A STUDY OF TUMOURS OF THE CRANIAL NERVE AND PARASPINAL NERVE

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ABSTRACT

INTRODUCTION

One of the frequent sites of tumour formation is the cranial nerves and paraspinal nerves. The cranial nerves perform a plethora of functions and so the signs and symptoms caused may be different. They are mainly classified into four different types.
The aim of the study is:

1. To study the tumours arising from the cranial nerves in an epidemiological point of view.
2. To study the tumours histopathologically.
3. To classify the tumours according to WHO classification.

Thirty-eight brain tumor cases were studied in the Department of Medicine, A. J. Shetty Institute of Medical Sciences, Mangalore. Cranial nerve tumours accounts for 4(10%) among the intracranial tumours. Schwannomas makes up 3(7.39%) among the Intracranial tumours. and constituted 3(75%) among cranial nerve tumours. All the 3 schwannomas were located in CP angle. The geographic distribution of cases was found to be 28 cases from Mangalore and 10 cases from Kerala.

KEYWORDS

Tumour, Brain, Cranial, Paraspinal.

HOW TO CITE THIS ARTICLE: Shetty BS, Khandige S. A study of tumours of the cranial nerve and paraspinal nerve. J. Evid. Based Med. Healthc. 2016; 3(20), 864-865. DOI: 10.18410/jebmh/2016/196

INTRODUCTION: One of the frequent sites of tumour formation is the cranial nerves and paraspinal nerves. The cranial nerves perform a plethora of functions and so the signs and symptoms caused may be different. They can be classified into four types which are discussed in detail below. The WHO has graded them in 2007 which is further discussed.[1]

Schwannoma [WHO grade I]: A benign nerve sheath tumour that is typically encapsulated and composed entirely of well differentiated Schwann cells. Multiple schwannomas are associated with neurofibromatosis type 2 or schwannomatosis.

Neurofibroma [WHO grade I]: A well demarcated intraneural or diffusely infiltrative extraneural tumour consisting of a mixture of cell types, including Schwann cells, perineurial like cells and fibroblasts; multiple and plexiform neurofibromas are typically associated with neurofibromatosis type 1.

Perineurioma [WHO grades I, II or III]: A tumour composed entirely of neoplastic perineurial cells. Intraneural perineuriomas are benign and consist of proliferating perineurial cells within endoneurium, forming characteristic pseudo-onion bulbs. Soft tissue perineuriomas are typically not associated with nerve and are usually benign.

Submission 10-02-2016, Peer Review 23-02-2016,
Acceptance 03-03-2016, Published 10-03-2016.
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DOI: 10.18410/jebmh/2016/196

Malignant peripheral nerve sheath tumour [MPNST] [WHO grades II, III or IV]: A malignant tumour arising from a peripheral nerve or in extraneural soft tissue if it shows nerve sheath differentiation, excluding tumours originating form epineurial tissue or from peripheral nerve vasculature; somewhat over 50% of malignant peripheral nerve sheath tumours are associated with neurofibromatosis type 1.

AIMS AND OBJECTIVES:

1. To study the tumours arising from the cranial nerves in an epidemiological point of view.
2. To study the tumours histopathologically.
3. To classify the tumours according to WHO classification.

MATERIALS AND METHODS: Thirty-eight brain tumour cases were studied in the Department of Medicine, A. J. Shetty Institute of Medical Sciences, Mangalore.

Complete clinical history and clinical diagnosis were noted down in all the cases. Surgical reference was taken wherever possible.

After surgery, biopsies of operated tumors were received in 10% formalin. They were processed by the routine paraffin embedding technique. All the tissue bits that were received were embedded, wherever necessary in multiple paraffin blocks and sections from all these blocks were studied. Paraffin sections of 4 microns' thickness were obtained from each block and stained with haematoxylin and eosin stain using standard procedures. Histochemical stains were performed wherever indicated.

