· 病例报告 ·

三尖瓣置换术后球囊扩张技术辅助左心室电极再植入1例

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[摘要]　本病例为既往行三尖瓣金属瓣膜置换术后出现完全性房室传导阻滞经冠状静脉实现DDD起搏模式的患者,4年后出现冠状静脉导线脱位、起搏阈值升高、起搏器电量耗竭。拟行新冠状静脉电极植入过程中发现冠状静脉内存在严重狭窄,通过球囊扩张技术实现了新左心室电极植入。

[关键词]　起搏电极故障;冠状静脉狭窄;左心室电极导线再植入;起搏器更换

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A case report of left ventricular lead re-implantation assisted by balloon dilation technique after tricuspid valve replacement

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Abstract　This case involves a patient who underwent metal tricuspid valve replacement and developed complete atrioventricular block, subsequently managed with DDD pacing mode via the coronary sinus. Four years postoperatively, the patient experienced coronary sinus lead dislodgement, increased pacing threshold, and pacemaker battery depletion. During the attempted implantation of a new coronary sinus electrode, severe stenosis within the coronary sinus was discovered. A new left ventricular electrode was successfully implanted with balloon dilation technique.

Key words　pacing lead failure; coronary sinus stenosis; left ventricular lead re-implantation; pacemaker replacement

1　病例资料

患者,男,20岁,“因起搏器植入术后8年,发现电极脱位4年,起搏器电池耗竭,心悸1周”入院。患者8年前因先天性心脏病Ebstein畸形(三尖瓣下移畸形)、房间隔缺损行三尖瓣金属瓣置换、房间隔缺损修补术。术后出现三度房室传导阻滞,观察40 d不能恢复。患者为三尖瓣金属瓣植入术后,无法经三尖瓣植入右心室心内膜电极,故经冠状静脉行起搏器植入术。将1258Ts电极植入左心室侧静脉,因外科手术右心耳缝合,将1888-52电极植入右心房房间隔下部(图1),起搏阈值、感知及阻抗均满意,设置为DDD起搏模式。4年前患者无明显诱因出现黑矇后晕厥,起搏器程控后发现左心室电极起搏阈值7.0 V、脉宽0.4 ms、感知3.1～4.0 mV、阻抗992 Ω。胸部X线片可见左心室电极导线脱出至心大静脉(图2)。患者身高从140 cm增长至172 cm,考虑左心室电极脱出与身高相关。将起搏电压改为7.0 V、脉宽1.5 ms保守处理,期间间断出现心悸、黑矇症状。

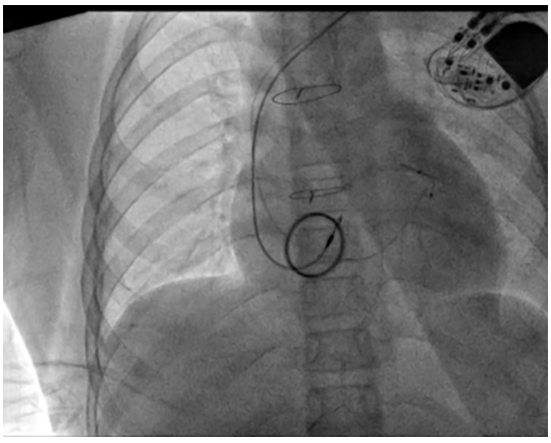

图1　患者首次冠状窦电极植入

Figure 1　Initial implantation of the patient's coronary sinus electrode

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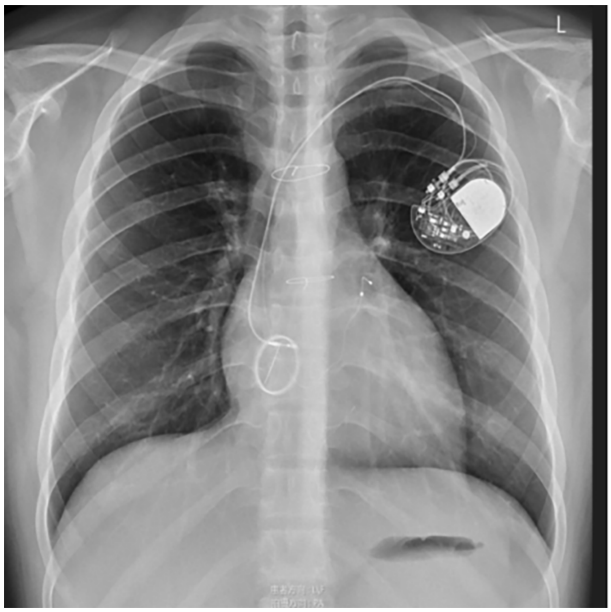

