SUBSELECTIVE EMBOLISATION IN MANAGEMENT OF JNA

A.Satish Chandra, Sanjeev Mohanty

Abstract: Role of Embolisation in preoperative management of Nasopharyngeal angiofibroma is well established in present day therapeutic modalities. An improvised technique i.e., subselective embolisation has been provided by Interventional radiologists to fortify the therapeutic results. This study compares the final outcome of seven cases, four of which were embolised pre operatively. Each case was dealt with varying surgical approaches.

Keywords: Juvenile Nasopharyngeal Angiofibroma, Subselective Embolisation (SSE), Digital Subtraction Angiography (DSE)

INTRODUCTION

Juvenile Nasopharyngeal angiofibroma (JNA) is a vascular tumor of Nasopharynx arising in prepubertal and adolescent males and exhibiting a strong tendency to bleed. Mean age of presentation is 14yrs though fibromatous variants tend to occur in later ages. Surgical excision has been the primary modality of choice and definitive treatment for this condition. Pre operative angiography and endoluminal embolotherapy becomes mandatory in the management of this condition. A preoperative angiography is required to know the vascularity of tumour, feeding vessels and a possible parallel supply by internal carotid system. We used a newer modality of embolotherapy called sub selective embolisation in three patients. This is a selective catheterization of feeding end vessels so as to secure the embolus in tumor periphery. The principle of this technique is by the fact that reduction of endoluminal pressure in tumor vessels is more when they are blocked nearer to the tumor. This procedure is done 48-72hours before surgery. We had seven cases of angiofibroma of which three underwent subselective embolisation and one patient was embolised conventionally. Therapeutic outcome in seven cases was evaluated as shown in table – II.

TECHNIQUE OF SUBSELECTIVE EMBOLISATION

MRI angiography is performed initially to detect the vascularity and feeding vessels of tumor. Once the main feeding vessel is detected, (Internal maxillary artery in 3 cases) it is catheterised by using a 5 'F' gauge catheter by transfemoral route, as compared to 7 'F' gauge catheter used in conventional techniques. The catheter is advanced (Retrograde seldinger method) into the more distal branches reaching the tumor periphery and then each vessel is embolised with poly vinyl alcohol (PVA) particles. The PVA particle size used for this technique ranges from 50 – 220µm. Digital subtraction angiography is used to monitor the whole procedure. We used this technique in three patients and surgery was done after 72hrs.

CASE STUDY

Seven patients included in the study belong to same age group i.e., 20-30yrs and all were male patients. Five patients had tumor filling the nasopharynx and post nasal space with pedicle attachment in anterolateral nasopharynx. The remaining two

patients had a smaller tumor limited to post nasal space who were treated with endoscopic excision without embolisation (group C). Wilson's transpalatal approach was used for five patients. Three of them underwent subselective embolisation (group A), one patient underwent conventional embolisation with gel foam. (group B). Preoperative embolisation was not done in one case.

Table – 1

	SSE	CE	Nil	n
Transpalatal approach	3	1	1	n
Endoscopic excision	-	-	2	n

n - No of patients,
SSE - Subselective embolisation
CE - Conventional embolisation

RESULTS

Table – 2

	GroupA	GroupB	GroupC	GroupD
n	3	1	1	2
Approach	Transpalatal approach	Transpalatal approach	Transpalatal approach	Endoscopic approach
Embolisation	SSE	CE	-	-
Average blood loss	75ml	160ml	450ml	100ml
Duration of surgery	2hr:30mts	3hrs	4hr 30mts	3 hours
Duration of ICU care	1 day	1 day	3 days	-
Histopathology	Angiofibroma	Angiofibroma	Angiofibrom	Fibroangioma
Post embolisation	pain	Mild	Severe	-

The outcome of the surgery in seven patients evaluated and interpreted as in table -2. Patients who underwent subselective embolisation had lowest morbidity and blood loss when compared to the one operated without any embolisation. Patient operated after conventional embolisation had definite reduction in blood loss and duration of surgery. Two patients treated with transnasal endoscopic approach had lesser blood loss which was attributed to the histological variant they hosted and the relative advantage of resecting a smaller tumour. Apart from these advantages tumor size reduction was more in cases treated with

Fig 1: DSA picture of Nasopharyngeal vascular lesion in tumour blush phase.

Fig 2: CT scan (contrast enhanced) of PNS & Nasopharynx showing a circumscribed mass in right and left post nasal space & base of sphenoid sinus.

Fig 3: High power view of histopathological section showing sinusoids and fibrous tissue

Fig 4: CT scan paranasal sinuses axial section (post operative picture)

SSE, we achieved a 60% reduction in perioperative blood loss when compared to the patient who was not embolised using SSE.

DISCUSSION

Preoperative embolisation with angiography is a valuable tool in present day scenario for management of angiofibromas, especially of high vascular variants. Although CT scanning has replaced angiography in tumor mapping, defining the blood supply of tumor using the latter technique is more valuable for planning the surgery. This in addition allows reduction in tumor vascularity and tumor size. SSE is more helpful in bypassing major anastomosis present between the feeding vessels and internal carotid system. SSE's increased efficacy over conventional technique in reducing if not eliminating the hyper vascularity gives the surgeon, required clear intra operative field and ensures complete excision. This in turn leads to reduction in surgical duration, recurrence and patient morbidity. Polyvinyl alcohol particles of varying sizes are better choice as embolus material over traditional gelfoam due to its ease of delivery. Presence of abnormal communications may preclude or limit the ability to reduce the blood flow in the tumor. The communications between Internal maxillary artery and ophthalmic artery or middle meningeal artery will prove hazardous as they are liable to get embolised accidentally and lead to blindness or stroke respectively. Use of SSE with precisely sized PVA particles and smaller coaxial catheter (4, 5fr) will prevent this complication. Therapeutic embolisation is not without risk completely. Complications are primarily related to inadvertent embolisation of vital structures, potential nerve injury, devitalisation of overlying skin with severe pain on the side of embolisation and failure of the procedure. Embolisation by reducing vascularity is theoretically supposed to promote radioresistivity.

CONCLUSION

Sub selective embolisation is emerging as a more effective modality which makes its implementation mandatory in all angiofibromas preoperatively. Its increased efficacy and lower

complication rate when compared to conventional method is leading to its increased utility. Its advantages include reduction in hospital stay and intensive care there by gaining an affordable status.

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Address for correspondence

Dr. Sanjeev Mohanty
Associate Professor & Unit Chief
Dept of E.N.T - Head & Neck Surgery,
SRMC & RI, Porur,
Chennai - 116