

周鹏,周平,何炜,王利华,李兴华,田双明,钱滢,陈丽蓉.超声造影定量评估实质期兔肝VX2瘤血供程度的演变过程[J].中国医学影像技术,2010,26(4):616-619

超声造影定量评估实质期兔肝VX2瘤血供程度的演变过程

Contrast-enhanced ultrasonographic evaluation on blood supply of rabbit liver VX2 tumor in early stage

投稿时间: 2009-08-03 最后修改时间: 2009-09-06

DOI:

中文关键词: [兔 肝肿瘤](#) [超声检查](#),[介入性](#)

英文关键词: [Rabbits](#) [Liver neoplasms](#) [Ultrasonography, interventional](#)

基金项目:

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中文摘要:

目的 探讨超声造影(CEUS)在定量评估实质期兔肝VX2瘤血供及血供演变过程中的价值。方法 将18只兔肝VX2肿瘤模型随机分为3组(每组6只),分别于术后10、15、20天接受CEUS,绘制时间-强度曲线(TIC),计算各组肿瘤及周边正常肝组织的TIC参数。CEUS后取兔肝肿瘤及周边正常肝组织行病理免疫组化染色,计数微血管密度(MVD)。结果 CEUS显示实质期兔肝VX2瘤呈典型"快进快出"。3组肿瘤达峰时间(TTP)均短于相应的正常组织($P < 0.01$),但肿瘤TTP组间差异无统计学意义($P > 0.05$)。肿瘤绝对峰值强度(AEI)及肿瘤MVD:10天组、15天组、20天组依次减低($P < 0.05$)。肿瘤MVD与正常肝组织比较:10天组肿瘤MVD高于正常肝组织($P < 0.01$)、15天组等于正常肝组织($P > 0.05$)、20天低于正常肝组织($P < 0.01$)。肿瘤AEI与MVD呈正相关($r = 0.83, P < 0.05$)。结论 超声造影TIC指标AEI能实时定量评估实质期兔肝VX2肿瘤血供状况。实质期兔肝VX2肿瘤血供呈"富血供—等血供—乏血供"逐渐递减的演变过程。

英文摘要:

Objective To observe the value of contrast-enhanced ultrasonography (CEUS) in quantitatively evaluating the evolution of the blood supply of rabbit liver VX2 tumor models in early stage. **Methods** Eighteen liver VX2 tumor models of rabbits were divided into 3 groups randomly (each $n=6$). CEUS was performed on the 10th, 15th and 20th day group after establishment, respectively. Time intensity curve (TIC) was plotted, the rabbits' liver tumor and surrounding normal liver tissue were resected for immuno-histochemistry and microvessel density (MVD) count. **Results** CEUS showed that the rabbit liver VX2 tumor present a typical malignant tumor imaging "fast-in and fast-out" in early stage. TIC showed that the time to peak (TTP) of hepatic tumor is shorter than that of surrounding normal liver tissue in all three groups ($P < 0.01$), no statistical difference of tumor's TTP was detected among three groups ($P > 0.05$). Absolute enhanced intensity (AEI) and MVD reduced in turn of 10th, 15th and 20th day group. MVD of tumor was higher in 10thday group than surrounding normal liver tissue ($P < 0.01$), while was equal in 15th day group ($P > 0.05$) and lower in 20th day group ($P < 0.01$). AEI of liver tumor had positive correlation with MVD ($r=0.83, P < 0.05$). **Conclusion** AEI of TIC can be used to quantitatively assess the evolution of the blood supply in rabbit liver VX2 tumor models. The blood supply in early stage of rabbit liver VX2 tumor models shows a gradual descent process from abundant blood supply to medium blood supply and then low blood supply.

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