



JUVENILE NASOPHARYNGEAL ANGIOFIBROMA CHARACTERISTICS AT DR. WAHIDIN SUDIROHUSODO HOSPITAL MAKASSAR 2011-2021

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Abstract

Introduction: An uncommon benign tumor of the head and neck, known as juvenile nasopharyngeal angiofibroma, is more common in male adolescents. It is an aggressive, malignant tumor. **Aim:** to learn the characteristics of Juvenile Nasopharyngeal Angiofibroma at Dr. Wahidin Sudirohusodo Hospital Makassar's Department of Otorhinolaryngology, Head and Neck Surgery. **Method:** An analysis of the medical records from Dr. Wahidin Sudirohusodo Hospital in Makassar from 2011 to 2021. **Result:** There are 40 cases of juvenile nasopharyngeal angiofibroma, of which 95% are male, 35 patients (87.5%) are between the ages of 10 and 20, and the largest ethnic group represented by 19 patients (47.5%) is Buginese. All of the patients (100%) underwent embolization, 25 patients (62.5%) underwent trans palatal approach, and 20 patients (50%) experienced intraoperative blood loss of between 100 and 500 milliliters. **Conclusion:** child's nasopharynx Angiofibroma develops in male adolescents.

Keywords: Juvenile nasopharyngeal angiofibroma, male, adolescent, trans palatal

Introduction

Juvenile nasopharyngeal angiofibroma is a benign tumor. It is histologically composed of vascular and connective tissue components.¹ Though it is a minor tumor, this tumor is extremely invasive and dangerous. It can extend from the nasopharynx and nasal cavity to the pterygoid fossa, orbit, infratemporal fossa, and paranasal sinus to the intracranial.²

Hippocrates described juvenile nasopharyngeal angiofibroma (JNA) for the first time in the fifth century BC.³ This tumor is a rare one, with a JNA incidence of about 0.05 to 0.5% of all head and neck tumors. It is most common in boys between 10 and 20 years of age.⁴

The blood supply in JNA cases depends on the size and extent of the tumor. In the early stages, most of them come from the internal maxillary artery via the sphenopalatine branch. However, in the advanced stages, both the internal and external carotid arteries, particularly the ophthalmic artery, ethmoidal artery, and carotid cavernous branches, are involved.¹

In JNA situations, surgery is the recommended and conventional course of action. The surgical approach will depend on the location and size of the tumor and may include Wei's operation, infratemporal fossa approach, intracranial-extracranial approach, transpalatal, Sardana's, lateral rhinotomy with medial maxillectomy, endoscopic, transmaxillary (Le Fort I) approach, Maxillary swing approach, or facial translocation approach. Typically, embolization is done 24 to 48 hours before surgery to lessen bleeding during the treatment and the tumor's blood supply.⁴

In the ENT/SMF division of Dr. RS. Wahidin, this study

was carried out to identify the characteristics of juvenile nasopharyngeal angiofibroma from 2011 to 2021.

Method

Using the medical records of young patients with juvenile nasopharyngeal angiofibroma treated at the ENT clinic of Dr. RS. Wahidin Sudirohusodo from 2011 to 2021, a retrospective descriptive analysis was carried out.

According to age, gender, race, the results of the CT angiography, the type of surgery used, and the quantity of blood that occurred during the procedure, all participants who fit the criteria were gathered. All patients with comprehensive medical record information were included.

Outcome

During 2011-2021, there were 40 cases of juvenile nasopharyngeal angiofibroma, 95% of which were male (Table 1).

Table 1. Gender Distribution

Gender	Total
Male	38
Female	2
Total	40

In the case of juvenile nasopharyngeal angiofibroma, 2.5% were under 10 years old, 35 patients (87.5%) were 10-

20 years old and 4 patients (10%) were between 21-30 years old.

The mean age in this case is 15.12 years (table 2).

Table 2. Age Distribution

Age (year)	Total
Under 10 y.o	1
10-20	35
21-30	4
Total	40

We found various ethnic groups in the angiofibroma cases, mostly Bugis, with 19 patients (47.5%) (table 3).

