies. Due to the non availability of the facility of pre operative embolization, once the patient started to bleed profusely and more than usual, we were left with only option of packing the area and abandon the procedure to avoid severe complications.

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Address for Correspondence Author
Dr. Imran Saeed
418 B, Faisal Town, Lahore
Phone: 042-35218687, 03334254776
E-mail: drimransaeed@gmail.com