Management of Juvenile Nasopharyngeal Angiofibroma; Report of Two Cases

Zahide Mine Yazici, Mustafa Celik, Yakup Yegin, Burak Olgun, Fatma Tulin Kayhan

ABSTRACT:
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Objective: Juvenile nasopharyngeal angiofibroma (JNA) is a benign tumor that most commonly affects males in adolescent age. Although it is the most common tumor of nasopharynx, it accounts for 0.05-0.5% of all the head and neck neoplasms. Several treatment modalities are used. Surgery with preoperative embolization is the recently preferred management. Different agents may be used for preoperative embolization.

Case: Hereby, we reported diagnosis, follow-up and treatment management of two patients with nasopharyngeal angiofibroma who were operated by nasal endoscopic surgical approach following preoperative polyvinyl alcohol (PVA) embolization, in the light of the contemporary literature.

Conclusion: The preoperative PVA embolization in treatment of JNA is safe, easy to perform and valid.

Keywords: Angiofibroma, embolization, nasopharynx, polyvinyl alcohol

INTRODUCTION

Juvenile nasopharyngeal angiofibroma (JNA) is a rare benign tumor that mostly affects the young male population (1). It is the most common benign tumor of nasopharynx, accounting for about 0.5% of all the head and neck neoplasms (2). Although usually located at the superior edge of sphenopalatine foramen, it can be seen in nasopharynx or in any location in the nasal cavity. Although it is a benign tumor histologically, it may act locally aggressive and cause destruction in the surrounding tissues and bones (1). In this article, 2 cases who were diagnosed with nasopharyngeal angiofibroma and treated by nasal endoscopic surgical approach with preoperative polyvinyl alcohol (PVA) embolization were presented in the light of the literature.

CASE 1

Eighteen-year-old male patient admitted to our clinic with a complaint of nasal congestion for about a year. In his anamnesis, except nasal congestion complaint, he had occasional nosebleeds. His past history and family history were unremarkable. The nasal endoscopic examination revealed a space
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occupying fragile mass lesion red in color in the left nasopharynx, which almost totally blocks the choana. In the other ear, nose and throat (ENT) and systemic examinations were unremarkable. Paranasal sinus (PNS) computed tomography (CT) and magnetic resonance imaging (MRI) were performed. In PNS CT, a mass in about 35x45 mm dimensions, that roots from the left lateral superior ceiling of the left nasopharynx and extends to left choana, eroding the left sphenoid sinus wall and filling the cavity, was detected (Figure-1a-c). Considering the clinical and radiological imaging of the patient, angiofibroma was considered and biopsy was not recommended. The patient was referred to the interventional radiology clinic. In the interventional radiology clinic, under local anesthesia, the left internal maxillary artery (IMA) which provides blood supply to the mass was embolized with PVA particles of 500 microns in size. Twenty-four hours after this procedure, under general anesthesia, the mass was completely removed by en bloc endonasal endoscopic procedure (Figure-2). No packing was applied to the nasal cavity and the vital findings were stable with no bleeding at the postoperative period. The patient was discharged on the postoperative 2nd day, and the pathological examination of the specimen was reported to be compatible with mass angiofibroma. During the 6-month follow-up of the patient, no complication has occurred and MRI was performed with CT’s side effects of radiation in mind; no recurrence was detected at MRI.

CASE 2

Sixteen-year-old male patient admitted with nasal congestion complaint for 3 months. In his anamnesis, his complaint was detected to gradually increase in this period. His past history and family history were unremarkable. The nasal endoscopic examination revealed a fragile mass lesion red-pink in color, extending to the right nasal cavity and blocking the choana almost completely (Figure-3a). Other ENT and systemic examinations were unremarkable. Paranasal sinus (PNS) computed tomography (CT) and magnetic resonance imaging (MRI) were performed. A mass with a size of about 2x2 cm in the

Figure-1a-c: The axial and coronal PNS CT section of the first case; a mass of about 35x45 mm in size that extends from the left nasopharynx lateral superior ceiling to choana, eroding the left sphenoid sinus wall and filling the cavity

