

## Clinical Image

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# The 'Zebra Spleen': CT enhancement pattern of the spleen

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### Description

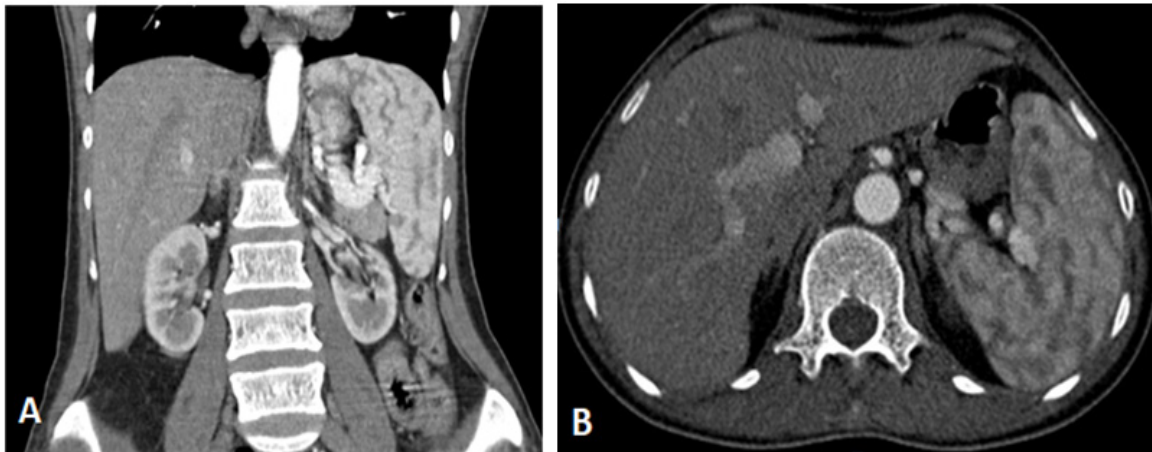
Zebra spleen, also referred to as psychedelic spleen is a radiological sign reflecting the transient heterogeneous parenchymal enhancement of the spleen during the arterial or early portal venous phases of contrast enhancement in CT, MRI, or ultrasound imaging. Unfamiliar which such pattern the inhomogeneous splenic enhancement can be misdiagnosed as splenic trauma or splenic infarcts with corroborating clinical context, therefore transient patterns of heterogeneous splenic enhancement are to be known to differentiate the normal from the pathological.

Splenic enhancement pattern varies with clinical and technical parameters such as age and the injection rate [1]. But also, it varies from an anatomic-pathological angle. Three transient patterns of heterogeneous splenic enhancement are very well documented including [2]: Focal heterogeneity (defined by the presence of a focal region of low attenuation) and diffuse heterogeneity (defined by the presence of diffuse, mottled attenuation) and arciform: Alternating bands of high and low attenuation on CT that have been described also as a serpentine

or tigroid splenic enhancement but more commonly under the banner of 'The zebra spleen' due to its high similarities with a zebra's stripes [3,4].

Recognized as a normal imaging finding, it may be explained histologically by the presence of different vascular pathways and flow rates through the cords of red (which enhances early) and white pulp (which enhances later) [4]: with the peak visualization of heterogeneous enhancement occurring at 27 seconds after injection and splenic enhancement typically becoming homogeneous by 70 seconds after injection [3]. The transition between the two splenic states is what creates that particular striping phenomenon.

A zebra pattern can also be depicted on MRI and also on baseline ultrasound examination of spleen with high-frequency transducer, as alternating hypoechoic bands. The ultrasound pattern cannot be explained simply by different flow rates, because no contrast medium is usually injected, and assumed to represent different structural components of the parenchyma that may relate to the complex structure of the arteriovenous pathways [5].



**Figure 1:** Spleen of a female adult. All images were obtained during arterial phase after IV contrast injection. Coronal (A) and Axial (B) CT images show heterogeneous enhancement of spleen with bands of lower attenuation due to flow differences.

### Declarations

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