Spinal Cord Lesions - Pathologist Point of View

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Irshad Nabi Soomro (Department of Pathology, Aga Khan University Hospital, Karachi.)

Spinal cord, a delicate organ can be effected by a variety of lesions. Subtle clinical features may be hathinger of a massive inflammatoRy orneoplastic process. Recent advances in radio imaging such as computerized tomography, magnetic resonance imaging and bone scintigraphy have broadened our horizons. Through these techniques one cannot only localize the lesion but under guidance obtain tissue for the diagnosis. Most of this is in the form of cytologic smear preparation. However, this is usually adequate for a person familiar with cytologic appearances of various lesions to reach a diagnosis. A part of this tissue can be used to form a cell block which can be used for special stains and immunocytochemistry. Key features of lesions are:

Whorls and psamomma bodies of meningioma. Cells on immunohistochemistry are positive for vimentin and epithelial membrane antigen (EMA).

Long club shaped nuclei of Antoni A component of a schwannoma[1]. Cells are positive for S-l00 protin, Leu 7 and vimentin.

Papillary structures formed by ependymoma. Cells are positive for Glial Fibrillary Acidic Protein (GFAP), EMA and cytokeratin.

Hairlike processes of pilocytic astrocytoma.

Pluinps eosinophilic cells, stained for GFAP in gemistocytic astrocytoma.

Anaplastic cells with highN:C ratio in glioblastoma.

Uniform cells arranged in Zeilballen in a paraganglioma. These are surrounded by S-l00 positive sustentacular cells.

Atypical lymphoid cells with coarse chromatin and prominent nucleoli of a lymphoma.

These may be primary or first manifestation of a systemic disease[2]. Cells are positive for leukocyte common antigen (LCA) and Pan B or Pan T markers.

Metastasis, epidural or intramedullary may show squamoid glandular or sarcornatous features[3].

Osteoclast giant cells should suggest a bony lesion of vertebra especially osteoclastoma.

Presence of granulomas would narrow the differential diagnosis. Of course tuberculosis will be on the top of list in this country.

Viruses may be diagnosed by virtue of their inclusion bodies such as herpes simplex and cytomegalovims.

There are several inflammatoiy and reactive processes, which may simulate neoplasm. Notable amongst these are demeylinating diseases, histiocytosis and xanthomatosis[4], plasma cell granuloma[5], Rosai-Dorfman disease[6], Castlernan disease[7] and amyloidoma[8]. All these can only be diagnosed if tissue is made available. These are rare lesions but do matterto individual patients.

In this issue there is anarticle[9] analyzing lesions causing cord compression. This may not be entirely representative, e.g., in oncology service metastasis will be the conunonest cause similarly data Trom the West will show higher prevalence of malignancy[10]. This series roughly gives an idea of the pattern of disease in our country.

Not surprisingly tuberculosis is the commonest cause. Clinically disease is usually unaccompanied by constitutional symptoms of fever, weight loss and pulmonary disease. The commonest symptoms are backache, a very non-specific feature. Only high index of suspicion will call for investigations (AKU data, presented by Dr. Shahid Baig at 50th Anniversary of DMC). Paraplegia may be a very late feature. Other features are root pain, paraesthesia, motor weakness, malaise and fever. Opportunity to observe gross disease is limited due to lack of autopsy in this country.

However, two patterns are well known:
1. Space occupying lesions
2. Diffuse inflaminatomy arachnoiditis
Provisional diagnosis can be made by radioimaging. Abnormalities onMRI include:
Obliteration of subarachnoid space
Oedema of cord
Clumping of nerve roots
Central and eccentric cavitation of the corçi with destruction of the neighboring structures and formation of abscess.
Signal abnormalities suggesting vascular congestion.
Often clinically unsuspect, investigations such as myelogram demonstrates extensive disease.
It is usually the space occupying lesion, which is biopsied[11]. Presence of granulomas establishes the diagnosis. However. epitheloid cells or caseation necrosis should also suggest diagnosis. In the presence of only chronic inflanunation a diagnosis cannot be excluded, therefore, procedure should be repeated. Tissue can also be used for DNA extraction and amplified by Polymemse chain reaction to identify rnycobactena. An insertion element IS 6110 is usually amplified by PCR. This is quite sensitive and specific for mycobacteria[12].
Tuberculosis is our national disease. TB Control Programme has miserably failed due to lack of commitment on the part of public and private sector. WHO ranks Pakistan as one of the worst effected countries. Overpopulation, economic deterioration leading to malnutrition, lack of medicines and diagnostic facilities, poor patients compliance and drug resistance are some of the factors contributing to spread of the disease. It is ourjob to bring out data to apprise the hierarchy of the gnrn situation prevailing in health sector and hope that they will wake fmm deep slumber. Only way out is major investment in health and education of the nation.

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