Figure-2: The mass of the first case removed with the operation
right nasal cavity extending from the level of middle turbinate to choana at CT was detected. Considering the clinical and radiological imaging of the patient, angiofibroma was considered and biopsy was not recommended. The patient was referred to the interventional radiology clinic. In the interventional radiology clinic, the right internal maxillary artery (IMA) was embolized superselectively with PVA particles of 300-500 microns in size. Twenty-four hours after this procedure, under general anesthesia, the mass was completely removed by en bloc endonasal endoscopic procedure. As in the first case, no packing was applied to the nasal cavity and no complication has occurred during the follow-up in the service. The patient was discharged on the postoperative 2nd day, and the pathological examination of the specimen was reported to be compatible with mass angiofibroma. During the 6-month follow-up of the patient, no complication has occurred, and no massive lesion has been detected in the nasal endoscopic examination (Figure-3b). MRI was performed with CT’s side effects of radiation in mind; no recurrence was detected at MRI.

Informed consent: The informed consents were obtained from the patients in this article.

DISCUSSION

JNA is a histologically benign, locally aggressive neoplasm of vascular origin without a capsule (2). The patients most commonly apply to the physician with complaints of unilateral nasal congestion and recurrent nosebleed (1). It can occur in different clinics depending on the localization and expansion of the tumor. The biopsy is controversial in diagnosis, unlike in head and neck cancer. If the mass with an atypical look or the patient anamnesis is unusual, biopsy can be considered under operation room conditions (3). The diagnosis is made by the physical examination, clinical suspicion and the radiological imaging techniques. The radiological findings have priority in the tumor staging. Although there are several staging systems present in JNA staging, the most commonly used is the Fisch staging system (4). According to the Fisch’s staging system, our first case was evaluated as stage 3 and our second case was evaluated as stage 2. Staging is crucial in determining the surgical treatment.

The treatment includes surgery, external radiotherapy, cryotherapy, electrocaugulation, brachiotherapy, embolization, hormone therapy and chemotherapy (1). The most widely accepted method in JNA treatment is the surgical excision. However, the vascular origin of the tumor may risk the patient’s life during the surgical intervention by causing massive hemorrhage. Therefore, the methods to reduce the hemorrhage before surgery have been the subject of research (5). In order to reduce the risk of hemorrhage, systemic estrogen treatment, sclerosing agent injections to the tumoral tissue, ligation of external carotid artery and 30 Gy low-dose preoperative radiation therapy have been administered (5).

Today, the most widely accepted method in JNA treatment beside surgery is the preoperative embolization of the tumor (5,6). In the embolization method, first, diagnostic selective angiography (DSA)
is performed with a radiopaque material via microcatheter transfemorally. With DSA, radiopaque material is administered to internal and external carotid arteries unilaterally, and the blood supply of the tumor is examined. Then via the same catheter, selective embolization is performed by using embolic agent particles of 300-710 micron in size. At the end of embolization, angiogram is performed again and the changes in the blood supply of the tumor is monitored. Silastic spheres, dura mater, thrombin, Gelfoam, polyvinyl alcohol (PVA) can be used as embolic agents (5). Although Gelfoam is an agent that can be easily reabsorbed through the catheter, PVA makes a longer vessel occlusion than Gelfoam, and it is reabsorbed in a few weeks. As PVA administration is easy, it has some disadvantages. Among these disadvantages; lack of radiopaque agent, the particles creating clusters, the method causing mural angionecrosis and blocking the microcatheters can be counted (5,7,8). In our cases, PVA is used, which the reabsorption is more difficult. There is no clear schedule in the literature about the surgical treatment time after embolization (7,8). The reabsorption time of the agent used as the embolic agent may give us a clue about the timing of the surgery. When the agents which are easily reabsorbed used, due to the possibility of recanalization of the main vessel that feeds the tumor, the surgical intervention should not exceed 48 hours (5). Considering the short period of time of reabsorption of the embolic agent used in our cases and the possibility of recanalization of the occluded vessels, the embolization is performed 24-48 hours before the surgical intervention. The literature shows that embolization performed 24-72 hours before the surgery reduces the blood loss during the surgery (2,5). Embolization was performed 24 hours before the surgery in our cases and no hemorrhage that required blood transfusion during the surgery has occurred.

CONCLUSION

PVA embolization of JNA before surgery would reduce the possibility of intraoperative hemorrhage and allow the surgical intervention to be more controlled. We believe that this technique we routinely apply in our clinic is effective and appropriate. The possibility of bleeding of JNA despite embolization should be kept in mind and the need of blood transfusion should be considered in the preoperative preparations.

REFERENCES