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Histopathological Spectrum of Spinal Lesions

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Abstract: ***Introduction: Spinal lesions exhibit a wide spectrum of presentation and are classified into congenital malformations, inflammatory and infective disorders, degenerative and reactive processes, cystic lesions, vascular malformations, and neoplasms[(1)]. Aims & Objectives: To review the histopathological spectrum of spinal lesions in relation to their site,age,sex and morphology. Materials and Methods: Our study is a retrospective study.56 biopsy specimens were included in the study over a period of 3 years from 2017 to 2019. Results: Our study shows male predominance with ratio of 1.07:1(M:F).Among 56 specimens 48 (85.7%)were Non-Neoplastic and 8 (14.3%) were Neoplastic lesions.Pott's spine(48.2%,age 31-70yrs) is most common non-neoplastic lesion and meningioma (3.5%,age 31-40yrs)is the most common benign Neoplastic lesion observed. Discussion and Conclusion: Although the neuroimaging techniques give an idea about the location and probable diagnosis, histopathology remains the gold standard for accurate diagnosis of spinal lesions. Our study shows Pott's spine is the most common non-neoplastic spinal lesion and meningioma is the most common benign neoplastic lesion. Carcinomatous deposits are the most common malignant lesion. Similar findings were observed in Nitin M.Gadgil et al study. With respect of age and sex prediction Tuberculosis was the most common (non neoplastic) lesion in both our studies.***

Keywords: Spinal lesions, Histopathologic spectrum, Pott's spine, meningioma

1. Introduction

Spinal lesions are broadly categorized as lesions encountered in the spine and epidural space, lesions of spinal meninges, lesions of spinal nerve roots, and lesions of spinal cord. Spinal lesions are further classified into congenital malformations, inflammatory and infective disorders, degenerative and reactive processes, cystic lesions, vascular malformations and neoplasms [(2)].

Proper knowledge of clinical and demographic features of spinal lesions can streamline the process of diagnosis and management which ultimately improves the prognosis. Although the neuroimaging techniques give an idea about location and probable diagnosis, histopathology remains the gold standard for accurate diagnosis of spinal lesions

Aims and objectives

To study the histological spectrum of spinal lesions in relation to their frequency of occurance and in relation with Age, Sex and Site of occurrence. The present study is a retrospective study. Total of 56 biopsy specimens were included in the study. The study is done over a period of 3 years from 2017 to 2019.

Exclusion criteria:
Patients presenting with congenital anomalies were excluded.

2. Materials and Methods

Relevant clinical data and imaging details were reviewed. Specimens were fixed in 10% formalin. Routine histopathological processing was done. Sections were cut stained with H&E stain. All the data was divided in different categories, analysed and summarized as percentage. Total 56 patients were analysed. The most common complaint was back pain followed by nerve root pain, paraparesis and paresthesia

3. Results

Distribution of spinal lesions in relation to sex
Among total of 56 cases male predominance was noted in relation to occurrence of spinal lesions
Male 29 cases (51.8%) followed by female 27 cases (48.2%)

Distribution of Spinal lesions in relation to age considering occurence of spinal lesions in relation to age the commonest age group of presentation is 51-60 yrs(25%) followed by 41-50yrs(23.2%), 31-40yrs (19.6%), 61-70yrs (17.8%), 11-20yrs (7.1%), followed by 21-30yrs (5.3%), 71-80yrs (1.8%).

Incidence of neoplastic and non neoplastic spinal lesions

Among total of 56 cases, Non-Neoplastic lesions are most commonest 48 cases (85.7%) followed by neoplastic lesions 8 cases (14.3%)

Table 2: Histopathological Spectrum and Frequency of occurrence of Spinal Lesions

