

MRI of LEFT KNEE

Protocol:

Multiplanar MRI of the left knee joint performed in the sagittal, coronal and transverse planes using T1 weighted spin echo, T2 and proton-density weighted fast spin echo, fatsaturated & T2* weighted gradient echo sequences.

Observations:

There is complete tear of the patellar tendon from its attachment at the inferior pole of patella with a large defect between the torn ends and resultant high riding patella i.e. superior dislocation of patella.

There is a fluid collection seen anterior to and inferior to the superiorly displaced patella.

The visualised part of Quadriceps tendon appears normal.

Patella and its cartilage are normal.

There is thinning of the articular cartilage in the medial compartment of the femorotibial joint space.

Few small patchy subarticular PD fatsat hyperintense areas are seen in the subarticular marrow of the medial femoral and tibial condyle.

Rest of the articular surfaces and subarticular marrow are normal.

There is mild extrusion of the body and anterior horn of the medial meniscus with mild deformation of their shape and reduction of size.

Grade III Hyperintense signal (oblique tear) reaching inferior articular surface is seen in the posterior horn of medial meniscus.

Grade II hyperintense signal (horizontal tear) is seen in the body of medial meniscus.

Grade I hyperintense signal is seen through entire substance of lateral meniscus.

Hyperintensity is seen on PDFS sequence along the Medial collateral ligament, however no disruption of its fibres.

The cruciate and lateral collateral ligaments are uniform in the outline and do not display any focal signal abnormality.

Mild knee joint effusion.

Conclusion:

- **Complete tear of the patellar tendon from its attachment at the inferior pole of patella with a large defect between the torn ends and resultant superior dislocation of patella (patella alta).**

- Fluid collection inferior to and anterior to the superiorly displaced patella.
- Changes of osteoarthritis involving the medial compartment of the knee (femorotibial) joint.
- Mild extrusion of the body and anterior horn of the medial meniscus.
- Oblique tear reaching inferior articular surface in the posterior horn of the medial meniscus.
- Horizontal tear in body of medial meniscus.
- Grade I hyperintense signal in the entire substance of lateral meniscus.
- Grade I sprain of the MCL.

MRI OF LUMBAR SPINE

Clinical Profile: Low back pain

Prior: None

Technique: Multiplanar multiecho MRI of the lumbosacral spine was performed.

Findings:

Loss of normal lumbar lordosis is seen with mild degenerative changes.

The lumbar vertebral bodies demonstrate normal height, alignment and marrow signal. Posterior elements are intact with normal ligamentum flavum and facets.

L1/2 disc - The disc reveals no significant bulge or herniation. Neural foramina and exiting nerve roots appear normal.

L2/3 disc - The disc reveals no significant bulge or herniation. Neural foramina and exiting nerve roots appear normal.

L3/4 disc - The disc reveals no significant bulge or herniation. Neural foramina and exiting nerve roots appear normal.

L4/5 disc - The disc reveals no significant bulge or herniation. Neural foramina and exiting nerve roots appear normal.

L5/S1 disc - There is mild loss of disc height and hydration. Mild diffuse intervertebral disc bulge is seen with mild mass effect over the thecal sac.

Neural foraminae are mildly compromised.

The lower thoracic cord and conus appear normal.

The pre and paravertebral soft tissue appear normal.

Impression:

1. Mild degenerative changes at lumbar spine.
2. Disc bulge at L5/S1 level causing mild mass effect over the thecal sac.

MRI of PELVIS

Technique: Multiplanar, multiecho MRI of pelvis was performed.

Findings:

Marrow signal abnormality is seen in both femoral heads with serpiginous areas of low signal on T1 and heterogeneously hyperintense signal on T2/STIR. No collapse or flattening of the femoral heads is seen. Minimal bilateral hip effusion is seen.

The other visualized bones demonstrate normal marrow signal intensity. The iliac crests appear normal.

The muscles, tendons and ligaments around the hip joint demonstrate normal signal intensity. No evidence of muscle tear, strain or contusion.

The visualized pelvic viscera are unremarkable.

Impression:

Findings are suggestive of avascular necrosis of bilateral femoral heads (stage 2) as described.

No other significant abnormality detected.

Please correlate with patient's clinical findings and laboratory studies.

MRI and MRA OF BRAIN

Technique: Multiplanar and multiecho MRI of brain was performed.

Findings:

Multiple small hyperintensities are noted involving periventricular white matter in T2W & Flair images. These do not show diffusion restriction.

Hyperintensity is noted involving central pons on T2W & Flair images. It does not show diffusion restriction.

Rest of both cerebral parenchyma show normal gray-white matter differentiation with normal sulci, gyri and basal cisterns.

Centrally located gray matter nuclei appear normal in size, shape and intensity.

Diffusion imaging does not reveal evidence of acute infarct.

Ventricular system appears normal in size & shape. No evidence of periventricular oozing.

Midline structures like interhemispheric fissure, 3rd ventricle, pineal region and rest of brain stem appear normal.

Posterior fossa structures appear normal.

Mild tortuosity of left optic nerve is noted. Right optic nerve appears normal in the given images.

MR Brain Angiography:

The internal carotid arteries show normal course and caliber and are symmetrically disposed.

Mild irregularity is noted involving intracranial part of left ICA. No significant luminal narrowing is noted.

