Uterus Sign in Lumbar Spine

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ABSTRACT

Various imaginary signs are presented in literature to make easy for the practitioners to interpret radiological images in many neurological disorders. Uterus sign is one among that kind. Distortion of uterus sign in the magnetic resonance imaging (MRI) axial cut of lumbar spine indicates a compressive element which needs to be correlated with clinical status.

Keywords: Uterus sign, Lumbar spine, Magnetic resonance imaging, Neuroradiology, Axial cut section.

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INTRODUCTION

Radiological features in neurological practice are interesting and have diagnostic values. For example, the ‘Scottie dog’ appearance in the oblique view of lumbar spine X-rays indicates spondylosis—defect at the pars interarticularis in lumbar spine.1 The ‘dural tail’ sign in meningomas in contrast magnetic resonance imaging (MRI) brain,2 ‘Hummingbird’ sign in progressive supranuclear palsy in MRI,3 ‘Eiffel-by-night’ sign in idiopathic hypertrophic pachymeningitis4,5 ‘hot cross bun’ sign in multiple system atrophy pons,6 ‘dumbbell-shape’ in neural foraminal neurofibromas, ‘Biconvex’ in extradural hematomas, ‘Butterfly’ sign in glioblastoma multiforme, the ‘Mount Fuji’ sign in tension pneumocephalus,7 etc. are few of them to mention. These are transformation of our imagination into neuroradiology that is beneficial not only in teaching and but also in application in difficult diagnostic situations, especially to young doctors and other specialists.

The author has incorporated uterus in spine. The anatomy of uterus is familiar to all medical students and practitioners (Fig. 1). Since MRI was introduced, there has been significant improvement in understanding the anatomy and pathology of spine. The soft tissues, like ligaments, disk and nerve roots, are well delineated in MRI than in computed tomography (CT) scans.

UTERUS SIGN

The axial cut sections at lumbar spine is unique, particularly at the disk level. An imaginative mind of a neurosurgeon can visualize a uterus in the canal (Fig. 2), that includes the neural foramen and beyond. The dome of the uterus corresponds to the posterior annulus of the disk at its center and the lateral wall of the uterus corresponds to the inner cortical layer of lamina with its ligamentum flavum. While the inner spinolaminar junction is the cervix, the spinous process is vagina. The neural foramen extending laterally from superolateral margin

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of the body that carries lumbar nerve root correspond to fallopian tubes and its superior margin relates to the lateral margins of disk. Now, the ganglions are the ovaries. This imaginary uterus is usually well seen in all lumbar levels, classically at L3/4 (Fig. 3) and L4/5 level (Fig. 4) and less classically at L5/S1 level (Fig. 5). Since the disk is oval shaped at L5/S1 level in the axial cut, the dome of the uterus is shallow, and L1/2 and L2/3 fallopian tubes are wider (Fig. 6).

**INTERPRETATION OF UTERUS SIGN**

The distortion of normal uterus sign indicates a pathology, meaning if you do not see the perfect imaginary uterus then you are looking at a possible abnormal scan of the lumbar spine.

Dome of the uterus is dented or obliterated by a central disk prolapse (Fig. 7). The degree of indentation depends on the volume of the disk material. Disappearance or narrowing of fallopian tube is seen in posterolateral disk prolapse (Fig. 8).
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Figs 9A and B: (A) Unilateral lateral stenosis left and (B) bilateral lateral stenosis

Fig. 10: Far lateral disk

Fig. 11: Central and paracentral disk prolapse

Fig. 12: Thick lig flavum and bilateral lateral stenosis

prolapse (Fig. 8) or due to osteophytes of the posterolateral margin of the endplates of vertebral body from anterior (Figs 9A and B). Ovary will be seen missing in far lateral extraforaminal disk prolapse (Fig. 10). A combination of these may be seen commonly depending on the extent of disk pathology (Fig. 11). Lateral wall of the body of uterus is distorted or indented by a thickened or buckled ligamentum flavum. These thickened ligaments also can narrow the fallopian tubes from posterior as the hypertrophic facets. A shrunken body of uterus indicates lumbar canal stenosis depending the severity (Fig. 12). In severe lumbar canal stenosis with combination of pathologies mentioned above can show no imaginary uterus at the disk level at all.

REFERENCES