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Intraspinal abscess associated with dorsal dermal sinus: A rare cause of unexplained hydrocephalus

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Abstract
Hydrocephalus in children may be associated with various causes including prematurity (<37 weeks), spina bifida, head injury, stroke, blood clots, brain tumors or subarachnoid hemorrhage causing block in ventricular system. However, at times we could not find a cause for hydrocephalus and referred to it as unexplained hydrocephalus. Here, we report a case, where a female child presented with gross unexplained hydrocephalus. MRI Brain was conducted which could not rule out cause for the same. However, the child also presented with discharging dorsal dermal sinus for which MRI Spine was conducted, which turned out to be a significant finding in our study. The discharging specimen was sent for culture report. Intraspinal abscess associated with dorsal dermal sinus was noted to be a rare etiology for unexplained hydrocephalus.

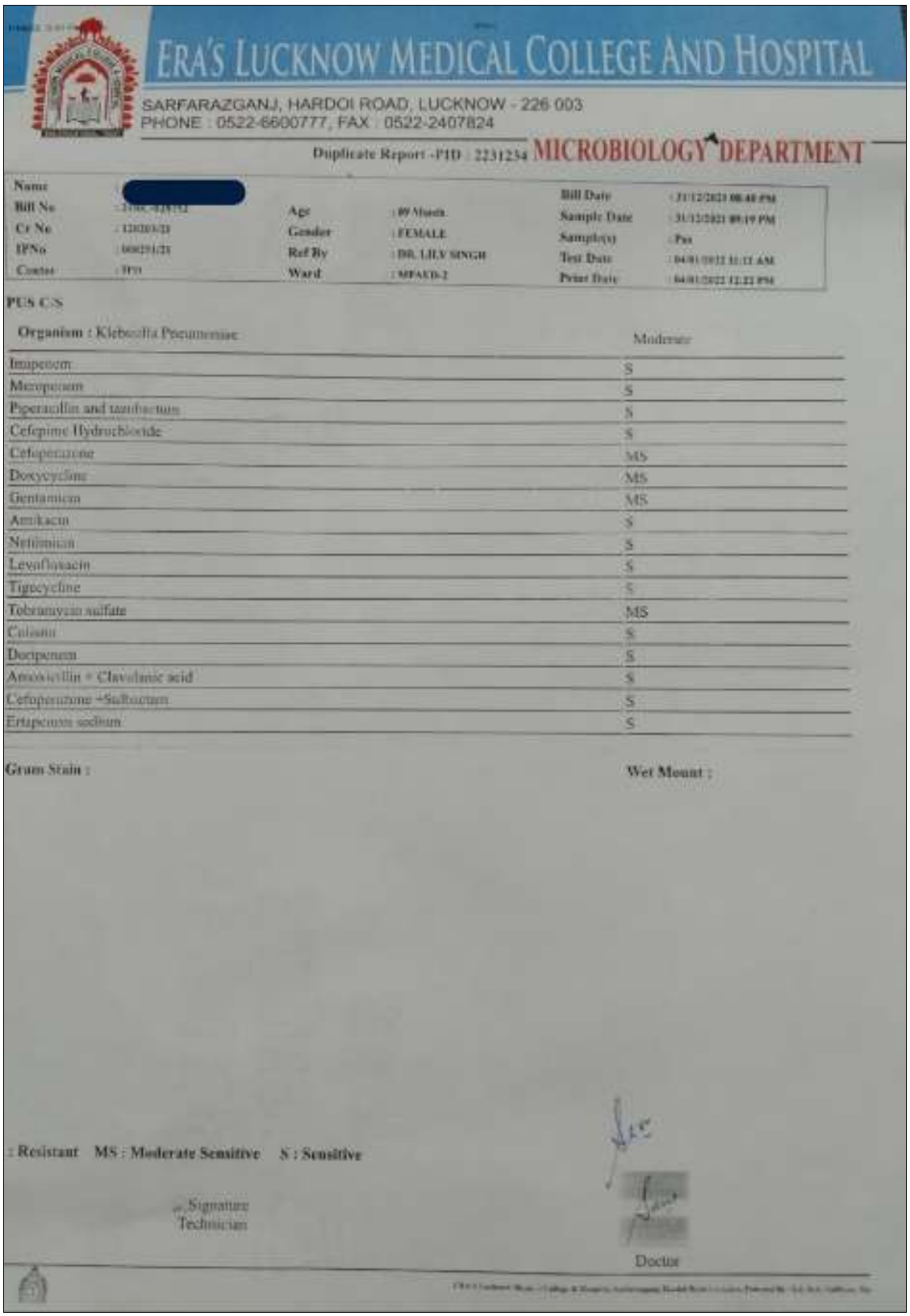
Keywords: Hydrocephalus, abscess, hydrocephalus

