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). 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. The abnormally shaped RBCs also have a propensity to adhere to the endothelium. All these lead to vascular occlusion and tissue infarction which manifests clinically as the painful “sickling crisis.”

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. Further, the endplates themselves are usually <1 mm thick and are thinnest in the central region.

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

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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REFERENCES