# Characteristic Vertebral Imaging in Sickle Cell Disease

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A 32-year-old woman presented with multiple episodes of self-limiting, severe back pain over several years. She was a known patient of sickle cell anemia. Magnetic resonance imaging scans of the dorsal and lumbar spines showed "H-shaped" vertebrae on coronal and sagittal imaging [Figures 1 and 2].

Sickle cell anemia is a condition where red blood cells (RBCs) contain abnormal hemoglobin (Hemoglobin S).[1,2] When deoxygenated this hemoglobin becomes insoluble and aggregates with similar molecules distorting the shape of the RBCs making them less deformable while they flow through the capillary bed.[1] The abnormally shaped RBCs also have a propensity to adhere to the endothelium.[1] All these lead to vascular occlusion and tissue infarction which manifests clinically as the painful "sickling crisis."[1,2]

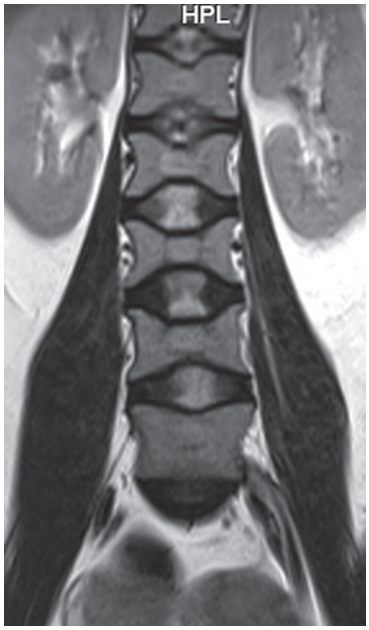


**Figure 1:** Coronal magnetic resonance slice showing "H-shaped" lumbar vertebrae (Lincoln log vertebra) with central end plate depression consequent to infarction

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The microvasculature of the endplates of the vertebrae is a low flow system fed by terminal branches that arise from the arterial grid at the centrum of the vertebrae.[3] Further, the endplates themselves are usually <1 mm thick and are thinnest in the central region.[4] The combination of both

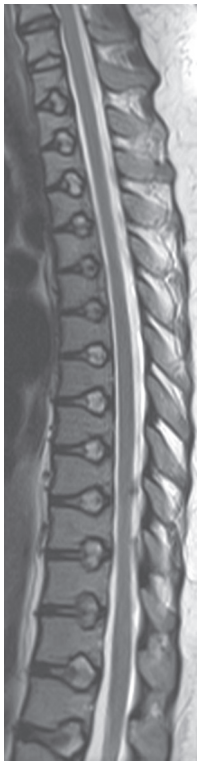

**Figure 2:** Sagittal magnetic resonance slice (T2 sequences) showing multilevel bulging of intervertebral discs into the vertebral body

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these factors leads to endplate infarction with a sharply defined central depression in sickle cell disease as seen in our patient.


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## Conflicts of interest

There are no conflicts of interest.

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