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时间-空间关联成像技术A平面平推+旋转法快速筛查孕中期胎儿心脏结构

Spatio-temporal image correlation with A-plane translation+spin method in rapid screening of fetal heart structure during the second gestation

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中文摘要:

目的 评价时间-空间关联成像(STIC)技术A平面平推+旋转法在快速筛查孕中期胎儿心脏结构中的应用.方法 将常规超声检查正常的胎儿400胎分为常规扫查组(200胎)和STIC组(200胎).根据胎儿心脏与探头的相对位置,将STIC组胎儿分为心尖四腔心、横位四腔心及心底四腔心3个亚组.对STIC组使用A平面平推法获得上腹部横切面、四腔心切面、左心室流出道、右心室流出道及三血管切面,并进行动态连续观察;在三血管切面的基础上,使用A平面旋转法获得主动脉弓及动脉导管弓切面.计算两组胎儿心脏筛查所需时间,评价STIC各亚组所获得图像的质量.结论 应用STIC技术进行胎儿心脏筛查,用时较常规超声筛查明显缩短.心尖四腔心及横位四腔心亚组所获图像质量优于心底四腔心亚组 ($P < 0.01$).结论 与常规扫查方法相比,应用STIC技术A平面平推法+旋转法可快速筛查孕中期胎儿心脏结构,具有重要临床应用价值.

英文摘要:

Objective To evaluate the value of spatio-temporal image correlation (STIC) with A-plane translation+spin method in rapid screening of fetal heart structure in the second gestation. **Methods** Total 400 normal fetus confirmed by routine ultrasound received screening of heart structure and were divided into routine group ($n=200$) and STIC group ($n=200$). The fetuses in STIC group were divided into apex, transversal and bottom four-chamber view subgroups. In STIC group, A-plane spin was used to get upper belly traverse view, four-chamber view, left ventricle outflow tract, right ventricle outflow tract and the three-vessel view, and were all dynamically observed. A-plane spin based on the three-vessel view was used to get arch and ductus arteriosus longitudinal view. The time required for heart screening in the two groups was compared, and the imaging qualities in different subgroups were assessed. **Results** The time required for fetal heart screening in STIC group was significantly shorter than that in routine group (s vs s , $P < 0.05$). The qualities of imaging based on apex and transversal four-chamber view were definitely higher than those of bottom four-chamber view (both $P < 0.01$). **Conclusion** Compared with routine ultrasonography, STIC with A-plane translation+spin method can rapidly screen the fetal heart structure, which has important clinical value.

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