

Differentiation between Hemangiomas and Cysts of the Liver with Single Shot Fast Spin Echo image using short and long TE

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Introduction

The MR findings of cyst and hemangioma of the liver are very similar. Both show a well-demarcated tumor, low signal in T1-weighted image and very high signal in T2-weighted image. In routine studies, it is difficult to distinguish between cyst and hemangioma without contrast material. Single shot fast spine echo (SSFSE) can generate a T2-weighted image very rapidly. This study examined whether it was possible to differentiate hemangioma from cyst using SSFSE without contrast material.

Material and Method

MR imaging was performed on 18 benign hepatic tumors of 15 patients (10 males and 5 females, mean age 54 years). Ten tumors were hemangioma and 8 were cysts. Each diagnosis was made from contrast enhanced study (CT or MR). MR examination was performed with a 1.5T unit (Signa Horizon; GE Medical Systems, Milwaukee, Wis.) using a phased array torso coil. Breath-hold SSFSE images were obtained in axial images with the following parameters: TR 0.6-3 sec; FOV 20-30 cm; matrix 256 × 256; thickness 8 mm; bandwidth 62.5 kHz. Short TE (60 msec) and long TE (600-700 msec) were scanned separately. Contrast noise ratio (CNR) of the tumor and liver compared between short and long TE SSFSE study.

Results

Cysts were well-demarcated high intensity signal masses in long TE SSFSE (Fig.1) whereas hemangiomas were ill-demarcated faint intermediate signal masses (Fig. 2). The CNR of short TE SSFSE of the cyst was significantly higher than that of hemangioma (cyst, 78.5 ± 39.65 ; and hemangioma, 24.8 ± 5.26). The CNR of long TE SSFSE of both cyst and hemangioma was lower than that of the short TE SSFSE, and was lower in hemangioma than cyst significantly (cyst, 51.6 ± 32.2 , -34.3%; and hemangioma, 2.18 ± 1.64 , -91.2%).

Discussion

Some reports have described the differentiation of the malignant tumors, hemangioma and cyst of the liver (1-5) using T2 relaxation time. However once malignant hepatic tumor is suspected, use of contrast material is usually required to confirm the malignancy. If benign hepatic masses like hemangioma and cyst could be easily differentiation in daily clinical work, this would prevent the use of contrast material and save the imaging time in many cases. The SSFSE technique requires only a few

seconds for every slice, and therefore the extra imaging time is not long. Our results show that it is possible to differentiate hemangioma and cyst using SSFSE easily.

Conclusion

SSFSE using short and long TE was useful in the evaluation of cyst and hemangioma of the liver.

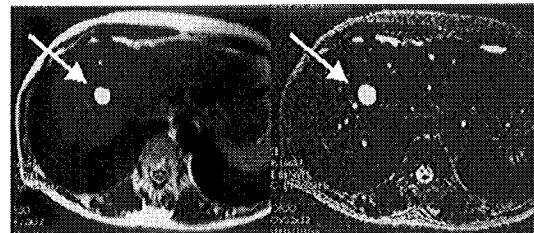


Figure 1.
SSFSE of the hepatic cyst (short TE and long TE image). On long TE SSFSE, the tumor has a high signal and is well demarcated.

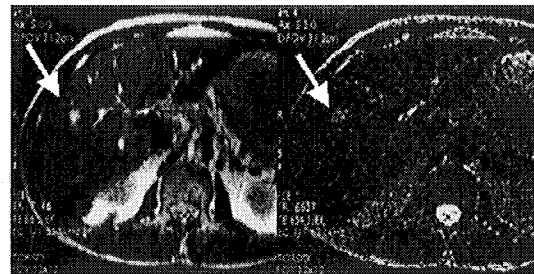


Figure 2.
SSFSE of the hemangioma (short TE and long TE image). On long TE SSFSE, the tumor signal decreased.

References

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