of hemolysis with mitral prosthetic regurgitation: study using transesophageal echocardiography and fluid dynamic simulation[J]. J Am Coll Cardiol, 1996, 27(2): 399-406.

[7] Nevaril CG, Lynch EC, Alfrey CP, et al. Erythrocyte damage and destruction induced by shearing stress[J]. J Lab Clin Med, 1968, 71(5): 784-790.

[8] Yeo TC, Freeman WK, Schaff HV, et al. Mechanisms of hemolysis after mitral valve repair: assessment by serial echocardiography[J]. J Am Coll Cardiol, 1998, 32(3): 717-723.

[9] Lam BK, Cosgrove DM, Bhudia SK, et al. Hemolysis after mitral valve repair: mechanisms and treatment[J]. Ann Thorac Surg, 2004, 77(1): 191-195.

[10] Demirsoy E, Yilmaz O, Sirin G, et al. Hemolysis after mitral valve repair: a report of five cases and literature review[J]. J Heart Valve Dis, 2008, 17(1): 24-30.

[11] Cerfolio RJ, Orszulak TA, Daly RC, et al. Reoperation for hemolytic, anaemia complicating mitral valve repair[J]. Eur J Cardiothorac Surg, 1997, 11(3): 479-484.

[12] ShinguY, Aoki H, Ebuoka N, et al. A surgical case for severe hemolytic anemia after mitral valve repair[J]. Ann Thorac Cardiovasc Surg, 2005, 11 (3): 198-200.

[13] Goździk A, Skalik R, Pelczar M, et al. Haemolytic anaemia following implantation of the mitral annuloplasty ring: a case report[J]. Kardiol Pol, 2006, 64(6): 619-621.

[14] Ishibashi N, Kasegawa H, Koyanagi T, et al. Mechanism of hemolysis after mitral valve repair and new surgical management: prosthetic annuloplasty ring covered with autologous pericardium[J]. J Heart Valve Dis, 2005, 14(5): 588-591.

[15] Shapira Y, Vaturi M, Sagie A. Hemolysis associated with prosthetic heart valves: a review[J]. Cardiol Review, 2009, 17(3): 121-124.

[16] Kalangos A, Sierra J, Vala D, et al. Annuloplasty for valve repair with a new biodegradable ring: an experimental study [J]. J Heart Valve Dis, 2006, 15(6): 783-790.

[17] Alehan D, Doğan R, Ozkutlu S, et al. Severe hemolytic anemia after repair of primum septal defect and cleft mitral valve [J]. Turk J Pediatr, 2001, 43(4): 329-331.

[18] Inoue M, Kaku B, Kanaya H, et al. Reduction of hemolysis without reoperation following mitral valve repair[J]. Circ J, 2003, 67(9): 799-801.

[19] Messer S, Saxena P, Mickelburgh M, et al. Mitral valve replacement in calcified annulus following ring annuloplasty[J]. Asian Cardiovasc Thorac Ann, 2008, 16(6): 488-489.

[20] Golbasi I, Turkay C, Timuragaoglu A, et al. The effect of pentoxifylline on haemolysis in patients with double cardiac prosthetic valves[J]. Acta Cardiol, 2003, 58(5): 379-383.

(收稿: 2009-11-12 修回: 2010-02-01)

(本文编辑: 金谷英)

· 病例报告 ·

二尖瓣脱垂致异常 Q 波 1 例

吴再涛 李 玲

DOI: 10.3969/j.issn.1673-6583.2010.02.020

患者，男性，25 岁，因心悸胸闷气喘 20 d 入院。入院查体可见颈静脉充盈，双肺可闻及湿性罗音，双下肢重度凹陷性水肿。全胸片示心影扩大，双下肺感染，双侧胸腔积液。心脏彩超示二尖瓣脱垂伴关闭不全，二尖瓣、三尖瓣及主动脉瓣大量返流，心腔扩大，心脏收缩及顺应性下降。心电图示快速房颤，V_{1-4} 呈 QS 型，V_5 呈 rS 型(见图 1)。入院诊断：二尖瓣脱垂伴二尖瓣关闭不全，充血性心力衰竭。予强心，利尿，扩血管，减慢心室率，抗感染等治疗后症状好转。

讨论 正常心电图胸前导联 V_{1-6} 导联的 R 波逐渐增高，V_1、V_2 导联可偶呈 QS 型，V_3 导联不应出现异常 Q 波。正常室间隔除极所形成的"中隔 Q 波"可在 V_{4-6} 导联中见到，但通常 Q 波振幅 $V_6 > V_5 > V_4$。位置性 Q 波，则多见于 Ⅲ、AVF、V_1 及 V_2 导联，除正常变异外，尚可见于某些胸部疾病与先天性心血管病变，如左侧气胸、右位心、鸡胸、右心包缺如及纠正型先天性大血管错位。此患者入院后经相关检查均可排除以上疾病。肥厚型心肌病患者可因室间隔过度肥厚而使该向量异常增大，在两个以上的相邻导联出现深而窄的 Q 波，特称为肥厚型心肌病的间隔性 Q 波。该患者心脏超声未见心室壁厚度异常，不支持心肌病诊断。心电图改变考虑可能与心脏扩大后心电除极向量改变所致。具体形成机制有待探讨。

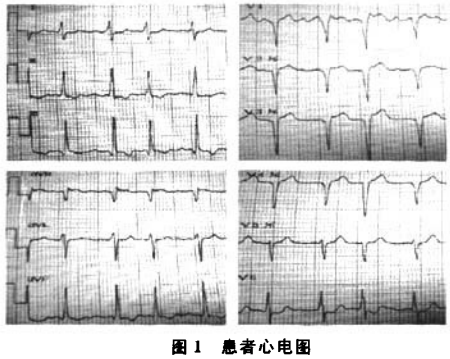

图 1 患者心电图

(收稿: 2009-12-08)

(本文编辑: 丁媛媛)

作者单位: 210015 第二军医大学附属长征医院南京分院心内科