Introduction
Dorsal dermal sinus presents as a dimple or pin point ostium in median or rarely paramedian location extending as an epithelium lined tract from skin to spinal cord, cauda equina, or arachnoid as in form of spinal dysraphism. They are predominantly located in lumbosacral region and rarely in occipital region. It may be asymptomatic or may present with various neurological deficits such as weakness, paresthesias and bowel and bladder dysfunction due to spinal dysraphism [1]. It may be complicated by infections such as recurrent meningitis, epidural or subdural abscess and intramedullary spinal cord abscess. It results from incomplete separation of superficial ectoderm from neural ectoderm, resulting in a focal segmental adhesion. Later during embryogenesis, as spinal cord ascends relative to spinal canal it stretches the adhesion into long tubular tract. It may be associated with Intraspinal dermoid, epidermoid, lipomyelocoele, filum terminale lipoma, tight filum terminale or intradural lipoma [2].

Case Presentation
A 9yr old female presented with chief complaints of headache and fever with chills and rigor. On examination a discharging sinus from lumbosacral region with surrounding multiple pustules were noted around on skin. The motor and sensory examinations were normal. All desirable milestones were achieved. The discharging specimen was sent for culture report. The patient was subjected to MRI Brain and MRI whole spine. MRI Brain revealed dilatation of bilateral lateral, third and fourth ventricles with mild periventricular seepage of CSF, likely secondary to meningitis. Corpus callosum appeared thinned out. Mega cistern magna was noted. However, no cause for hydrocephalus could be noted. MRI whole spine revealed significant findings. An enhancing dorsal sinus tract extending from skin to spinal cord at S3-S4 level with fat stranding and heterogeneity in subcutaneous tissue was noted which was suggestive of infected dorsal dermal sinus. It also revealed peripherally enhancing necrotic collections and phlegmonous tissue at T10 to lower lower sacral level in spinal canal displacing spinal cord posteriorly with associated enhancement of arachnoid space, suggestive of intra spinal abscess with arachnoiditis or meningitis.

Discussion

Gross hydrocephalus with no obvious cause in MRI brain was noted in our patient. However, MRI whole spine revealed an intraspinal abscess and necrotic collections and phlegmonous tissue in spinal canal associated with dorsal dermal sinus. Hydrocephalus in such case may be caused due to leptomeningeal inflammation, which was depicted by periventricular CSF seepage. Pus culture and sensitivity report detected the presence of organism Klebsiella pneumonia with a mention on it's antibiotic sensitivity. Treatment is surgical with resection of sinus tract and exploration of intrathecal component. Medical treatment as per pus culture and sensitivity for resolution of infection is required. Prognosis-As it depends largely on degree of neurological deficits and severity of infection, is good as there are no neurological deficits. However, infection present may be treated medically.



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PHONE : 0522-6600777, FAX : 0522-2407824

Duplicate Report -PID : 2231234 MICROBIOLOGY DEPARTMENT

Name	[redacted]			Bill Date	
Bill No		Age	: 09 Month	Sample Date	
Cr No		Gender	: FEMALE	Sample(s)	: Pus
IPNo		Ref By	: DR. LILY SINGH	Test Date	
Center		Ward	: MPAED-2	Print Date	

PUS C/S

Organism : Klebsiella Pneumoniae	Moderate
Imipenem	S
Meropenem	S
Piperacillin and tazobactam	S
Cefepime Hydrochloride	S
Ceftriaxone	MS
Doxycycline	MS
Gentamicin	MS
Amikacin	S
Netilmicin	S
Levofloxacin	S
Tigecycline	S
Tobramycin sulfate	MS
Colistin	S
Doripenem	S
Amoxicillin + Clavulanic acid	S
Ceftriaxone +Sulbactam	S
Ertapenem sodium	S

Gram Stain :

Wet Mount :

: Resistant MS : Moderate Sensitive S : Sensitive

Signature
Technician

Doctor

Fig 1: pus culture report of discharge from dorsal dermal sinus.