图 2　患者入院胸部 X 线影像

Figure 2　Chest X-ray image of the patient upon admission

1 周前患者出现心悸不适，程控起搏器示电池电量耗竭，为处理左心室电极及置换起搏器收入院。入院心电图（图 3）：心率 40 次/min，三度房室传导阻滞，心室起搏不良。考虑冠状静脉电极植入时间过长且可能存在粘连，拔除原冠状静脉电极可能造成静脉内膜剥脱、血管夹层、血管撕裂、心包填塞，给重新植入电极造成困难，拟在保留原心室电极基础上植入新的冠状静脉电极[1]。常规消毒铺巾，沿肘正中静脉注入造影剂显示患者左侧腋静脉、锁骨下静脉及上腔静脉通畅，无明显狭窄。在原手术切口下方约 2 cm 处做切口，取出原起搏器，分离导线，穿刺锁骨下静脉，沿导丝送入剥离式外导引导管引导球囊造影导管至冠状静脉窦行冠状静脉造影，管腔狭窄约 95%（图 4）。尝试送入四极左心室电极导线无法顺利通过静脉狭窄处，进而首先使用 Runthrough NS 导丝送入左心室侧静脉，沿 NS 导丝先后送入 2.0 mm×12 mm、2.5 mm×12 mm 冠状动脉扩张球囊，以 12 个大气压（atm）×30 s 由近到远逐步扩张冠状静脉狭窄处（图 5），造影可见狭窄部分解除（图 6）。再次沿 NS 导丝送入 1258Q 四极冠状静脉电极至左心室侧静脉（图 7），测量左心室阈值：1.0 V、0.4 ms、感知 10.2 mV、阻抗 1 054 Ω，可建立多个满意心室起搏向量。将电极连接至 PM3140 起搏器左心室插孔，将心房电极连接心房插孔，将右心室插孔使用封堵接头封闭，逐层缝合囊袋、皮肤。术后心电图提示 VAT 起搏模式（图 8），依据心电图和超声心动图优化 AV 间期。

