

Surgically Treated Primary Spinal Cord Neoplasms in Southeastern Nigeria

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ABSTRACT

Background: Primary spinal cord tumors are not as frequently encountered as their cranial counterparts. They could present in such an indolent manner that requires a reasonable index of suspicion for their diagnosis to be considered.

Objective: The objective of this study is to analyze the incidence and pattern of primary spinal cord and appendage neoplasms in patients surgically treated in our institution over a decade of practice. **Materials and Methods:** A retrospective review of clinical, radiological, and histopathology profiles of patients surgically treated for primary spinal cord tumor from 2006 to 2016 was carried out. Retrieved data were analyzed using SPSS version 21. **Results:** Out of 472 spine procedures were performed within the study period 17 (3.6%) cases of histologically proven primary spinal cord tumors were identified. The age of patients ranged between 17 and 77 years with a mean age was 45 years. The male: female ratio was 1:1.1. Motor deficit and pain were the most common presenting symptoms seen in 35.3% and 29.4% of patients, respectively. Meningiomas are the most common histological diagnosis (70.6%), distantly followed by Schwannoma (17.6%). The most common location of the tumors was intradural extramedullary (70.6%). All patients had gross total resection of tumor with no perioperative mortality.

Conclusion: Meningioma is the most common surgically treated primary spinal cord tumor in our setting. Surgery is associated with good outcome.

KEYWORDS: Primary, spinal cord, surgery, tumors

INTRODUCTION

Since Sir Victor Horsley performed the first successful resection of a spinal intradural extramedullary (IDEM) tumor by means of a laminectomy in 1887, surgical management of these lesions has continued to evolve over time.^[1] Primary spinal cord tumors are 10 times less common than their cranial counterparts, although they are histopathologically similar.^[2] Based on their location with respect to the dural sac and spinal cord, the tumors can be classified into extradural; IDEM; or intramedullary with most primary tumors located in the IDEM area.^[3] The presentation could be nonspecific, but pain and motor dysfunction are important symptoms of spinal cord tumors.^[1,3-5] Therefore, most of the patients are wrongly diagnosed with cervical spondylopathy or intervertebral disk herniation.^[6]

Magnetic resonance imaging (MRI) is currently the gold standard for imaging as it provides accurate diagnoses and delineates the soft-tissue components.^[5] Intraspinous tumors are relatively uncommon lesions but can cause significant morbidity and can be associated with mortality as well.^[7] Complete surgical extirpation is the goal where feasible. The use of intraoperative monitoring has been shown to improve the extent of tumor resection with increased safety^[8] particularly for IDEM. Prognosis for patient longevity, which can be determined by the patient's age at diagnosis and the extent of the disease,

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is the major factor in deciding which surgical approach would prove suitable.^[9]

No previous or similar work has been done in this region on surgically treated primary spinal cord neoplasm and is imperative to understand the behavior of these tumors for an appropriate, well-timed intervention to be made.

MATERIALS AND METHODS

This is a descriptive cross-sectional retrospective analysis of patients with primary spinal cord and appendage neoplasms surgically managed in our institution from 2006 to October 2016. All patients had diagnostic preoperative MRI and surgical intervention. Data on demographic variables, clinical features, surgical approach, pathology, location, and association with syrinx were extracted. Primary cord tumors were classified according to anatomical location.

Retrieved data were analyzed using SPSS for windows version 21 (IBM). *P* < 0.05 was considered statistically significant.

Tumors without histological diagnosis were excluded from the analysis.

RESULTS

Out of 472 spine procedures performed within the study, 17 cases of histologically proven primary spinal cord tumors were identified. This represents 3.6% of spine all procedures. The age of patients ranged between 17 and 77 years with a mean age was 45 years. The disease peaks at the fourth decade of life [Table 1]. The male:female ratio was 1:1.1. Nine patients (52.9%) presented within 1 year of onset of symptoms. The mean duration of symptoms before presentation was 3.4 years.

About 94% of patients, the symptoms were insidious in onset, while the remaining 6% of patients had a sudden onset. Motor deficit and pain were the most common presenting symptoms seen in 35.3% and 29.4% of patients, respectively [Figure 1].

Tumor predominantly affects the cervical region [Figure 2]. The IDEM area is the site of tumor

location in 12 patients (70.6%). Meningiomas are the most common histological diagnosis (70.6%), and it has a female preponderance male:female of 1:2 [Figure 3 and Table 2]. The ratio of benign to malignant lesions is 16:1. No histologically confirmed intramedullary astrocytoma/ependymomas were documented in our cohort to our utmost surprise.