Table 3. Ethnic

Ethnic	Total
Bugis	19
Makassar	6
Toraja	2
Others	8

Each patient underwent a CT angiography examination so that the feeding artery of the tumor was identified. There were 42 cases of getting a feeding artery from the external carotid artery branch (37 cases of internal maxillary artery, 5 cases of ascending pharyngeal artery, 1 case of superficial temporal artery and 1 case of facial artery), 1 case obtain feeding arteries from branches of the internal and external carotid arteries and only 1 case had a feeding artery from a branch of the internal carotid artery (ophthalmic artery) (Table 4).

Table 4. Feeding Artery

Feeding Artery	Total
Internal maxillary artery	30
Internal maxillary artery and ascending pharyngeal artery	5
Internal maxillary artery and ethmoidal artery	1
Internal maxillary artery and superficial temporal artery	1
Internal maxillary artery and facial artery	2
Ophthalmic artery	1

There were 25 patients (62.5%) underwent surgery with a transpalatal approach, 2 patients (5%) with a total or superstructure maxillectomy, 10 patients (25%) with a lateral rhinotomy approach and 3 patients (7.5%) with midfacial degloving. All patients (100%) underwent embolization before surgery (table 5).

Table 5. Surgical Techniques

Surgical Techniques	Total
Transpalatal	25
Total maxillectomy	1
Superstructure maxillectomy	1
Lateral rhinotomy	10
Midfacial degloving	3

During surgery, the amount of bleeding in juvenile nasopharyngeal angiofibroma cases was between 100-3000 milliliters, 20 patients (50%) had 100-500 milliliters of bleeding, with 3500 milliliters being the most.

Discussion

The benign tumor known as juvenile nasopharyngeal angiofibroma is more frequent in males between the ages of 10 and 20. This is comparable to our study,

in which 38 (95%) of the 40 patients with juvenile nasopharyngeal angiofibroma had a male gender and were between the ages of 10 and 20. Although the pathophysiology of juvenile nasopharyngeal angiofibroma is unclear at this time, testosterone and estradiol are suspected to be involved.⁵

In JNA lesions, some findings point to an overexpression of androgen receptors.⁶ There hasn't been any research on the role of race or ethnicity in JNA cases up until now, but in this study, we discovered 19 cases of JNA in patients of the Bugis ethnic group.

The internal maxillary artery was the source of the bulk of feeder arteries in the MSCT angiography study. This is comparable to a different study that found the external carotid artery branch to be the primary blood channel supplying JNA patients. According to Wu et al.'s study, the major feeding artery for JNA comes from the internal maxillary artery, partially from the sphenopalatine, descending palatine, and posterosuperior alveolar branches. Even with bilateral vascular involvement, the feeding arteries are frequently many in situations of enormous tumor growth.^{7,8}

In every incidence of JNA (100%), preoperative

embolization was done. Embolization is done to lower the risk of bleeding, and it should be done 24 to 48 hours following embolization to avoid collateral blood vessel creation. The quantity of blood that occurred during surgery in our research ranged from 100 to 500 milliliters. The ratio between the angio component and the fibroma component, as well as the size and component of the tumor, are other factors that affect intraoperative bleeding.³

Depending on the location and size of the tumor, several surgical approaches are used in JNA instances.⁴ According to our research, the transpalatal approach is the most often employed surgical extirpation technique. This is comparable to the study of Jain et al., which found that the transpalatal route is the most frequently utilized surgical method.⁹ For malignancies affecting the medial side of the pterygopalatine fossa, the transpalatal technique may be performed.¹⁰

There are several features of the juvenile nasopharyngeal angiofibroma that is treated at the ENT Department of Dr. RS. Wahidin Sudirohusodo. The majority of the patients were male and ranged in age from 10 to 20 years. The majority of the ethnic group was Bugis, and embolization was done prior to surgery. The majority of the feeding arteries originated from branches of the external carotid artery.

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