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NOTES AND COMMENTS

Atrial Sounds in Atrial Flutter

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Atrial flutter sounds are occasionally audible on bedside examination especially in patients with slow ventricular rates. A patient is described with audible flutter sounds and an illustrative phonocardiogram is presented. The value of careful auscultation in patients with atrial flutter is re-confirmed.

Bedside diagnosis of atrial flutter is difficult.[1] Flutter waves may occasionally be seen in the external jugular veins. The intensity of the first heart sound may vary but this is not unique for atrial flutter. Usually the diagnosis is made by electrocardiography and often the use of carotid sinus pressure, to increase the A-V block, is needed to bring out the flutter waves. Another important aid to the diagnosis of atrial flutter is the auscultation of atrial flutter sounds, which is often overlooked but probably more common than reported. However, these sounds can only be heard in the presence of high degree A-V block with a slow ventricular rate. In the following case, atrial flutter sounds were heard at the bedside and their presence confirmed by phonocardiography.

Case Report:

A 70-year-old retired worker had been followed at Henry Ford Hospital for six years prior to admission for arteriosclerotic and hypertensive cardiovascular disease with chronic atrial flutter and variable block. He was not on digitalis. In September 1970, he came to the emergency room with right hemiparesis. Physical examination showed the apical rate was 36 per minute and the blood pressure was 130/80 mm Hg. There were a few rales over the lung bases. The electrocardiogram showed atrial flutter with high grade A-V block. A temporary transvenous pacemaker was inserted with satisfactory ventricular capture. After transfer to the coronary care unit, the patient pulled out his temporary transvenous pacemaker electrode. His ventricular rate, however, stayed at 50 per minute and the electrocardiogram again showed atrial flutter with a high grade A-V block. At this time, rapid regular high frequency sounds could be heard in the 3rd intercostal space 4 to 5 cm left of the midsternal line. These were assumed to be audible atrial sounds. There was a grade 2/6 systolic murmur at the base. No flutter waves were seen in the neck veins. For confirmation, a phonocardiogram was obtained (Fig 1). That same day, a permanent transjugular pacemaker was inserted, with good capture of the ventricle at a rate of 70 per minute. At this ventricular rate atrial sounds were no longer audible. The remainder of the hospital course was uneventful. Eight days after discharge the patient was re-admitted with a recurrent cerebrovascular accident; he remained comatose and expired four weeks later.

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Discussion

Atrial flutter sounds were heard in this patient at the bedside, but flutter waves were not observed in the jugular veins. The sounds were loudest in the 3rd left intercostal space. Figure 1 shows a simultaneous recording of the electrocardiogram lead V-1 and the phonocardiogram. The insert shows the electrocardiogram lead V-1 taken at the usual speed of 50 mm per second, demonstrating the atrial flutter and high grade A-V block. The phonocardiogram shows a combination of a flutter sound and short systolic murmur following the first heart sound (SM). After each second sound (S2) the next atrial sound is not audible, but later in diastole there are regular atrial sounds (a) corresponding to each flutter wave (F). This has been explained by the position of the valve in early diastole.[2] A less likely explanation attributes this phenomenon to the position of the heart.[3]

In 1910 Cohn confirmed atrial flutter by electrocardiogram after hearing flutter sounds on auscultation.[4] In 1915 Sir Thomas Lewis stated that atrial flutter sounds may be heard with advanced degree of A-V block.[5] Bennett and Kerr subsequently reported audible flutter sounds in 1931.[6] They are usually of a clicking quality similar to atrial sounds reported in complete A-V block.[7] In atrial flutter the sounds are more obvious with higher degree of A-V block. They may be perceived on both sides of the sternum,[2] may vary with position and have been reported by one author to be loudest in the right third interspace.[8] This has caused some authors to believe that they are of right atrial origin. Of the theories offered for the mechanism of these sounds,[3,9] the sudden increase in tension of the atria is most popular.[8,10,11]

In a patient with a slow regular or irregular heart rate, atrial sounds should be carefully listened for since their presence at a regular rapid rate of around 300 per minute may disclose the mechanism to be that of atrial flutter with advanced degree atrioventricular block.

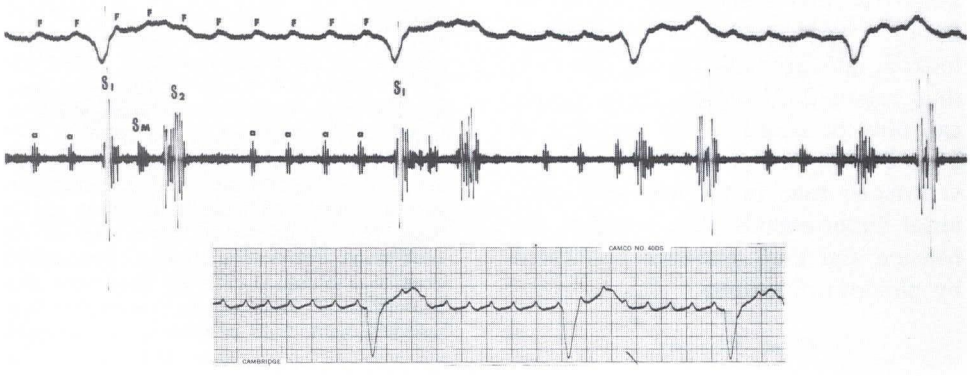

Figure 1

Phonocardiogram obtained in the third left intercostal space 4 cm left of the midsternal line with simultaneous lead V_1. Paper speed 75 mm/sec. Insert shows conventional lead V_1 at 50 mm/sec. See text for discussion.

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