Laminectomy and gross total resection (GTR) was done in 53% of cases, hemilaminectomy + GTR in 35%, and subligamentous laminectomy + GTR in 12% of patients. All patients were discharged home. No mortality was noted.

DISCUSSION

Primary spine tumor surgeries are not particularly common in our environment as it accounts for only 3.6% of spine procedures. However, the fact that it peaks at the fifth decade and affected cohorts with a mean age of 45

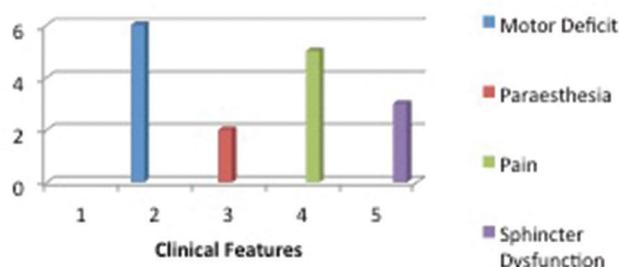


Figure 1: Distribution of the clinical features (n=17)

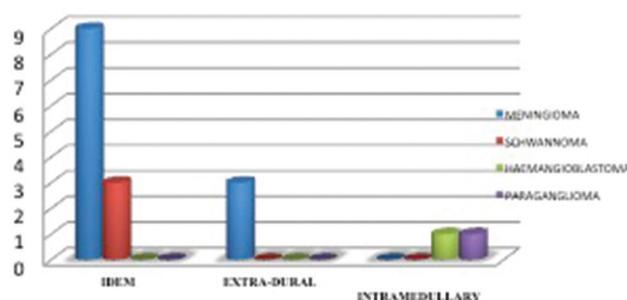


Figure 2: Region of the spine affected (n=17)

Age (years)	Frequency (%)
11-20	2 (11.8)
21-30	1 (5.9)
31-40	5 (29.4)
41-50	3 (17.6)
51-60	3 (17.6)
61-70	2 (11.8)
71-80	1 (5.9)
Total	17 (100)

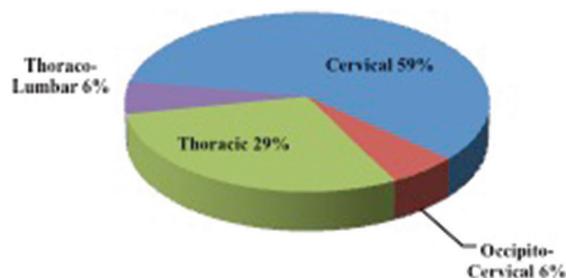


Figure 3: Tumor location by histology (n=17)

Table 2: Distribution of spinal meningioma

	Frequency (%)
Sex	
Male	4 (33.3)
Female	8 (66.7)
Location	
Cervical spine	7 (58.3)
Thoracic spine	5 (41.7)

suggests implications on the workforce. Furthermore, the tumors were predominantly IDEM in location. In the work by Moein *et al.* among 102 patients in Iran, they reported a mean age for primary tumors of 40.2 years with most tumors located in the intradural area.^[10] Our findings corroborate with this report. However, whereas meningioma was the most common tumor in our series, they reported nerve sheath tumors. Most of the tumors (94.1%) were benign and exhibit a long latency (time to presentation) averaging 3.4 years among our cohorts.

Adeolu *et al.* found metastasis to be the most common histology followed by meningioma in Ibadan, southwest Nigeria.^[11] This pattern is understandable as we excluded metastasis from our study. When this is applied to their findings, meningioma will be the most common tumor as we also found among our patients. There is a clear female preponderance in meningiomas among our patients with all the lesions distributed in the cervical and thoracic regions only. Our findings were also in line with reports from other literature where female predominance was also reported; though the thoracic spine was the most reported site, it could occur in other regions of the spine.^[12-14] In another small-sized study on 14 patients over a 5-year period, the authors reported the most common IDEM tumors as meningiomas and Schwannomas.^[15] In our series, schwannoma was also the second most common histological diagnosis seen in 3 patients (17.6%), and all were located in the IDEM space. Motor deficits and local pain are important clinical features observed in our patients.

In a review of 35 surgically managed cervical spine primary tumours, Zileli *et al.* concluded that complete tumor resection is the oncologically best surgical strategy and should be attempted whenever possible.^[16] Although different forms of laminectomy were used, we were able to achieve GTR in all our patients. No perioperative mortality was observed.

CONCLUSION

Primary spinal cord tumors commonly affect young- and middle-aged patients. A triad of motor dysfunction, regional pain, and sphincteric dysfunction were the common clinical features. Meningioma is the most

common primary tumor. Overall surgical outcome is good.

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Conflicts of interest

There are no conflicts of interest.

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