Original Research Paper

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# STUDY OF CLINICAL PROFILE AND MANAGEMENT OF INTRADURAL EXTRAMEDULLARY SPINAL CORD (IDEM) TUMOURS (CONDUCTED AT A TERTIARY CARE CENTER IN CENTRAL MAHARASHTRA)

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| **Dr. Anup Kela*** | Assistant professor, Dept of Neurosurgery, Govt medical college, Akola. *Corresponding Author |
| **Dr. Samata Miniyar** | Assistant Professor, Dept of paediatrics, GMC , Akola. |
| **Dr Umesh Kawalkar** | Assistant Professor, Dept of community medicine, GMC, Akola |

**ABSTRACT** **Aims and objectives:** This study aims to analyse the complete profile of patients diagnosed and treated as IDEM spinal cord tumours. The factors studied include age, sex, clinical presentations, histopathology, surgical outcome and post operative recurrence. **Materials and method:** It is a single center prospective study conducted over a period of 18 months. Patient demographics, severity and duration of symptoms, and tumor characteristics (anatomical and pathological) in all operated spinal IDEM tumors were collected. The neurological findings obtained during the preoperative stage and the postoperative follow-up were evaluated according to the Frankel and Nurick grading. The back pain was assessed with help of the Denis pain scale (DPS). Data collected throughout preoperative and postoperative examination and investigations were analyzed and submitted to statistical procedures. **Results and analysis:** Our study included30 patients, majority being young adults between 20 to 30 years (46.66%). The male and female ratio in our study was 2:1. Predominant presentation was sensory symptoms like numbness, paraesthesia in extremeties (66.66%), followed by pain in back, limbs (33.33%). The most common location found was dorsal cord (50%) followed by lumbar(36.66%). The histopathological examination showed meningioma to be the most common (56.66%), followed by schwannoma (20%), and neurofibroma (16.66%). Pseudomeningocoele was the only complication encountered. Out of 30 patients we had operated, we could achieve total excision in 27 patients (90%). There was no postoperative worsening of symptoms, and no recurrence. **Summary and Conclusion:** The clinical and pre and postoperative profile suggested IDEM spinal cord tumours were common in 3rd decade, with male predominance. Commonest location was dorsal area with meningioma being the commonest histopathological finding.

**KEYWORDS :** Spinal tumours, IDEM, meningioma, schwannoma.

## INTRODUCTION :

Primary spinal cord tumors account for 2–4% of all the primary central nervous system neoplasms[1] . Intradural extramedullary tumors (IDEM) tumours account for 40-45% of all tumors found in the spinal canal.IDEM tumours are mostly benign and the commonly found are meningioma, schwannoma and neurofibromas[2].

Studies have shown gross total resection results in significant neurologic improvement regardless of the level of preoperative neurologic dysfunction and with minimal morbidity[3]. However, IDEMs like en plaque meningioma, diffuse leptomeningeal glioneuronal tumor (DLGNT) and those tumors firmly adhered to the underlying spinal roots and rootlets and those arising from the ventral cord are difficult to grossly resect without causing neurological damage.

This study aims to find the incidence of IDEM spinal tumours and to study their complete profile along with the management and cure at a resource limited tertiary care center in western Vidarbha (central maharashtra). It would help to gather information about this particular type of tumours and study their presentation and management in this area.

### Aims and objectives:

This study aims to analyse the complete profile of patients diagnosed and treated as IDEM spinal cord tumours. The factors studied include age, sex, clinical presentations, histopathology, surgical outcome and post operative recurrence.

### Materials and method:

It is a single center prospective study conducted over a period of 18 months. Written informed consent was taken from all the patients during the study.

Patient demographics, severity and duration of symptoms, and tumor characteristics (anatomical and pathological) in all operated spinal IDEM tumors were collected. The neurological findings obtained during the preoperative stage and the postoperative follow-up were evaluated according to the Frankel and Nurick grading. The back pain was assessed with help of the Denis pain scale (DPS).

Data collected throughout preoperative and postoperative examination and investigations were analyzed and submitted to statistical procedures using statistical packages for social science (SPSS) software. P value was set at $<\square 0.05$ for significant results.

## OBSERVATION AND RESULTS :

### Agewise distribution of patients :-

Our study included30 patients, belonging to age group 21 years to 70 years, i.e 3rd to 7th decade. Majority of them were young adults between 20 to 30 years i.e. 14 out of 30 patients (46.66%), followed by patients in 5th decade (23.33%), least were patients in 7th decade(3.33%).

| Age group | Number of patients |
|---|---|
| 21-30 yrs | 14(46.66%) |
| 31-40 yrs | 5 (16.33%) |
| 41-50 yrs | 7 (23.33%) |
| 51-60 yrs | 3 (10%) |
| 61-70 yrs | 1(3.33%) |

### Sex-wise distribution of patients :

We had males and females in our study in the ratio of 2:1, i.e. 20 males and 10 females.

### Clinical presentation :

Patients presented to us were having varied symptoms. Majority were having more than one complaint. Predominant presentation was sensory symptoms like numbness, paraesthesia in extremeties, i.e 20 out of 30 patients (66.66%), followed by pain in back, limbs i.e 10 out of 30 (33.33%). 5 (16.66%) patients had weakness in limbs, and 4 (13.33%) had sphincter involvement in the form of retention of urine , urinary incontinence.