Both middle cerebral arteries arise normally from the internal carotid on either side and forms normal insular loops. Mild irregularity is noted involving M1 part of left MCA. No significant luminal narrowing is noted.

The anterior cerebral artery shows no signs of narrowing or displacement. The basilar artery shows a normal course and caliber and divides into normal size posterior cerebral arteries.

The anterior and posterior communicating arteries appear unremarkable.

IMPRESSION:

- Chronic white matter ischemia.

- Hyperintensity involving central pons on T2W & Flair images. It does not show diffusion restriction.
- Mild tortuosity of left optic nerve.
- Mild irregularity involving intracranial part of left ICA and M1 part of left MCA. No significant luminal narrowing.

MRI OF HIP JOINTS (PLAIN AND CONTRAST)

Clinical information: Known case of Sickle cell anemia. Previously AVN of Right Hip. Presently, pain in Left Hip.

Protocol: Multiplanar MRI of the both hip joints was performed using T1 weighted spin echo, T2 weighted fast spin, echo, T1 and PD Fatsaturated sequences. Post contrast multiplanar T1 weighted sequence obtained after injection of gadolinium.

Observations:

LEFT HIP:

The left femoral head is spherical in shape with no articular collapse.

The left femoral head, neck and posterior part of the left acetabulum show diffuse hyperintense signal on T2 and T2 fatsaturated sequences which is isointense on T1 sequence. On post contrast sequence, a large part of the femoral head shows no enhancement with thick peripheral enhancement around the non-enhancing area. There is thick synovial enhancement with minimal joint effusion.

There is periarticular hyperintense soft tissue on T2 and T2 fatsaturated sequences seen around the left hip joint involving the left obturator externus, pectinues muscles and the origin of the left adductor muscles which shows post contrast enhancement with few non-enhancing irregular necrotic areas within.

Multifocal areas of marrow hyperintensity on T2 and T2 fatsaturated sequences is seen in both upper femoral shafts, intertrochanteric regions, right iliac blade, right ischial tuberosity which show heterogeneous post contrast enhancement with peripheral contrast enhancement in upper femoral shafts.

RIGHT HIP:

The right femoral head is small in size with collapse of articular surface on the superolateral aspect. Small subchondral defects seen in femoral head and the in the acetabulum which show no post contrast enhancement.

No synovial thickening or effusion seen.

No periarticular abnormal soft tissue seen around the right hip joint.

Conclusion:

- **Diffuse signal abnormality in the left femoral head and neck as described above with synovial thickening and enhancement, minimal left hip joint effusion and abnormal periarticular inflammatory soft tissue involving the left obturator externus, pectinues muscles and the origin of the left**

adductor muscles. These findings are most likely suggestive of left hip septic arthritis with periarticular infective/ inflammatory soft tissue. Less likely possibility of AVN with superadded infection.

- **Multifocal areas of signal abnormality in both upper femoral shafts, intertrochanteric regions, right iliac blade, right ischial tuberosity as described above is most likely suggestive of multifocal osteomyelitis.**
- **Findings in Right hip joint suggestive of Stage IV AVN.**

Correlate with clinical findings, lab investigations and other imaging investigations.

CONTRAST ENHANCED MRI OF THE ABDOMEN

Clinical information: Known case of prostatic carcinoma. APR and Colostomy done. Evidence of sarcoma on biopsy of the colostomy site.

Prior Imaging: None

Protocol: Multiplanar imaging of the abdomen was performed using T1 weighted spin echo, T2 weighted fast spin echo, gradient echo, fatsaturated sequences. Post contrast T1 weighted fat saturated sequences obtained after injection of gadolinium.

Observations:

The sigmoid colostomy is seen extending though the inferior part of the left rectus muscle in the left lower quadrant of the abdomen.

The stoma opening is edematous and shows moderate enhancing thickening.

Rest of the sigmoid colon and visualised bowel loops are unremarkable.

Mild T2 hyperintensity is seen at in the subcutaneous fat and in the abdominal wall at the stoma site which show mild post contrast enhancement.

Few small bowel loops beneath the stoma site also show mild wall enhancement which is most likely related to post op inflammation.

No significant lymphadenopathy.

No free fluid in the abdomen.

Liver is normal in size, signal intensity, shows normal contrast enhancement with no focal lesions.

Gallbladder is distended with normal wall thickness. CBD is normal.

Pancreas is normal in size, intensity and enhancement.

Spleen is normal in size, intensity and shows normal contrast enhancement.

Both adrenals are normal.

Both kidneys are normal in size, intensity and show normal density nephrogram.

A small T2 hyperintense and T1 hypointense simple cortical cyst seen in the upper part of the left kidney.

A small 1.2 cm sized T1 hypointense, T2 hyperintense lesion is seen in posterior part of right iliac bone adjacent to the right SI joint.

Rest of the visualized bones show normal marrow signal intensity.

Conclusion:

- *Enhancing thickening at the stoma opening of the sigmoidostomy, however no obvious mass noted in the abdominal wall or intra-abdominally. Correlate with Histopathology reports.*
- *Mild edema and granulation tissue in the subcutaneous fat and abdominal wall around the stoma.*
- *A small lesion in posterior part of right iliac bone could be suggestive of bone metastasis in this known case of prostatic carcinoma. This needs correlation with radiographs/ bone scan.*