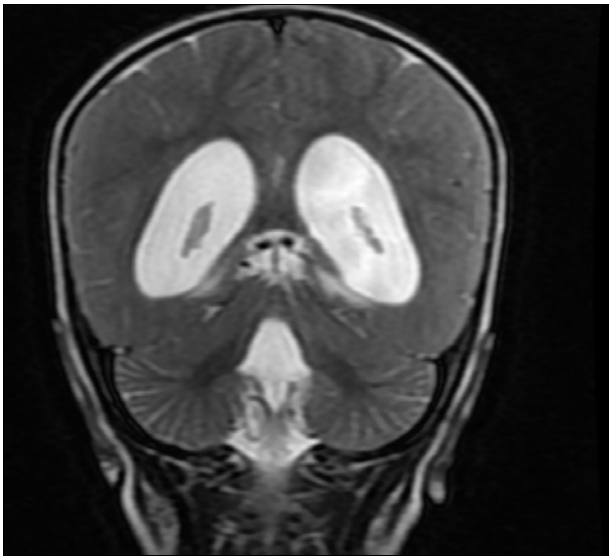

Fig 2: T2 coronal MRI brain- depicting dilated lateral ventricles.

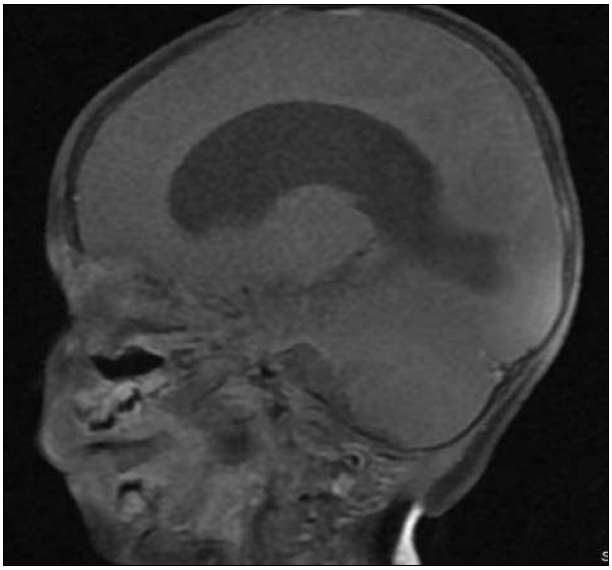

Fig 3: T1 Saggital MRI brain-depicting prominently dilated lateral ventricle.

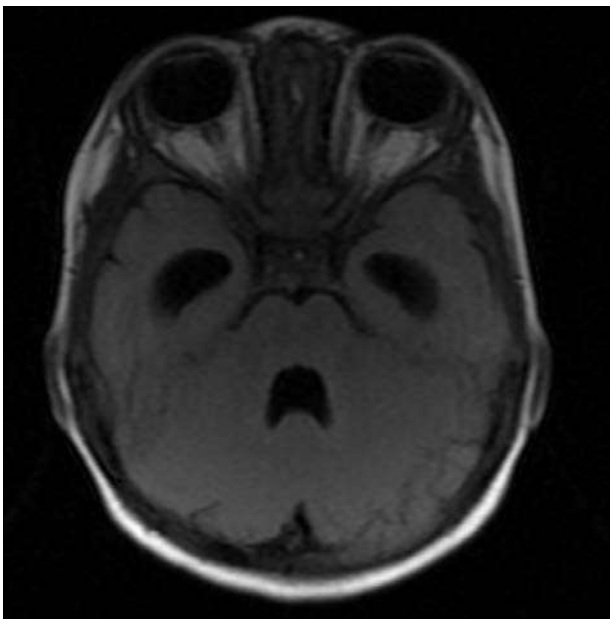

Fig 4: T2 flair MRI brain axial-depicting prominently dilated temporal horn of lateral ventricle and fourth ventricle.

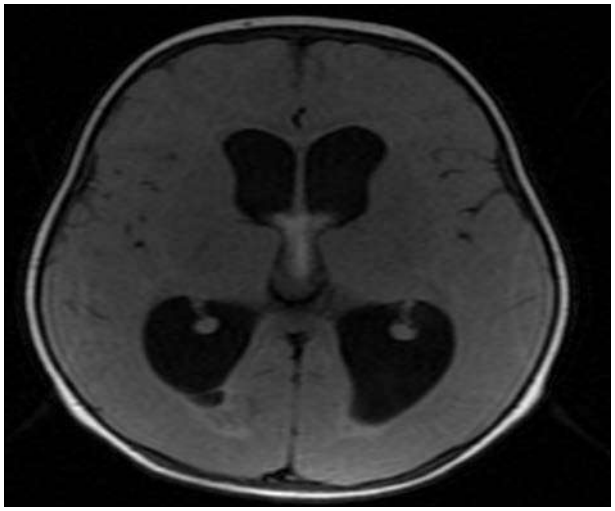

Fig 5: T2 flair MRI brain axial-depictingprominently dilated occipital horn of lateral ventricle.

