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Research Article

RECURRENCE AND STAGE-WISE BLOOD LOSS IN JUVENILE NASOPHARYNGEAL ANGIOFIBROMA, A STUDY IN TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction*:** Juvenile angiofibromas present as well-defined, lobulted tumours covered by nasopharyngeal mucosa. They have a high rate of recurrence. *Materials and methods:* A prospective and retrospective study conducted on 24 patients in government medical college associated hospital in Srinagar (j &k). ***Results: The incidence of recurrent or residual disease is high and is about 30%. Average blood loss was directly proportional to the stage of tumour with stage IVb having maximum blood loss. ***Conclusion*:** The average blood loss has a direct correlation with the stage of tumor. Radiologic follow-up is essential in the early identification of residual or recurrent disease.

INTRODUCTION

Juvenile angiofibromas present as well-defined, lobulted tumours covered by nasopharyngeal mucosa. They have a high rate of recurrence. Recurrence is by far the most common complication encountered and is reported in upto 25 percent of patients regardless of the method of treatment. Recurrence is more likely in patients with advanced disease and in those treated by inexperienced surgeons. The younger the patient the more likely that future recurrence will develop[1]. Most recurrence develop as a consequence of invasion of the basisphenoid, thus if this area is properly addressed at the time of primary surgery it will have dramatic effect on rate of recurrence[2].

Intraoperative bleeding may occur in any of the approaches and is main perioperative complication. Preoperative arterial embolization has been used to reduce amount of bleeding and use of blood byproducts during surgery with good results.[3]

MATERIAL AND METHODS

A prospective and retrospective hospital based study was conducted in the Department of Otorhinolaryngology, Head and Neck Surgery SMHS Hospital Srinagar on patients of juvenile nasopharyngeal angiofibroma. A total of 24 cases of juvenile angiofibroma were included in this study. The study was done from February 2013 to March 2016. The cases were included with the following inclusion criteria.

- Pre-adolescent and adolescent males presenting with progressive nasal obstruction and recurrent epistaxis was included in the study.
- The study included both patients presenting for the first time and those having recurrences following surgical excision.

The clinical pattern, the management options and various intervention modalities was analyzed and compared with previous clinical research. The observations and results were subjected to statistical analysis and conclusion drawn thereof.

The following information was obtained from the patients

- Demographic profile including age at presentation and sex.
- Detailed clinical history regarding symptoms like nasal obstruction, recurrent epistaxis, headache, facial pain, anosmia, hearing impairment, and signs like proptosis, facial asymmetry trismus, protruding nasal mass and palatal bulge.
- General physical examination including pallor, pulse, blood pressure and respiratory rate.
- Detailed ENT examination including anterior rhinoscopy and posterior rhinoscopy.
- Nasal endoscopy

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- Investigations
- Baseline investigations like complete blood counts, and bleeding and coagulation time
- Imaging
- Contrast enhanced computed tomography (CECT) → Nose & PNS, axial & coronal cuts done in all the cases.
- MRI in cases with intracranial extension of tumor on CT scans.

Follow-Up: All the patients were followed with nasal endascopy and imaging at various intervals of time. The minimum follow-up period recorded was 6 months.

Aims and objectives

1. To study the recurrence and its associated factors in patients with juvenile nasopharyngeal angiofibroma.
2. To assess stage-wise blood loss in patients with juvenile nasopharyngeal angiofibroma.

OBSERVATION AND RESULTS

Table 1 Recurrence rate of all cases

Total no. of cases (F/U range 6 months -3years)	No. of Cases with Recurrence	Recurrence Rate
24	7	~30%

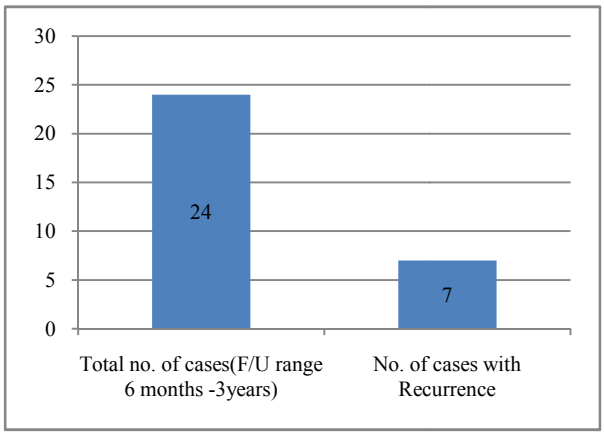

Figure 1 Recurrence rate of operated cases Angiofibroma.