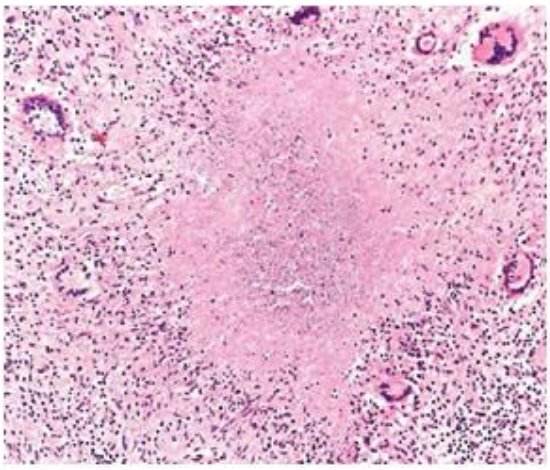
Type of lesion	Spinal lesion	Number of cases	Percentage
Neoplastic	Meningioma	2	3.5 %
14.3 %	Carcinomatous deposits	2	3.5 %
	Schwannoma	1	1.7 %
	Hemangioma	1	1.7 %
	Neurofibroma	1	1.7 %
	Lymphoma	1	1.7 %
Non neoplastic			
85.7 %	Potts Spine (TB spine)	27	48.2 %
	Inflammatory pathology	20	35.7 %
	Cysticercosis	1	1.7 %
	Total cases	56	100%

Distribution of Spinal Lesions based on location

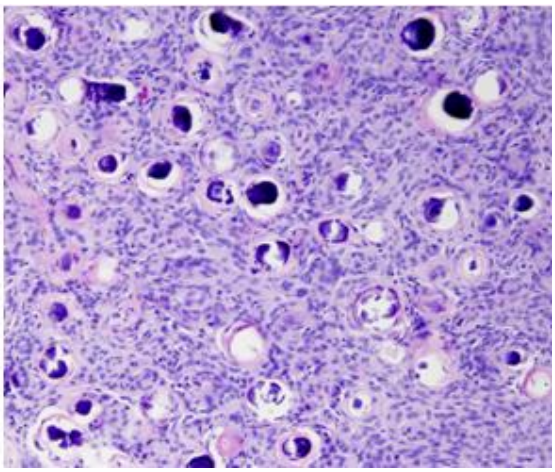
Coming to Distribution of Spinal Lesions based on location , Cervical 2(3.6 %), Cervocothoracic 1(1.7 %), Thoracic 27(48.2%), ThoracoLumbar 5(8.9 %), Lumbar 19(33.9 %), Lumbosacral 2(3.6 %), Sacral 0(0 %)

Distribution of spinal lesions in relation to age

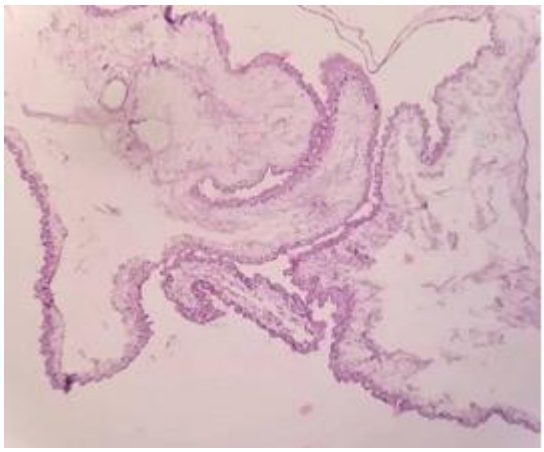
Among 56 cases of spinal lesions Potts Spine is commonest 27 cases followed by Inflammatory pathology 20 cases followed by Cysticercosis 1 case followed by Meningioma 2 cases,Carcinomatous deposits 2 cases, followed by Schwannoma, Hemangioma,



