FREQUENCY AND CLINICAL PRESENTATION OF CEREBELLOPONTINE ANGLE TUMORS: AN EXPERIENCE IN DEPARTMENT OF NEUROSURGERY LADY READING HOSPITAL PESHAWAR

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ABSTRACT

Objective: To determine the frequency and clinical presentation of cerebellopontine (CP) angle tumors in Department of Neurosurgery, Lady Reading Hospital Peshawar.

Methodology: Descriptive cross sectional study was conducted from July 2014 to June 2015(one year) in Department of Neurosurgery, Lady Reading Hospital Peshawar. All patients having primary CP Angle tumors were included. patients having recurrent CPA tumor, vascular pathology and CP angle tumors managed conservatively were excluded. Data of the target population was then collected on a designed profarma from the hospital charts, radiology and histopathology reports. Patients were analyzed on the basis of age and gender. Data was entered into statistical program SPSS 16 and was expressed in percentages. Data was presented in different tables.

Results: 14 patients (53.85%) out of 26 were female and 12 patients (46.15%) were male with male to female 1:1.7. Eight cases (30.77%) were below 40 years and 18 cases (69.23%) were above 40 years with mean age of 42 years. Eighteen (18) cases (69.23%) were acoustic neuroma and 4 cases (15.38%) were meningioma, 3 cases (11.54%) were epidermoid and 1 case (3.85%) was arachnoid cyst. The most common presenting symptom was hearing loss which accounts for 69.23%. It is followed by headache (53.85%), tinnitus and disequilibrium (38.46%) each, papilledema (30.77%), vomiting, visual impairment and facial weakness (23.08%) each, diplopia and nystagmus (15.38%) each and focal deficit (7.69%).

Conclusion: The most common cerebellopontine angle tumor is acoustic neuroma which is followed by meningioma, epidermoid and arachnoid cyst. The most common presenting symptom is hearing loss which is followed by headache, tinnitus and disequilibrium.

Key Words: Cerebellopontine angle tumor, Acoustic neuroma, Epidermoid, Arachnoid, Meningioma

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INTRODUCTION

Tumors of the cerebellopontine (CP) angle are usually benign and their complete removal leads to the healing of the patient. However, because of the very complex anatomical structure of the area and the severity of the neurological dysfunction in case of iatrogenic damage, surgery in the CP angle has always been a challenge. The first successful complete removal of a CP angle tumor was performed in1894 by Sir Charles Balance. The tumor was approached via right posterior fossa craniectomy and removed with the finger inserted in an unsterile fashion between the pons and the tumor. Although the patient had facial anesthesia and complete facial palsy, he recovered from surgery and was alive for at least 18 years[1]. Krause used for the first time faradic stimulation to differentiate the facial from the audiovestibular nerve[2].

Tumors of the CP angle account for 5-10% of all intracranial neoplasms[3]. Vestibular schwanomas are the most common CP angle tumor and account for 80-94% of them, followed by meningiomas (3-10% of CP angle tumors) and the epidermoids (2-4%)[4]. Much rar-

er primary tumors are schwannomas of other cranial nerves: of the trigeminal nerve, of the facial nerve, or of the caudal cranial nerves; paragangliomas, chordomas, chordosarcomas, arachnoid or neurenteric cysts, dermoid tumors, and metastases[5]. The CP angle could be secondarily involved by tumors extending from the brainstem or fourth ventricle: gliomas, ependymomas, choroid plexus papillomas, medulloblastomas, or lymphomas.

Vestibular schwanomas (VSs) are classified either according to their maximal size or according to the degree of their extension into the CP angle. They are commonly divided into five categories: intrameatal, tumors up to 1 cm, from 1 to 2.5 cm, from 2.5 to 4 cm, or larger than 4 cm[6]. Much more important than the size is the extent of the tumor in the CP angle, as well as the presence and severity of brainstem compression[7]. Intrameatal tumors present clinically with vestibulocochlear nerve dysfunction: hearing loss, tinnitus, or vestibular dysfunction. Hearing loss is usually of insidious onset and is the most frequent symptom, observed in up to 95% of the patients. Audiograms reveal high-frequency sensorineural hearing loss. Vestibular symptoms frequently are not recognized by the patients, but are always discovered with special testing. During the cisternal stage progressive hearing loss might be observed. A sense of disequilibrium gradually replaces the vertigo. Later on trigeminal symptoms, headache, ataxia, and obstructive hydrocephalus develop. With further brainstem compression, contralateral long tract signs, severe gait disturbance, lower cranial nerve palsies, and signs of intracranial hypertension appear.

By performing this study we will be able to know about the frequency of CP angle tumors and to know about the clinical features of CP angle tumors as well.