### Location wise distribution of idem :

Our study included intradural extramedullary tumours(IDEM) from all regions of spinal cord, except sacral. Predominantly dorsal cord was involved in 50% cases (15 out of 30 cases), followed by lumbar in 11 cases(36.66%) and cervical in 4 cases(13.33%). We have not encountered tumours involving more than one region of spinal cord in our study.

### Histopatholgy :

In our study, we found various histopathological types of tumours. Most common amongst them was meningioma found in 17 out of 30

cases(56.66%), followed by schwannoma in 6 cases (20%), and neurofibroma in 5 cases(16.66%). One case was arachnoid cyst (3.33%), and other one case showed inflammatory material on histopath, where tumour type couldnot be determined.

| Histopathology of tumour | Number of patients |
|---|---|
| Meningioma | 17 (56.66%) |
| Neurofibroma | 5 (16.66%) |
| Schwannoma | 6 (20%) |
| Inflammatory material | 1 (3.33%) |
| Arachnoid cyst | 1(3.33%) |

**Complications :**

Only one complication was seen in our series in the form of pseudo-meningocoele (3.33%).This patient was an otherwise healthy 60 year old male, with IDEM excised at D10-11 level. Histopathological diagnosis was meningioma. Suture removal was done on 12th post op day. Patient was asymptomatic then. After about 15 days of suture removal, patient presented to us with swelling over suture line along its entire length. It was soft, non tender, compressible without any signs of inflammation ,suggestive of pseudomeningocoele. Patient was started on tab diamox 250mg tds for 2 weeks. Patient was advised complete bed rest, and avoid straining for 15 days. Swelling subsided completely without any neurodeficit.

**Type of excision :**

Out of 30 patients we had operated, we could achieve total excision in 27 patients (90%).In 3 patients we could do partial excision, one of which was meningioma at D8-9 level , other was at D11 level, densely adherent to overlying dura. We left the adherent part with coagulation achieving simpson's grade 1 excision . Third patient was a case of neurofibroma extending into neural foramina at D6 level, where we had to leave foraminal part of about 0.5 cm as we could not reach there intra operatively. Post operatively all patients did well. There was no post operative worsening of symptoms, and no recurrence.

**DISCUSSION:**

Our study included 30 patients in age group of 21 years to 70 years. Majority belonging to 3rd decade, (14/30, 46.66%), which was similar to Shardendu et al study[4] (2021) whereas in a study by Fachrisal et al[5] majority patients were in 4th and 7th decade. In a study by Gyanendra et al[6] majority patients were in 3rd and 4th decade.

Male to female ratio in our study was 2:1, which showed male preponderance, in contrast to Sharadendu etal study, there were 19 females and 15 males, whereas in a study by Gyanendra et al and Fachrisal et al the incidence was similar in both sexes.

In our study, majority of patients presented with numbness and paraesthesia in limbs (66.66%), followed by pain (33.33%), weakness of limbs (16.66%) and sphincter disturbances (20%).These findings were similar to that observed by Sharadendu et al, (paraesthesia in limbs 88%) and Gyanendra et al.

In our study majority (50%) of tumours were located in thoracic region, 36.66% in lumbar region and 13.33% in cervical region. Similarly finding were seen in a study by Fachrisal and colleagues 53.33% had IDEM at dorsal level and 26.66% at lumbar level. In Gyanendra etal study (2019) there were 10 cases of dorsal level (52.6%) followed by lumbar, and cervical IDEM was rare. In the study by Sharadendu et al there were 17 cases of dorsal IDEM (48.57%) , which was almost similar to our study, followed by cervical (22.85%), but the incidence of lumbar IDEMs was less as compared to our study.

In our study, all patients were having benign tumour on histopathological study. Majority (56.66) of patients were having Meningioma on histopathology, followed by schwannoma (20%), and neurofibroma (16.66%). Fachrisal found schwannoma in majority (53.33%) on histopathology reports. The findings on histopathology by Gyanendra Joshi et al, were similar to our study that is, Meningioma was present in majority patients (42.1%) followed by schwannoma and neurofibroma (21.1%). Sharadendu and colleagues had majority of scwannomas (48.57%), followed by meningioma (25.71%) in there study.

In our study we encountered only one complication in the form of pseudo-meningocoele (3.33%), which was managed conservatively with bed rest and medications. It did not required re exploration. There were no complications observed in the study by Fachrisal et al (2020) and Gyanendra joshi et al (2019). Whereas in the study by Sharadendu et al, there was 1 case of csf leak , 1 had wound infection, both of which were managed conservatively. 1 patient developed pseudo meningocoele which required reexploration and repair of dural defect. In our study we could achieve complete excision in 90% cases (27 out of 30). 2 cases of meningioma were densely adherent to dura, and 1 case of neurofibroma which was extending through neural foramina could not be excised in toto.however there were no recurrence of tumour.

To conclude, IDEM was commonly found in 3rd decade with male preponderance in our study. It can be excised completely most of the times, with good recovery rate and fair prognosis.

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