Out of the 24 cases of nasopharyngeal angiofibroma diagnosed and followed for a minimum of 6 months, 7 patients were diagnosed with recurrence, with a recurrence rate of about 30%. These recurrences were diagnosed at varying intervals of follow-up.

Table 2 Correlation of age of presentation with recurrence rate

Age group (years)	n	Recurrence	%age	P value
<13	5	4	80	0.017
>13	19	3	15.7	

Youger the age, more the chance of recurrence. As age advances chances of recurrence get decreased.

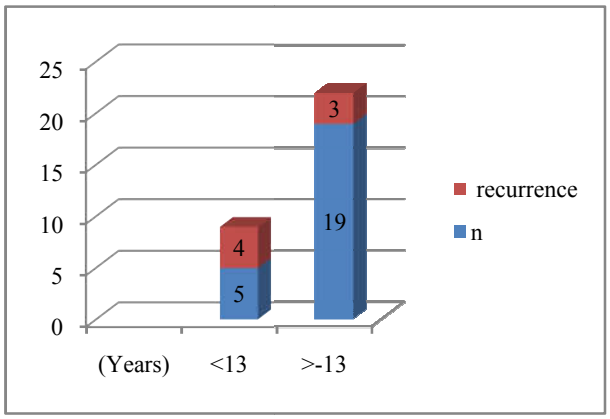

Fig. 2 Incidence of recurrence as per age group

Table 3 Correlation between stage of disease and recurrence

Stage	Total No. of patients	No. of patients with recurrence	Recurrence rate (%)	P value
I	0	-	-	
II	7	0	0	
III a	11	5	45.3	
b	3	0	0	0.000
IV a	0	-	-	
b	3	2	66.6	

5 out of 11 cases with stage IIIa and 2 out of 3 cases with stage IVb diagnosed with recurrence.

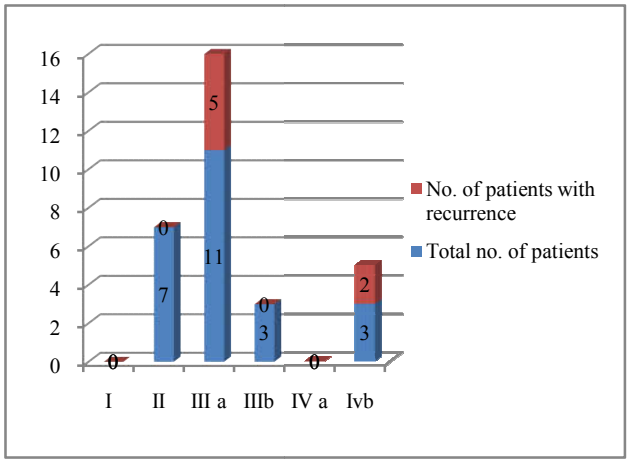

Fig. 3 Incidence of recurrence in different stages

Table 4 Correlation between skull base erosion on imaging and recurrence of angiofibroma

		Recurrence			p value
		Present	Absent	Total	
Invasion of basi-sphenoid	Present	4 66.67	2 33.33	6 100	0.038
	Absent	3 16.67	15 83.33	18 100	
	Total	7 29.17	17 70.83	24 100	

Out of 6 cases who had invasion of basi-sphenoid, 4 (66.66%) had recurrence on follow up whereas only 3 (16.67%) out of 18 cases not having invasion of basi-sphenoid had recurrence (p value 0.038).

Table 5 Average blood loss as per Fisch stage

Fisch Stage	Average blood loss (ml)
I	450
II	1350
IIIa	1700
IIIb	1950
IVa	2100
IVb	2350

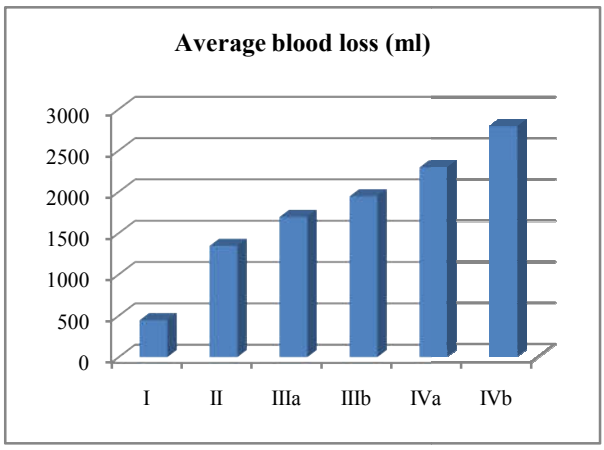

Fig. 4 Average blood loss as per Fisch stage

Average blood loss was directly proportional to the stage of tumour with stage IVb having maximum blood loss.