METHODOLOGY

Descriptive cross sectional study was conducted from July 2014 to June 2015 (one year) in Department of Neurosurgery Lady Reading Hospital Peshawar. All the patients having primary CP Angle tumors were included. Patients having recurrent CPA tumor, vascular pathology and tumors other than CPA were excluded. Data of the target population was then collected on a designed profarma from the hospital charts, radiology and histopathology reports. Patients were analyzed on the basis of age and gender. Age wise patient were distributed into two groups i.e. above 40 years and below 40 years of age. Data was entered into statistical program SPSS 16 and was expressed in percentages. Data was presented in different tables.

RESULTS

We included 26 patients of primary CP angle tumor. Gender and age wise distribution is shown in table 1 and 2 respectively. 18 cases (69.23%) were acoustic neuroma and 4 cases (15.38%) were meningioma, 3 cases (11.54%) were epidermoid and 1 case (3.85%) was arachnoid cyst.

Eight cases (30.77%) were below 40 years and 18 cases (69.23%) were above 40 years with mean age of 42 years. Most of those epidermoids cases were below 40 years and those of acoustic neuroma and meningioma were above 40 years. About 14 patients (53.85%) out of 26 were female and 12 patients (46.15%) were male with male to female ratio of 1:1.7.

Regarding clinical pattern the most common presenting symptom was hearing loss which accounts for 69.23%. It is followed by headache (53.85%), tinnitus and disequilibrium (38.46%) each, papilledema (30.77%), vomiting, visual impairment and facial weakness (23.08%) each, diplopia and nystagmus (15.38%) each and focal deficit (7.69%). Hearing loss, tinnitus and headache were the most consistent symptom which occurred in the entire CP angle tumors whereas facial weakness was more common in meningioma and epidermoids.

DISCUSSION

According to our study acoustic neuroma is the most common tumor of the CP angle region which accounts for about 69.23% and is followed by meningioma and epodermoid 15.38% and 11.54% respectively. These findings are compatible with a study in which the acoustic neuroma accounts for 70-90% , meningioma 5-10% and epidermoid 3-7%[8].

In another study acoustic neuroma accounts for about 85% of CP angle tumors (being the most common one) which is followed by meningioma (3-13%), epidermoids (2-6%) and arachnoid cyst being (1%). These findings are near to that of our study[9].

Our findings are also similar to the findings in another study in which the acoustic neuroma is the most common CP angle tumor and accounts for about 80-94% of CP angle tumors. According to that study meningioma accounts for 3-10% and epidermoid accounts for 2-4%[5].

CP angle tumors also have diversities of clinical presentations in which the three features are the most consistent symptoms of all which includes hearing loss, tinnitus and headache. Other features are present in different studies with different frequencies. At the time of diagnosis in meningioma hearing loss is observed in 30-73% of the cases. Trigeminal nerve signs are found in 13-49% of the patients, and cerebellar signs and symptoms are found in in 25-52%[10,11]. Tinnitus is noted by 10-12% of the patients. Signs of increased intracranial pressure have been reported in 16-29% and hydrocephalus

Table 1: Gender wise distribution

Gender	No. of cases	Percentage
Male	12	46.15%
Female	14	53.85%
Total	26	100%

Table 2: Age wise distribution

Age	No. of cases	Percentage
≥ 40 years	18	69.23%
< 40 years	8	30.77%
Total	26	100%

Table 3: Clinical presentation

Clinical features	No. of cases	Percentage
Headache	17	53.85%
Hearing loss	18	69.23%
Tinitis	10	38.46%
Disequilibrium	10	38.46%
Facial weakness	6	23.08%
Vomiting	6	23.08%
Papiledema	8	30.77%
Diplopia	4	15.38%
Nystagmus	4	15.38%
Focal deficit	2	7.69%
Decreased vision	6	23.08%

in 20-31% of the patients in different series. In our study all the symptoms of meningioma are the same but facial nerve palsy is little more common.

In another study the CP angle tumor presentations are as given below: hearing loss (98%), tinnitus (70%), disequilibrium (67%), headache (32%), facial numbness (29%), facial weakness (10%), diplopia (10%), vomiting (9%)[12]. in our study hearing loss (69.23%), headache (53.85%), tinnitus and disequilibrium (38.46%) each, facial weakness and vomiting (23.08%), papilledema (30.77%), diplopia and nystagmus (15.38%) each, focal deficit (7.69%) and decrease vision (23.08%).

In another study the clinical presentation is very close enough to the our study, hearing loss, tinnitus and vertigo being the most common symptoms. According to this hearing loss occur in 95%, tinnitus 80%, vertigo 50-75%, headache 25%, facial weakness 35-50% and diplopia 10%[9].

CONCLUSION

Acoustic neuroma is the most common CP angle tumor followed by meningioma, epidermiod and arachnoid cyst. CP angle tumors are more common in patients having age above 40 years of age. The most common clinical presentation is hearing loss, tinnitus, headache and disequilibrium. Facial weakness is more common in meningioma and epedermoid.

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CONTRIBUTORS

SZ conceived the idea, planned the study, and drafted the manuscript. WU and ZK helped acquisition of data and did statistical analysis. MA supervised the study and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.