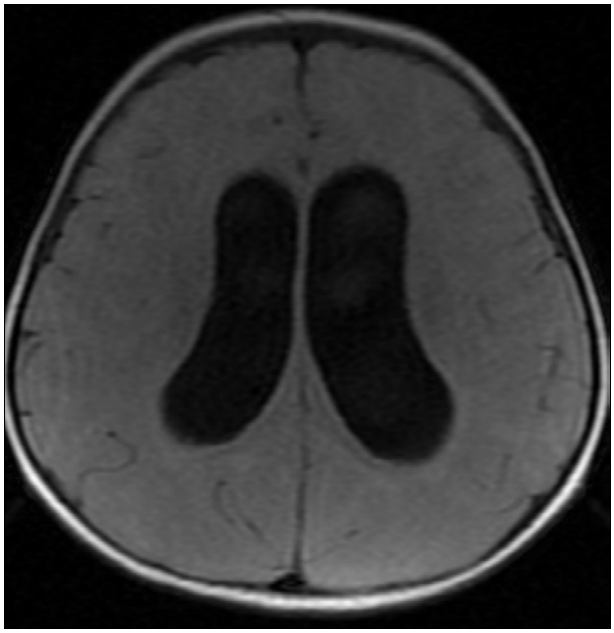

Fig 6: T2 flair MRI brain axial-depicting prominently dilated lateral ventricles.

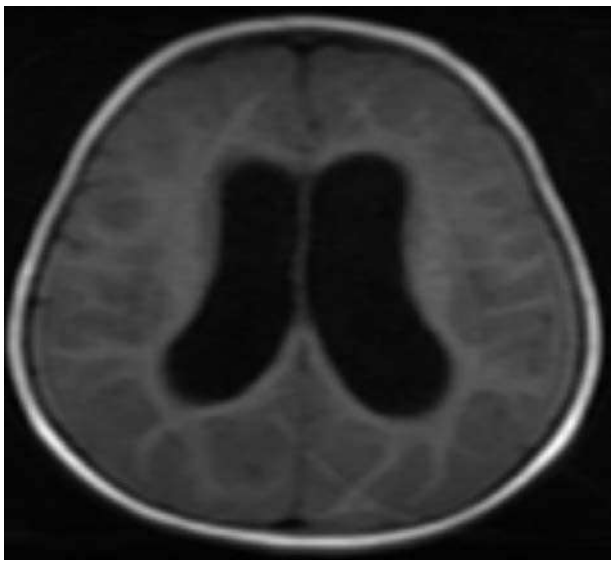

Fig 7: T1 flair MRI brain axial-depictingprominently dilated lateral ventricles with periventricular seepage.

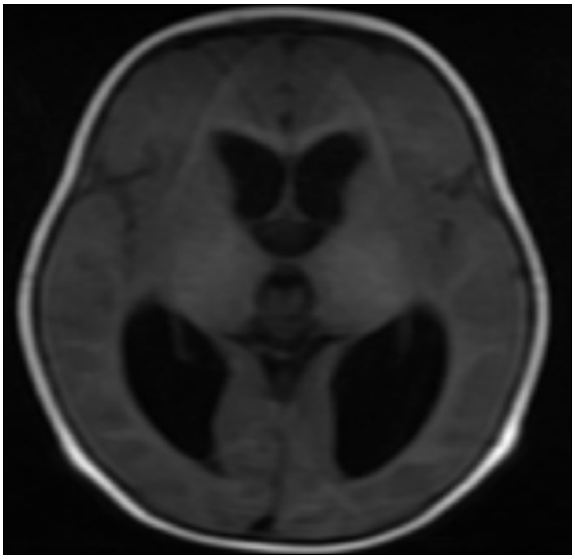

Fig 8: T1 flair MRI brain axial-prominently dilated occipital horn of lateral ventricle.

