

FREQUENCY OF CEREBELLOPONTINE ANGLE TUMORS IN PATIENT WITH TRIGEMINAL NEURALGIA

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ABSTRACT:

OBJECTIVES:

To determine the frequency of cerebellopontine angle tumors in patients presented with trigeminal neuralgia.

METHODOLOGY:

This descriptive study was conducted in Neurosurgery Department, Hayatabad Medical Complex, Peshawar from 01-01-2016 to 31-12-2019. Patients with either gender and above 18 years of age diagnosed to be having trigeminal neuralgia and being symptomatic from a minimum duration of 03 months were included in the study. All the patients were subjected to a detailed history, thorough physical and neurological examinations and magnetic resonance imaging for the diagnosis of cerebellopontine angle-tumors.

RESULTS:

The mean age group was 43 ± 2.37 years of which 37% were male and 62% were female patients, respectively. Cerebellopontine angle tumors were present in 3% of the patients.

CONCLUSION:

This study concluded that the frequency of cerebellopontine angle tumors was 3% among patients with trigeminal neuralgia.

KEYWORDS:

Cerebellopontine Angle, Trigeminal Neuralgia, Tumors, Arachnoid Cysts, Neurosurgery

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INTRODUCTION:

The cerebellopontine angle (CPA) is one of the most common sites of intracranial tumors and approximately 10% of them originate in this region. The CPA tumors potentially cause direct and/or indirect pathological effects on the auditory nerve and brainstem¹. In tumors with brainstem involvement, both tumour ear (ipsilateral to the

lesion) and non-tumour ear (contralateral to the lesion) auditory pathway could get disrupted. This would probably produce auditory deficits either overtly or covertly on both sides². For these reasons, the tumors of the CPA site offer a good clinical milieu to understand the auditory temporal resolution factor³. Most common extra axial tumors of CPA are vestibular schwannomas, which constitutes about 70-80% of all CPA lesions. The next in order are meningiomas (5-12%) and epidermoid cysts (2-6%). The other lesions include arachnoid cysts, facial nerve schwannomas. A glomus jugulare tumour may spread into the CPA region from the temporal bone. Other vascular tumours such as haemangioma and hemangioblastomas may also occur primarily in this area⁴. Due to advancement in technology, use of microscope / loops and intraoperative neuromonitoring the death rate has been decreased but complication like facial palsy,

meningitis cerebrospinal fluid leak and other cranial nerve deficit are still more marked⁵. Patients presented with trigeminal neuralgia have a great impact on the excellence of life and the socioeconomic activities^{6,7}. According to the Global Classification of Headache Disorders the trigeminal neuralgia in its aetiology is divided into classic trigeminal neuralgia which is caused by vascular compression of trigeminal nerve root and symptomatic which is due to other factors as tumors, vascular disorders, and demyelination such as in multiple sclerosis⁸. It has been assumed from different sources that from 1 to 9.9% cases of trigeminal neuralgia are caused by CPA tumors⁹. When tumour size increase, it starts compressing the nerve, which leads to demyelination of trigeminal nerve. This makes the trigeminal nerve more prone to ectopic action potentials generation¹⁰. Reported frequency of CPA tumors in patients was 10.4%, amongst them epidermoid was most communal lesion being present in 7.4% of the patients and reported for 75% of CPA tumors in these patients. Vestibular schwannoma and meningioma described for 1.4% cases each¹¹. The current study is constructed to determine the frequency of CPA tumours amongst patients presenting with trigeminal neuralgia. The rationale behind doing this study is that CPA tumors have a meaningful and reflective effect on cranial nerves not only preoperatively but postoperatively as well and among them trigeminal nerve is most affected and usually present as a symptom of CPA tumors. This study highlight the degree of the problem in our patients who are having trigeminal neuralgia.

METHODOLOGY:

This case series descriptive study was conducted in Neurosurgery Department, Hayatabad Medical Complex, Peshawar from January 2016-December 2019. In this study a total of 100 patients were selected by consecutive non-probability sampling technique. Patients with either gender and above 18 years of age diagnosed to be having trigeminal neuralgia and being symptomatic from a minimum duration of 03 months were included. Patients with previous history of trauma to the face and posterior fossa surgery were excluded. Patients who fulfilled the diagnostic criteria of trigeminal neuralgia by the International Headache Society were included in this study. These patients facial pain lasting from a

fraction of a second to 2 minutes, affecting one or more divisions of the trigeminal nerve and having the characteristics of either being intense, sharp, superficial, or stabbing and precipitated from trigger zones or by trigger facto. Patients were further investigated by CT and MRI, to look for the secondary causes of trigeminal neuralgia. After taking permission from hospital ethical and research committee the study was conducted. Patient admitted via outpatient department or shifted from other department were included in the study. Written informed consent was obtained from all patient before commencing the study. All the patients were subjected to a detailed history, thorough physical and neurological examinations and magnetic resonance imaging for the diagnosis of CPA tumours. All the information including patient's biodata was recorded in a predesigned proforma. Data was analysed using SPSS version 20.0 and presented in the form of table.