Table 6 Blood transfusion required in all cases

Blood transfusions needed	No. of Cases	Percentage
No transfusions	Nil	Nil
1 unit	4	17
2 units	7	29
3 units	12	50
4 units	1	04

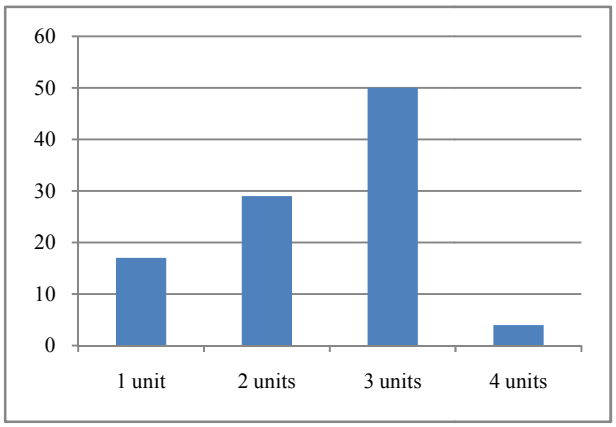

Figure 5 Blood transfusion needed in all patients

Blood transfusion was required in all patients and ranged from 1 to 4 units.

DISCUSSION

Out of the 24 cases of nasopharyngeal angiofibroma diagnosed and followed for a minimum of 6 months, 7 patients were diagnosed with recurrence, with a recurrence rate of about 30%.This was corroborating with the results shown by Shepherd G. Pryor *et al*[4] who recorded a recurrence of 24% in cases treated by standard surgical procedures including lateral rhinotomy. Diana Radkowski *et al*[5] recorded a recurrence rate of 22% in their study of 23 cases.The recurrence rate in our study was lesser than seen in study conducted by Harma[6] who reported a recurrence rate of 46% and by Gullane *et al*[7] who reported a recurrence rate of 36% after lateral rhinotomy in a series of 14 patients.

Age was found to have a significant correlation with the recurrence as 4 out of 5 i.e. 80% cases with age less than 13 years recurred, mostly within 12 months whereas only 3 out of 19 (15.7%) cases had recurrence (p value 0.017). Sun XC *et al*[8] in 2010 showed in their study that the recurrence rates in two groups (age >or= 18 years group and < 18 years group) were 26.8% and 48.2%, respectively (p = 0.03).

The recurrence correlated well with the stage of the disease at initial presentation. 5 out of 11(45.3%) cases with stage IIIa and 2 out of 3(66.6%) cases with stage IVb developed recurrence compared to stage II in which none of the 7 cases had recurrence (p value 0.000).These results were somewhat similar to those shown by Wolf J. Mann *et al*[9] who reported a recurrence rate of 50% in stage IV and 37.5% in stage III cases with stage II cases having a recurrence rate of 12.5%.

The invasion of basisphnoid diploe on imaging correlated with recurrence 4 out of 6 [66.6] who had invasion of sphenoid diploe developed recurrence where as 3 out of 18 [16.6] having no invasion of basisphnoid developed recurrence [P value 0 .038] Lloyd *et al*[2] on the basis of a review of preoperative CT and MRI determined that 93 of recurrences occured in patients with imaging evidence of invasion of sphenoid diploe through the pterygoid canal.

Blood transfusion was required in all patients and ranged from 1 to 4 units.83% cases required 2-4 units of blood transfusion reflecting a significant intra-operative blood loss. The average blood loss had a direct correlation with the stage of tumour as it was found to be 2100 ml for stage Iva and 2350 ml for stage IVb as compared to 450ml for stage I and 1350ml for stage II. Blood loss in our study correspond to the results shown by Diana Radkowsky *et al*[5] where estimated blood loss for surgical stage IB was found to be 933ml, and for stage IIIB 2900ml. In Shepherd *et al*[4] study, 52% cases required transfusion. Average blood loss for lateral rhinotomy without embolization was 1577ml with a range of 300-2200ml.

CONCLUSION

- The average blood loss has a direct correlation with the stage of tumor.
- Radiologic follow-up is essential in the early identification of residual or recurrent disease.
- The incidence of recurrent or residual disease is high and is about 30%.
- Risk factors for recurrence include large juvenile nasopharyngeal angiofibromas with intracranial extension, skull base erosion, cavernous sinus involvement, young age at diagnosis.

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