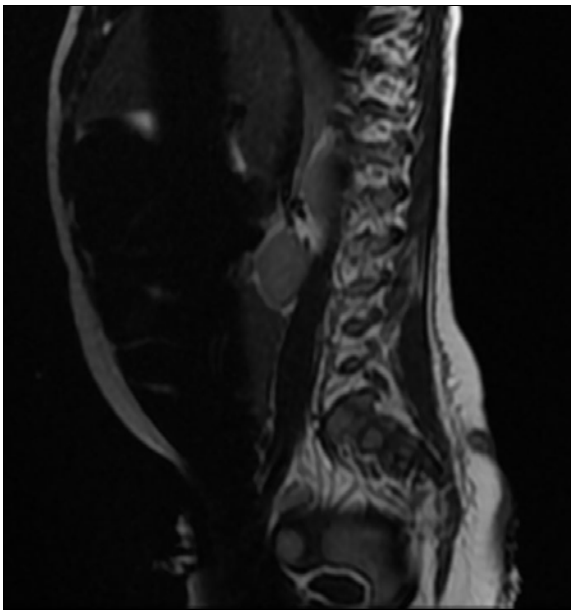

Fig 9: T2 MRI spine Saggital-showingdorsal dermal sinus.

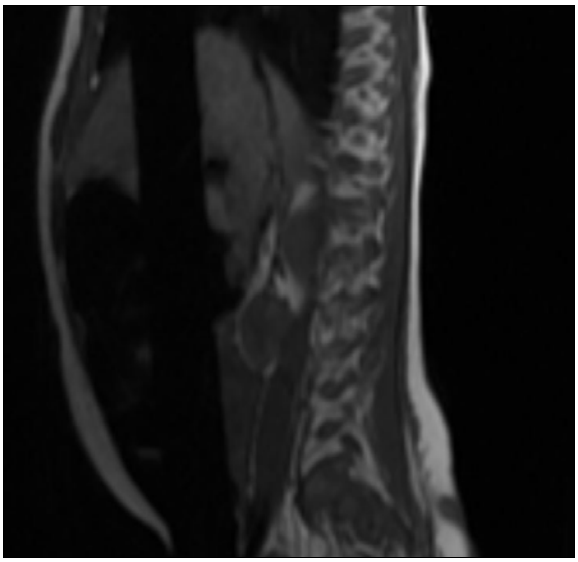

Fig 10: T1 MRI spine saggital-showing dorsal dermal sinus at s2-s3 level

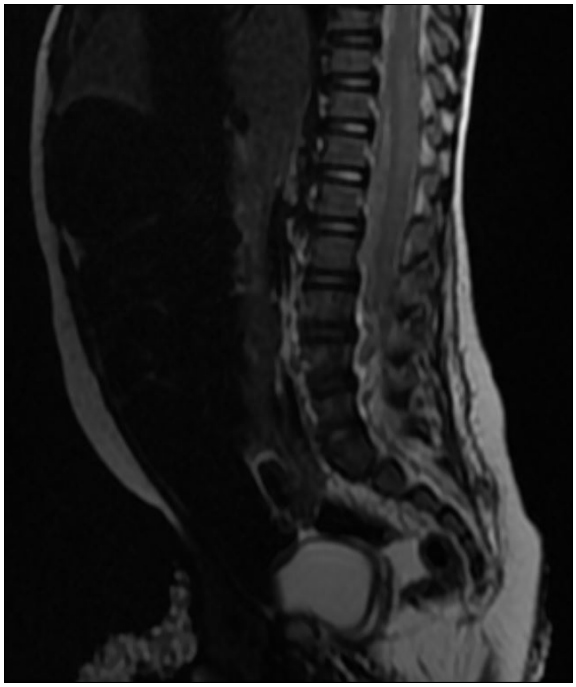

Fig 11: T2 MRI spine saggital-continuity of dorsal dermal sinus from skin to sub arachnoid space.