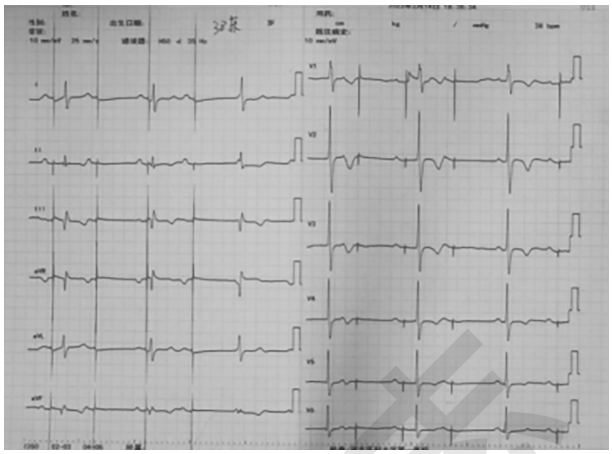

图 3　患者入院 12 导联体表心电图

Figure 3　12-lead ECM of the patient upon admission

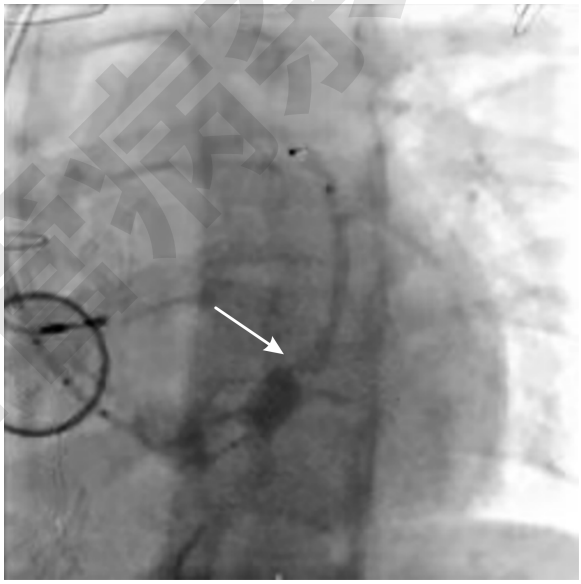

图 4　LAO30°造影提示冠状静脉严重狭窄

Figure 4　Severe stenosis of the coronary sinus

图 5　LAO30°使用球囊扩张冠状静脉狭窄处

Figure 5　Balloon dilation at the stenotic coronary sinus

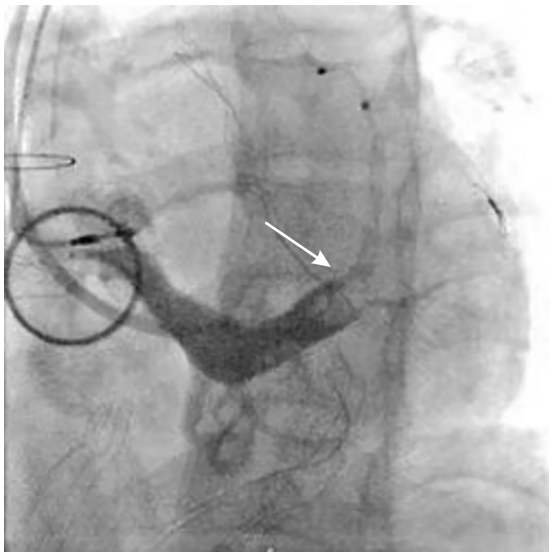

图 6　LAO30°再次行冠状静脉造影可见狭窄部分解除

Figure 6　LAO30° repeat coronary sinus angiography showing resolution of the stenosis

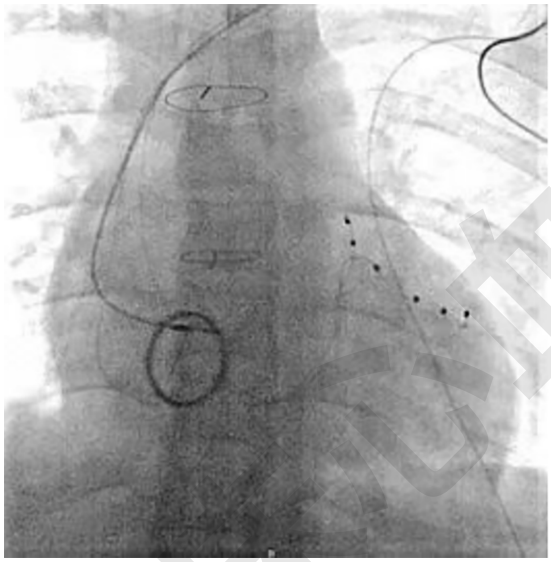

图 7　冠状静脉电极成功置于左室侧静脉（正位）

Figure 7　Coronary vein electrode successfully placed in the left ventricular branch vein（anterior-posterior view）

