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## 相位对比磁共振成像诊断小儿继发孔型房间隔缺损

### Phase-contrast magnetic resonance imaging in diagnosis of secundum atrial septal defects in pediatric patients

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中文摘要:

目的 探讨相位对比磁共振成像(PC-MRI)在诊断小儿继发孔型房间隔缺损(ASD)中的应用价值。方法 42例经胸超声心动图证实为继发孔型ASD患儿,年龄9个月~15岁。采用PC-MRI采集通过ASD的左向右分流束的图像,以及缺损边缘与上下腔静脉及二尖瓣、右上肺静脉连线的PC-MRI图像。结果 42例PC-MRI测量的ASD直径、缺损边缘与上腔静脉、下腔静脉、房室瓣及右上肺静脉间的距离均与经胸超声心动图的结果有很好的相关性( $P<0.001$ )。26例PC-MRI测量结果与外科手术结果高度相关( $P<0.001$ ),不同流速编码中,流速编码50~70 cm/s时PC-MRI测量到的缺损直径与外科手术结果相对最为一致。结论 PC-MRI可直观显示房间隔缺损的位置、数目、大小和与周围心内结构的空间关系,同时可进行准确的定量分析,为心脏解剖畸形诊断提供了一种新的检测方法和思路。

英文摘要:

**Objective** To explore the value of phase-contrast magnetic resonance imaging (PC-MR) in diagnosis of secundum atrial septal defect (ASD) in pediatric patients. **Methods** Totally 42 patients (aged from 9 months to 15 years) with secundum ASD proved with transthoracic echocardiographic (TTE) were evaluated with PC-MRI. Images of the flow through ASD were obtained with PC-MRI. The distances of ASD rim to superior vena cava (SVC), inferior vena cava (IVC), atrioventricular valves (AVV) and right upper pulmonary vein (RUPV), as well as the entrances of the vena cava and right upper pulmonary vein (RUPV) were assessed. **Results** The sizes of ASD and distances of ASD rim to the adjacent structures (SVC, RVC, AVV and RUPV) at PC-MRI were well consistent with those of TTE in 42 patients ( $P<0.001$ ). PC-MRI results in 26 patients correlated well with surgical results ( $P<0.001$ ). With different velocity encoding, compared with surgical results, measurements of ASD's sizes were more accurate when setting velocity from 50 to 70 cm/s than 90 cm/s. **Conclusion** The shape of ASD can be virtually depicted with PC-MRI. PC-MRI can accurately assess the defect size, number, rim distances to adjacent structures, therefore providing a new method for depiction of congenital heart anomaly.

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