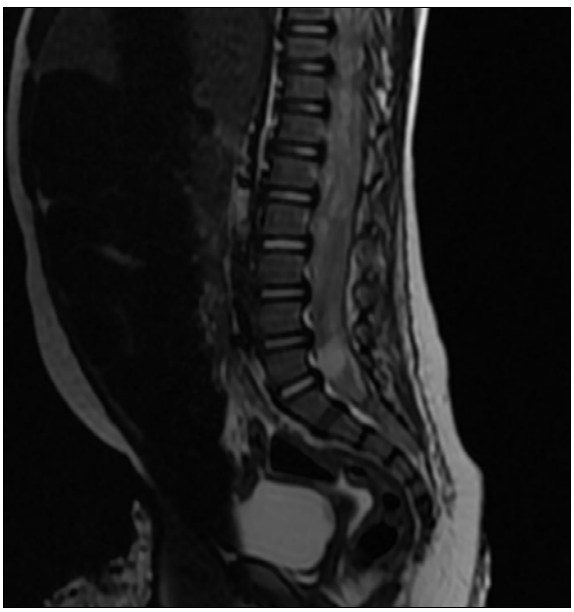

Fig 11: T2 MRI spine saggital-showing hyperintense intraspinal abscess.

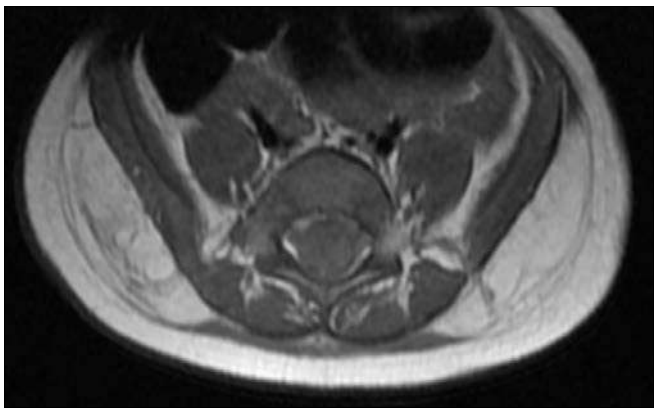

Fig 12: T1 MRI spine axial-showing intraspinal abscess.

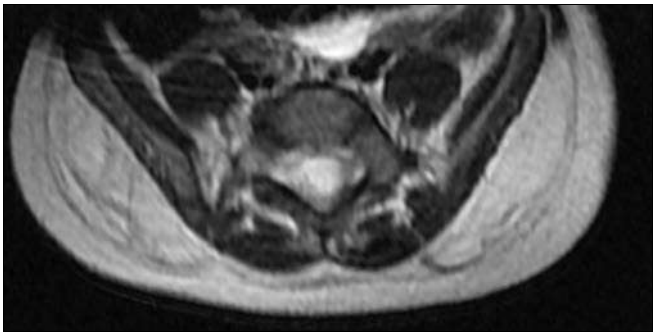

Fig 13: T2 MRI spine axial-showing intraspinal abscess.

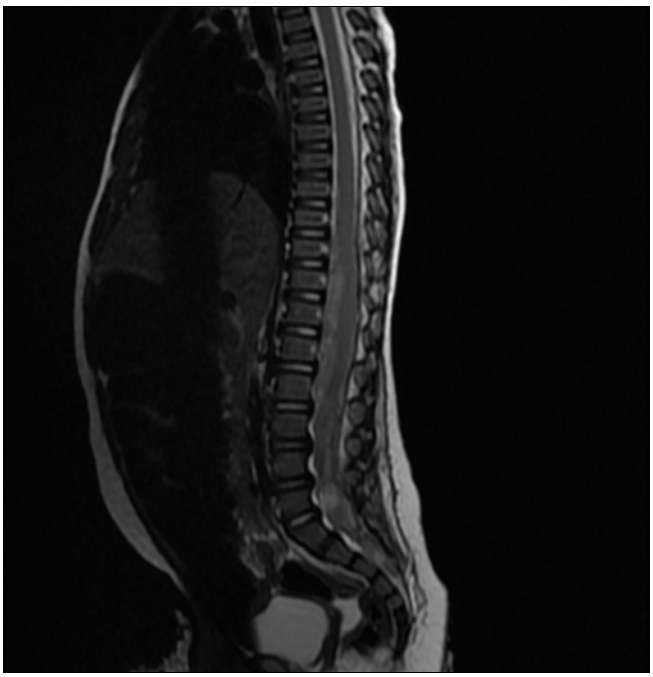

Fig 14: T2 weighted MRI image of spine reveals peripherally enhancing necrotic collections and phlegmonous tissue at T10 to lower lower sacral level in spinal canal displacing spinal cord posteriorly with associated enhancement of arachnoid space, suggestive of intra spinal abscess with arachnoiditis or meningitis.

Conclusions

All patients should be screened for wholespine in cases of unexplained hydrocephalus to rule out the cause and intervened. Patients must be cared for by well-trained specialists to improve their prognosis.

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