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## 四维超声STIC技术检测中孕早期胎儿心脏畸形

### Four-dimensional spatio-temporal image correlation technology in detection of fetal heart malformation at early-second trimester

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英文关键词: [Fetus](#) [Echocardiography](#) [Heart defects, congenital](#) [Spatio-temporal image correlation](#) [Early diagnosis](#)

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中文摘要:

目的 探讨四维超声时空关联成像(STIC)技术筛查中孕早期胎儿先天性心脏病的临床价值。方法 连续性选取70胎14~17<sup>+6</sup>周高危妊娠胎儿,先行二维超声筛查,再应用四维超声STIC技术采集胎儿心脏容积数据;由同1名超声医师采用单盲法进行分析,并将二维超声和四维超声STIC技术的诊断结果与随访结果进行比较。结果 58胎高危胎儿获得随访结果,其中心脏异常16胎,心脏正常42胎。STIC技术正确诊断率为86.21%(50/58),3胎诊断不完整,漏诊2胎,误诊3胎;二维超声正确诊断率为91.38%(53/58),1胎诊断不完整,漏诊1胎,误诊3胎;两者正确诊断率差异无统计学意义( $\chi^2=0.78, P>0.05$ )。四维超声STIC联合二维超声后正确诊断率96.55%(56/58),明显高于单独应用STIC技术( $\chi^2=3.94, P<0.05$ )。结论 四维超声STIC技术可用于诊断中孕早期胎儿先天性心脏病;将其纳入胎儿心脏二维超声产前早期筛查,可提高正确诊断率。

英文摘要:

Objective To investigate the clinical value of four-dimensional spatio-temporal image correlation (STIC) technology in detection of fetal congenital heart disease (CHD) at early second trimester. **Methods** A cross-sectional study was performed on high-risk fetuses ( $n=70$ ) from 14 to 17<sup>+6</sup> gestational age. The data of fetal heart volume were acquired with STIC, and postprocessed after routine two-dimensional ultrasonography (2D US) was performed on all fetuses. The results were analyzed by one independent examiner who was blind to the fetal outcomes. Then the prenatal diagnosis value of STIC and 2D US were evaluated according to postnatal detailed follow-up. **Results** A total of 58 fetuses who had detailed postnatal following-up data were included, 42 of them had normal cardiac structure, 16 were found with CHD. The accurate diagnostic rate of prenatal STIC was 86.21% (50/58). Prenatal STIC incompletely diagnosed 3 fetuses, missed 2 fetuses, misdiagnosed 3 fetuses. The accurate diagnostic rate of prenatal 2D US was 91.38% (53/58). Prenatal 2D US incompletely diagnosed 1 fetuse, missed 1 and misdiagnosed 3 fetuses. There was no statistical difference between STIC and 2D US ( $\chi^2=0.78, P>0.05$ ). In contrast, the accurate diagnostic rate of prenatal ultrasound was as high as 96.55% (56/58) when combining four-dimensional STIC technology with 2D US, which was obviously higher than that of STIC technology alone ( $\chi^2=3.94, P<0.05$ ). **Conclusion** Four-dimensional STIC can be used to diagnose fetal CHD at the early second trimester. The accuracy of prenatal ultrasonic diagnosis in routine fetal heart screening can be improved by 2D US combing with STIC technology.

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