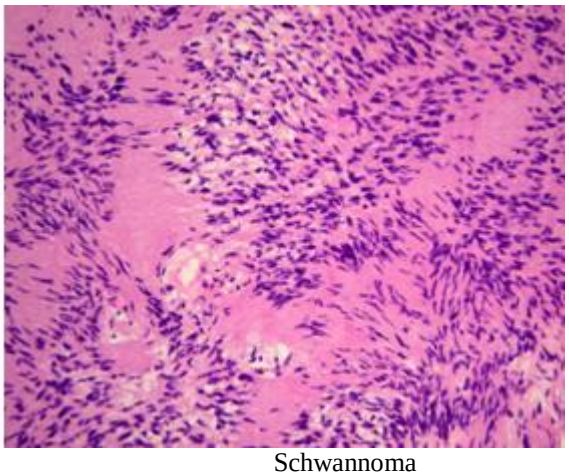
Tuberculosis of spine,



Meningioma



Neurocysticercosis



Schwannoma

4. Discussion

Spinal space occupying lesions [SOLs] lead to significant morbidity and mortality.[3] Commonest presentations include Back pain, Nerve root pain, Paraparesis, and paresthesia. The complex anatomy of the spinal region and wide spectrum of spinal lesions poses a great challenge to neurosurgeons, radiologists and pathologists for accuare diagnosis and management. Although other investigations and imaging gives an idea about the probable diagnosis, histopathological examination remains the gold standard in the diagnosis.

Studies	Comparitive study	Our Study
Jain AK, Singh S, Sinha S et al [3]	-Male predominance (4.6:1)	-Male predominance (1.07:1)
	-Thoracic region is the most frequently involved site (70%)	-Thoracic region is the most frequently involved site (48.2)
Nitin M.Gadgil et al[4]	-Tuberculosis was the most common non neoplastic lesion (23.5%)	-Tuberculosis was the most common (non neoplastic) lesion (48.2% all spinal leisons)
	-Male predominance (1.3:1)	-Male predominance (1.07:1)
Dr S P Tathe, Dr S N Parate at el[5]	-Most affected age group was 41-60yrs	-Most affected age group was 41-60yrs
	-Male predominance (1.5:1)	-Male predominance (1.07:1)
	-Tuberculosis was the most commonest non neoplastic lesion (11.3% among 18 % of total non neoplastic leisons)	-Tuberculosis was the most commonest non neoplastic lesion(48.2% all spinal leisons)
	-Thoracic region was most commonly affected [38.6%]	-Thoracic region was most commonly affected [48.2%]
I.N. Soomro et al	-Commonest histologic diagnosis was Tuberculosis (41.8%)	-Commonest histologic diagnosis was Tuberculosis (48.2% all spinal leisons)

Comparison with other studies:
Jain AK, Singh S, Sinha S[4]. et al and in our study, Thoracic (48.2 %) region was the most frequently involved site. Nitin M.Gadgil et al[5] correlate with our study with respect of age and sex prediction Tuberculosis was the most common(non neoplastic)

Dr S P Tathe, Dr S N Parate at el studies had the same results.[6]

- The most affected age group was 41-60 years
- There was male predominance noted
- Tuberculosis was the most commonest non neoplastic lesion.

I.N. Soomro et al studies have the similar findings to our study, commonest histologic diagnosis was chronic granulomatous inflammation, mostly with other features of tuberculosis.

Comparison with other studies

Studies	Comparitive study	Our Study
Jain AK, Singh S, Sinha S et al[3]	Thoracic region is the most frequently involved site	Thoracic region is the most frequently involved site
Nitin M. Gadgil et al[4]	Tuberculosis was the most common non neoplastic lesion	Tuberculosis was the most common(non neoplastic) lesion
	-Age and sex prediction	-Age and sex prediction
Dr S P Tathe, Dr S N Parate at el[5]	-Most affected age group was 41-60 years	-Most affected age group was 41-60 years
	-Male predominance	-Male predominance
	-Tuberculosis was the most commonest non neoplastic lesion	-Tuberculosis was the most commonest non neoplastic lesion
I.N. Soomro et al	Commonest histologic diagnosis was Tuberculosis	Commonest histologic diagnosis was Tuberculosis

5. Conclusion

Non -Neoplastic lesions constitute majority of the spinal space occupying lesions. Tubeculosis (potts spine) was the most common non neoplastic lesion observed. There is male predominance in respect to occurance of spinal lesions, and the most common affected age group is 40-60yrs. Ultimate prognosis and management depends on the histopathological diagnosis

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