



The “light bulb sign” in liver hemangioma

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The “light bulb sign” is a typical feature than can be seen on MRI imaging with a classic hepatic hemangioma [1]. This sign refers to marked and homogenous hyperintensity seen on heavily T2-weighted MRI sequences that is comparable to a glowing light bulb (Fig. 1), similarly to cerebrospinal fluid intensity (Fig. 2). The bright signal on T2 images has been attributed to the presence of slowly flowing blood in the vascular spaces of the lesion, and represents one of the most reliable findings in diagnosing hepatic hemangioma [1]. It has been reported that a threshold of 112 ms of T2 relaxation time results in 92% accuracy, 96% sensitivity, and 87% specificity for differentiating hemangiomas from metastases [2]. The specificity of “light bulb sign” is not 100% because it may also be observed in hypervascular metastatic lesions. Other feature characteristic but not diagnostic of hemangioma include well-defined round or lobulated margins and internal homogeneity. Typically, hepatic hemangiomas appear hypointense on T1, hyperintense on T2 and DWI, show nodular peripheral enhancement with progressive centripetal filling-in on dynamic gadolinium-enhanced T1-weighted MRI images and appear hypointense on hepatobiliary phase since they do not contain hepatocytes [1]. A previous study performed for distinguishing between hemangiomas and metastases from neuroendocrine tumors showed that including T2-weighted and post-contrast

T1-weighted imaging, the sensitivity and specificity of MR imaging were 98% and the accuracy was 99% [3]. However, in small hemangiomas (also reported such as capillary hemangiomas or flash-filling hemangiomas), the “light bulb sign” is a particularly important finding because the pathognomonic nodular enhancement could be not present [4]. Since hemangiomas are often detected incidentally and represent the most common benign hepatic neoplasm with an incidence up to 20% [1], the importance of typical imaging findings including the “light bulb sign” lies in the fact that they must be differentiated from more clinically significant lesions, such as primary and secondary liver malignancies.

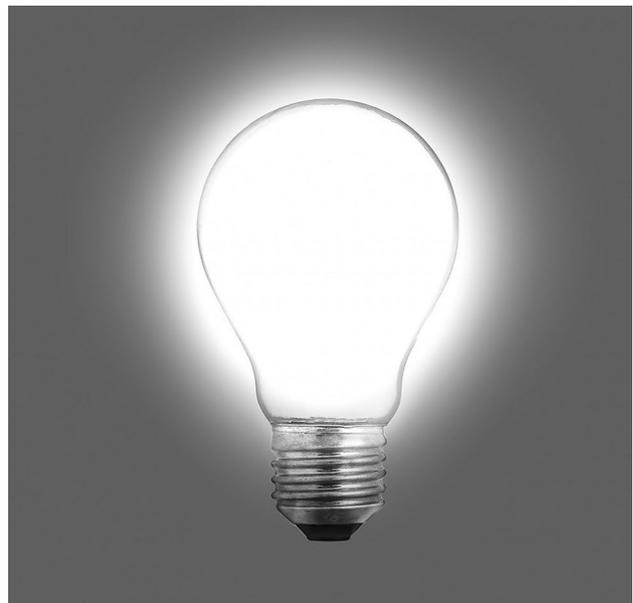


Fig. 1 Light bulb. Public domain image (<https://pixabay.com/it/lampadina-luce-white-concetto-316751/>). Accessed 18 Jan 2019

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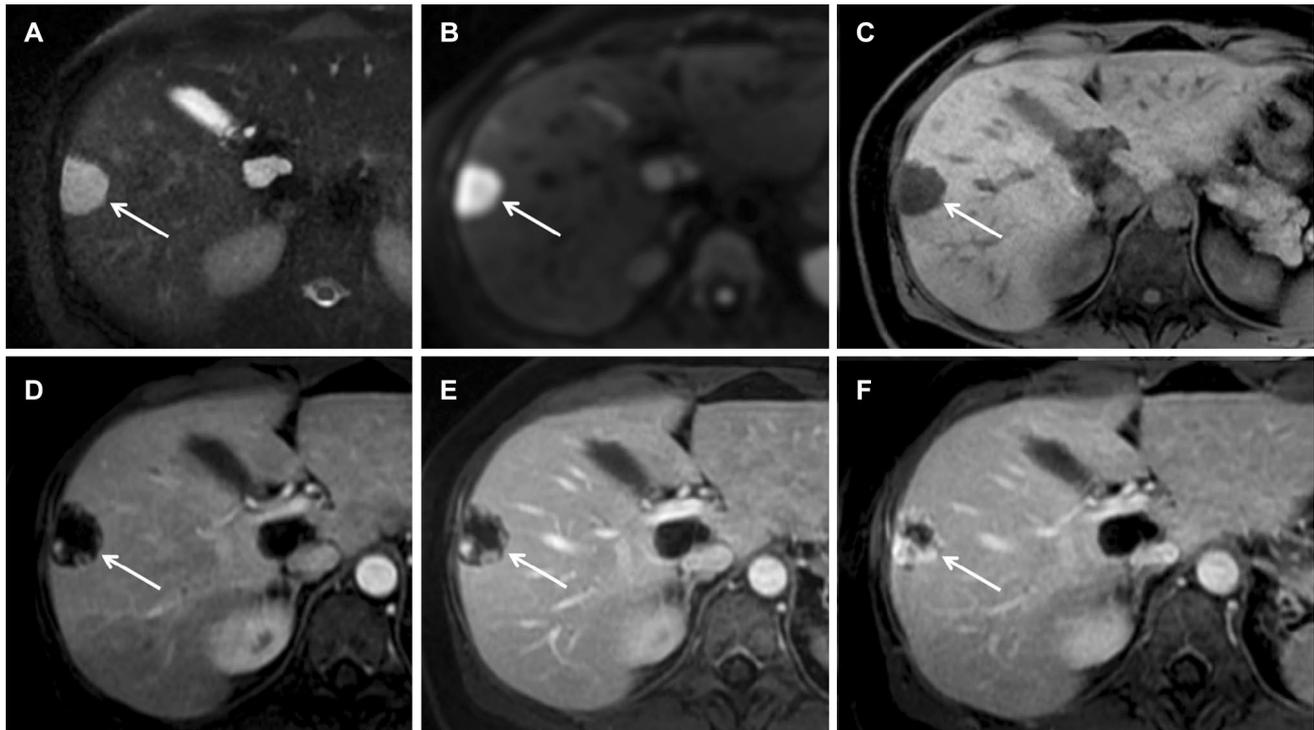


Fig. 2 Hepatic hemangioma (arrows) with the “light bulb sign” on T2-weighted fat-suppressed image (a). Typically, the lesion appears hyperintense on DWI (b), hypointense on T1 (c) and shows nodular

peripheral enhancement with progressive centripetal filling-in on arterial (d), portal (e) and late (f) dynamic phases

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Compliance with ethical standards

Conflict of interests The authors declare that they have no conflict of interests.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Statement of informed consent was not applicable since the manuscript does not contain any patient data.

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