

Use of enhanced T2 star-weighted angiography (ESWAN) to distinguish severity of liver cirrhosis

CHUNMEI MA¹, Ailian Liu¹, YE LI¹, LIHUA CHEN¹, and HEQING WANG¹

¹The first affiliated hospital of Dalian medical university, Dalian, Liaoning, China

Use of enhanced T2 star-weighted angiography (ESWAN) to distinguish severity of liver cirrhosis

Introduction:

Chronic liver disease causes iron deposition such as liver cirrhosis. Because iron is paramagnetic, when iron deposition increases, the uniformity of the local magnetic field changes to various degrees depending on the content of the iron deposition. Thus, iron deposition can result in an increase in susceptibility effects, thereby affecting the T2*relaxation time and R2* value. Recently, a novel MRI sequence, enhanced-susceptibility weighted angiography (ESWAN), has been widely used in clinical practice. The aim of this study was to investigate the interrelation between hepatic Iron deposition and liver function in patients with liver cirrhosis by means of enhanced T2 star-weighted angiography (ESWAN).

METHODS:

27 patients with clinically confirmed diagnosis of cirrhosis due to hepatitis B and 10 healthy control individuals were enrolled in this study and underwent abdominal MRI including T1WI, T2WI, LAVA, and ESWAN. The patients were divided into Child-Pugh class A (group 1; n = 12), Child-Pugh class B (group 2; n = 7), and Child-Pugh class C (group 3; n = 8). MR image were observed and R2* (effective transverse relaxation rate) values were measured on liver and Erector spinae muscles. $R2^*_{\text{liver}}/R2^*_{\text{muscle}}$ was calculated. ANOVA analysis of $R2^*_{\text{liver}}/R2^*_{\text{muscle}}$ in controls, Child-Pugh class A, B and C were performed.

RESULTS:

$R2^*_{\text{liver}}/R2^*_{\text{muscle}}$ showed an increasing trend in control group, Child-Pugh class A, B and C group (0.84 ± 0.24 , 1.14 ± 0.34 , and 1.25 ± 0.52 , 1.45 ± 0.51 , respectively). While the difference in control VS Child-Pugh class B group and control VS Child-Pugh class C group were statistically significant ($p < 0.05$), there was no significant difference in control VS Child-Pugh class A group and Child-Pugh class B VS Child-Pugh class C group.

CONCLUSION: $R2^*_{\text{liver}}/R2^*_{\text{muscle}}$ values obtained by means of ESWAN may present a useful method for determining severity of liver cirrhosis.

REFERENCES: 1. M. Queiroz-Andrade. Radiographics, 2009 29(6):1575-1589.

2. Meng Yue Tang. BioMed Research International, 2014;2014:312142.

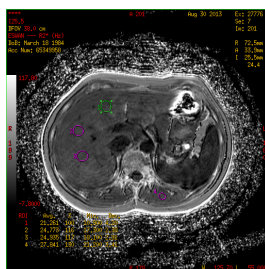


Fig 1 A 30-years old woman in control group.

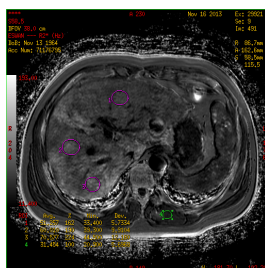


Fig 2 A 50-years old man with liver cirrhosis(Child-Pugh class C)