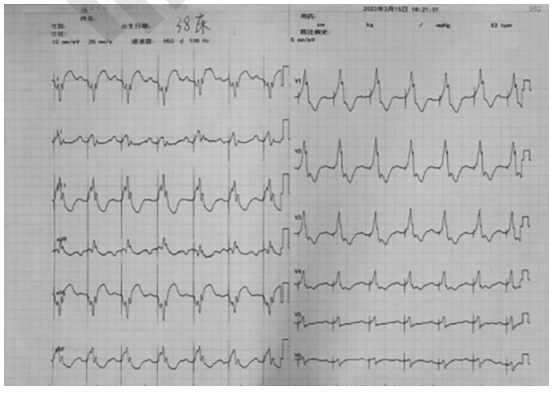

图 8　术后 12 导联体表心电图

Figure 8　Postoperative 12-lead surface electrocardiogram

2　讨论

本病例为既往行三尖瓣金属瓣膜置换术后经冠状静脉实现 DDD 起搏模式后出现起搏器电量耗竭、电极脱位，行新冠状静脉电极植入过程中发现冠状静脉内存在严重狭窄，通过球囊扩张技术实现了新左心室电极植入。三尖瓣金属瓣膜置换术后一般有以下电极植入策略：①经冠状窦植入心外膜电极，随着心脏再同步化（CRT）应用逐年增多，心外膜电极的制作工艺及植入技术越发成熟，植入成功率明显增加，但仍存在起搏阈值增高、电极脱位等问题；②经房间隔穿刺植入左心室心内膜电极，有较好的电极稳定性及起搏阈值等优点，但患者为房间隔修补术后，不宜采用穿刺房间隔植入左心室心内膜电极的方法；③经外科植入左心室心外膜电极，手术创伤较大，部分患者无法耐受，且目前并无可靠的心外膜左心室电极使用寿命数据[2-5]。

本例患者为三尖瓣金属瓣膜经冠状窦植入左心室电极术后电极发生移位，患者植入起搏器时年龄较小，尽管给予适当预留左心室电极长度，但考虑到电极的稳定性，且关于儿童植入左心室电极的预留长度尚缺乏共识，随着患者身高的增长，左心室电极脱出靶血管，因此再次行左心室电极植入是比较简单可行的方法。近年来，随着 MADIT-CRT、REVERSE 和 RAFT 等试验的发表，CRT 的适应证继续扩大，这增加了对左心室电极拔出和重新植入的需求[6-8]。左心室电极植入后冠状静脉内发生狭窄是一种常见的临床现象[9]。目前关于冠状静脉使用血管成形术适应证的明确标准尚未建立，但有病例报道证实，使用冠状动脉扩张球囊扩张冠状静脉狭窄处不仅可以增加左心室电极植入的成功率，且相对安全；另外，选择比血管窄 25% 的扩张球囊扩张冠状静脉被认为效果更好[10-11]。尽管既往国内外有研究表明拔除左心室电极并进行重新植入是安全可靠的手术方式，但对于左心室导线植入术后静脉狭窄行冠状静脉球囊扩张的病例少有报道[12]。植入新电极前拔除左心室电极可能造成内膜剥脱、血管夹层等，给植入新的左心室电极造成困难，植入后拔除原有电极可能造成新植入电极移位，并且患者可选择的心室起搏方式有限，因此保留原心室电极并再次植入新的左心室电极是一种简单、安全、有效的手术方式。

利益冲突　所有作者均声明不存在利益冲突

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鲨鱼鳍征:左主干闭塞急性 ST 段抬高型心肌梗死心电图改变 1 例

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［摘要］ 鲨鱼鳍征是一种与冠状动脉(冠脉)左主干闭塞引起的急性心肌梗死(AMI)相关的高危心电图改变,其特征是 QRS 波、ST 段与 T 波融合形成 R 波,形态酷似鲨鱼鳍。该特征心电图与患者高危猝死相关。左主干闭塞患者大部分在院前即发生死亡,较难采集到一手心电图资料,现报道 1 例经冠脉造影证实为左主干闭塞且心电图呈鲨鱼鳍样改变的 AMI 患者,以提高临床对鲨鱼鳍征心电图改变的认识,减少漏诊和误诊。

［关键词］ 鲨鱼鳍征;巨 R 波;λ 波;急性心肌梗死;左主干闭塞
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Shark fin sign: an electrocardiogram patter of acute ST segment elevation myocardial infarction with left main occlusion

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Abstract The shark fin sign is a high-risk electrocardiogram(ECG) pattern associated with acute myocardial infarction(AMI) resulting from occlusion of the left main(LM) coronary artery, which is characterized by the fusion of QRS wave, ST segment, and T wave into a giant R wave resembles the shape of a shark's fin and links to a heightened risk of sudden death in patients. It is difficult to obtain firsthand ECG of patients with LM occlusion, because of the high mortality rate before entering the hospital. This is a case study involving an AMI patient with confirmed LM occlusion by coronary angiography performed the shark fin sign pattern in ECG, which is aimed to enhance understanding of the pattern and reduce missed diagnosis or misdiagnosis.

Key words shark fin sign; giant R wave; λ wave; acute myocardial infarction; left main occlusion

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