RESULTS:

Mean age was 43 years with standard deviation ± 2.37 (Table 1)

Table 1: Age Distribution (n=100)

Age	Frequency	Percentage
20-30 Years	14	14%
31-40 Years	20	20%
41-50 Years	28	28%
51-60 Years	38	38%
Total	100	100%

Table 2: Gender Distribution (n=100)

Gender	Frequency	Percentage
Male	38	38%
Female	62	62%
Total	100	100%

Table 3: CPA Tumors (n=100)

CPA Tumors	Frequency	Percentage
Present	03	03%
Absent	97	97%
Total	100	100%

Table 4: Stratification of CPA Tumors with Respect to Age Distribution (n=100)

CPA Tumors	20-30 Years	31-40 Years	41-50 Years	51-60 Years	Total
Present	0	01	01	01	03
Absent	14	19	27	37	97
Total	14	20	28	38	100

Table 5: Stratification of CPA Tumors with Respect to Gender Distribution (n=100)

CPA Tumors	Male	Female	Total
Present	01	02	03
Absent	37	60	97
Total	38	62	100

DISCUSSION:

Trigeminal neuralgia is characterized by sharp, lancination, and episodic pain in the distribution of trigeminal nerve and last from few seconds to two minutes. Aetiology of this condition may include neoplasm, demyelination or compression by abnormal vessel. Most common extra axial tumors of CPA are vestibular schwannomas, which constitutes about 70-80% of all CPA lesions. The next in order are meningioma (5-12%) and epidermoid cysts (2-6%). The other lesions include arachnoid cysts. A glomus jugulare tumour may spread into the CP region from the temporal bone. Other vascular tumours such as haemangioma and hemangioblastomas may also occur primarily in this area⁴. Our study shows that among 100 patients, 14% patients were in age range 20-30 years, 20% patients were in age range

31-40 years, 28% patients were in age range 41-50 years and 38% patients were in age range 51-60 years. Mean age was 43 years with standard deviation ± 2.37 . Male patients were 38% while 62% patients were female. The frequency of cerebellopontine angle tumors was found to be 3% in patients with trigeminal neuralgia. When the tumour size increase it start compressing the fifth nerve which lead to demyelination of this nerve which further lead to increase action potential generation, and patient may present with fifth nerve deficit. Like severe pain in the distribution of fifth nerve and loss of corneal reflex¹⁰. Afridi EH et al had reported that the frequency of CPA tumors in patients was 10.4%. In addition to them epidermoid was most communal lesion being existing in 7.4% of patients and reported for 75% of CPA tumors in these patients. Vestibular schwannoma and meningioma described for 1.4% cases each¹¹. Cruccu Get al presented in his study that 1-9.9% cases of trigeminal neuralgia are due to CPA tumors¹². Barker FG et al had conveyed that the occurrence of CPA epidermoid in trigeminal neuralgia is 0.2-5.5%¹³. Kobata H et al recorded in his study that mean age was 47 years with standard deviation ± 2.983 . Male patients were 38% while 62% patients were female. The frequency of trigeminal neuralgia in CPA tumors was 9%¹⁴. Similar results were observed by Kato K et al in which mean age was 40 years with standard deviation ± 3.311 . Male patients were 40% while 60% patients were female. The frequency of CPA tumors was found to be 5% in patients with trigeminal neuralgia¹⁵. Similar results were noted by Matsuka Y et al in which mean age was 52 years with standard deviation ± 3.742 . Male patients were 45% while 55% patients were female. The frequency of CPA tumors was found to be 7% in patients with trigeminal neuralgia¹⁶. Similar results were documented by Jamjoom AB et al in which mean age was 50 years with standard deviation ± 3.662 . Male patients were 46% while 54% patients were female. The frequency of CPA tumors was found to be 5% in patients with trigeminal neuralgia¹⁷.

CONCLUSION:

The frequency of cerebellopontine angle tumours in patients presenting with trigeminal neuralgia is low. Therefore, detailed clinical and radiological assessment should be done especially in young patients presenting with trigeminal neuralgia.

RECOMMENDATION:

We will recommend future research work and other recommendations regarding screening of patient with trigeminal neuralgia for CPA tumors.

CONFLICT OF INTEREST: None

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