RESULTS:

Type of tumours	No. of cases	% of Intracranial tumours	% of cranial nerve tumours
Schwannomas	3	7.39	75
Neurofibromas	1	2.61	25
Total	**4**	**10.0**	**100**

Table 1: Showing incidence of cranial nerve tumours

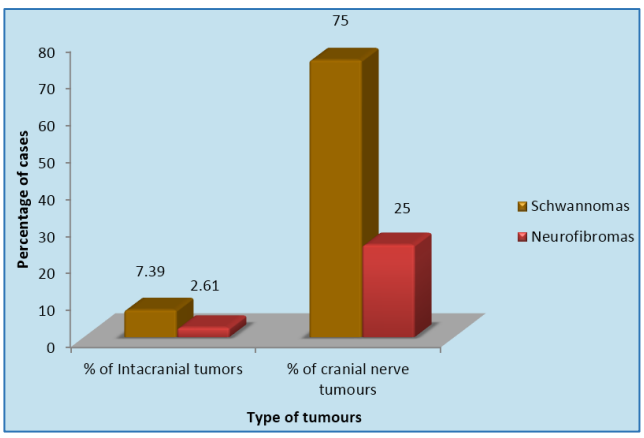

Fig. 1: Incidence of cranial nerve tumours

Cranial nerve tumours accounts for 4(10%) among the intracranial tumours. Schwannomas makes up 3(7.39%) among the Intracranial tumours. and constituted 3(75%) among cranial nerve tumours. All the 3 schwannomas were located in CP angle. All 3 patients were females. Only 1(25%) case was diagnosed as neurofibroma among the 4 cranial nerve tumours. Cerebrum was the location for this tumours. It occurred in a male patient.

The patients presented with headache, vomiting, loss of visual activity and auditory disturbances.

Microscopically they showed tumour tissue made up of wavy spindle cells, arranged in interlacing bundles and palisades. Classical Antoni A and B areas were seen with few typical Verocay bodies in all. Some of the areas showed a whorled pattern. Hyalinised blood vessels were a prominent feature in some of the cases. No evidence of malignancy was noted in any of these tumours. (Fig. 2).

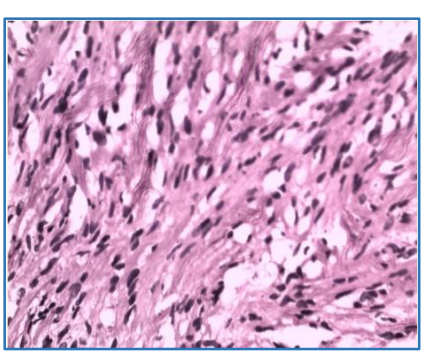

Fig. 2: Microphotograph of acoustic schwannoma. Spindle shape cells arranged with nuclear palisading

The average age incidence of cranial nerve tumour was 30.5 years in the present study.

M:F ratio was found as 1:3.

DISCUSSION: The incidence of Cranial nerve tumour was much higher in the present study compared to the other below mentioned studies. The average age incidence of cranial nerve tumour was 30.5 years in the present study

Cranial nerve tumour	% of Intracranial tumours	Avg. Age in years
Verma et al[2]	4.95%	34.5
Banerjee et al[3]	6.8%	34.5
Pal and Chopra et al[4]	5.06%	24.5
Present study	10.53%	30.5

Table 2: Comparison of age incidence of cranial nerve tumours

M:F ratio was found as 1:3 which is the reversal of ratio of the study by Pal and Chopra et al.[4]

Name of the study	Male: female ratio
Banerjee AK et al[2]	4:1
Prasad D et al[5]	3:1
Verma RN et al[2]	6:1
Pal and Chopra et al[4]	1:1
Present study	1:3

Table 3: Comparison of sex incidence of Cranial nerve tumours

CONCLUSION: The geographic distribution of cases was found to be 28 cases from Mangalore and 10 cases from Kerala. Out of this all the cases which were diagnosed for cranial nerve tumour came from Kerala. This study has a very good future since the tumours of the cranial nerves is little understood and in the future lot of studies has to be made in order to understand the underlying epidemiology of the disease.

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