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CASE REPORTS

Continuous heart murmur in a 26-year-old woman

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In this report, we describe a continuous murmur heard in a young woman at the beginning of her lactation period, which illustrates a typical example of 'Mammary Souffle', described one century ago. Colour Doppler and pulsed-wave mode echocardiogram allowed to precise, for the first time, the arterial nature of increased systolic and diastolic blood flow in tortuous branches of internal mammary artery, most probably responsible of the murmur, after ruling out any other origin of continuous murmur.

Case description

A 26-year-old woman was sent for echocardiography because of detection of a continuous cardiac murmur discovered 2 days after parturition. It was heard best along the right sternal border in the second intercostal space; the murmur was present in systole and diastole without interruption.

The young woman denied any chest pain or dyspnoea. No cardiac disease was known. Previous examination before and during pregnancy did not reveal any cardiac murmur.

The electrocardiogram showed a sinus cardiac rhythm with complete right bundle branch block, and short PR interval (105 ms).

The echocardiogram could rule out any valvular disease or intracardiac shunt.

In the short-axis parasternal view, an unusual blood flow was visible by colour Doppler in close contiguity with the right ventricular free wall and the pulmonary trunk.

This flow was clearly continuous with a dominant systolic component; its maximal width in colour Doppler, occurring in systole, was about 1 cm (*Figure 1*).

In pulsed-wave mode, a typical arterial flow pattern was apparent, with maximal systolic velocity reaching 1.4 m/s and maximal diastolic velocity reaching 0.6 m/s (*Figure 2*).

By changing the orientation of the probe, the flow could be followed over a distance of several centimetres, describing a tortuous way (*Figure 3*).

Comment

We propose that this young woman's murmur is a typical example of mammary souffle described for the first time in 1908, by van den Bergh *et al.*[1] who believed that the murmur owed its origin to enlarged tortuous branches of the internal mammary artery.

In 1960, Tabatznik *et al.*[2] revisited this entity and documented the murmur by phonocardiography. Murmur is preferentially located at the left sternal border in the second or third intercostal space; it is continuous or most systolic; the murmur can be obliterated by direct compression with the stethoscope or by firm pressure over the relevant intercostal space with the finger lateral to the stethoscope. They observed a mammary souffle in 15.3% of women in the postpartum period, and suggested that it arises at the site of anastomosis between branches of aortic intercostal arteries and branches of the internal mammary artery, during the last month of pregnancy and during lactation.

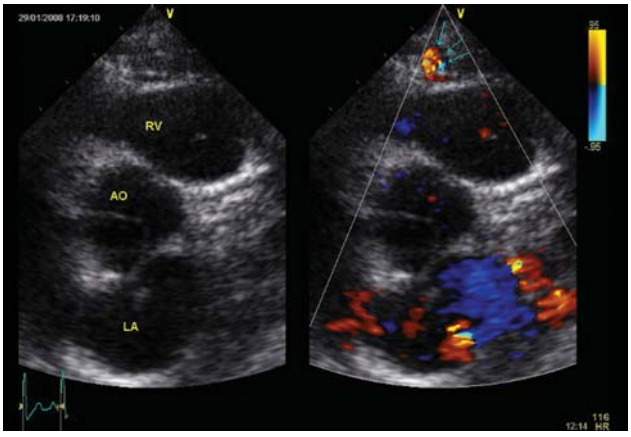

Figure 1 Short-axis parasternal view showing a striking flow at close proximity of the outflow tract of the right ventricle (RV) and identified in colour Doppler mode; (arrows) its maximal width in colour Doppler, occurring in systole, was about 1 cm. AO, aortic valve; LA, left atrium.

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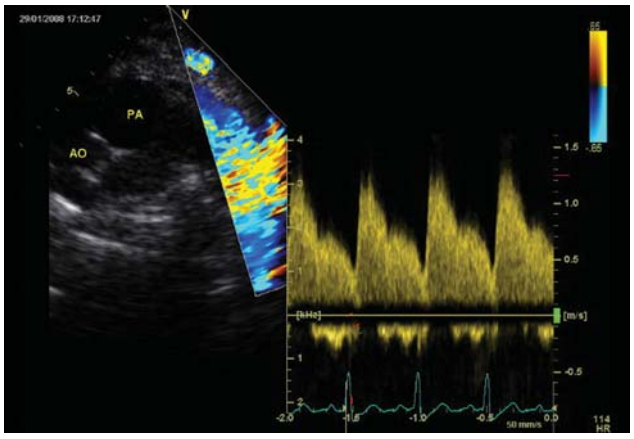

Figure 2 Pulsed-wave mode showing a typical arterial flow with maximal systolic velocities reaching 1.4 m/s and maximal diastolic velocities reaching 0.6 m/s. PA, pulmonary artery; AO, aortic valve.

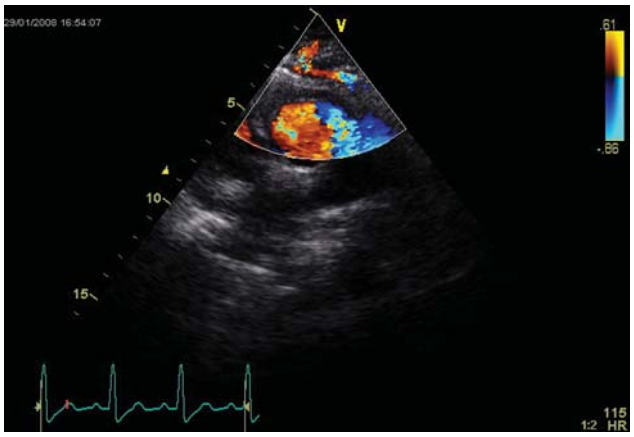

Figure 3 Colour-flow Doppler echocardiogram showing the tortuous trajectory followed over a distance of several centimetres.

In our case, the detection of a striking flow occurring at close proximity of the heart allowed to explain the murmur, after ruling out any other origin of continuous murmur (patent ductus arteriosus, coronary arteriovenous fistula, ruptured aneurysm of sinus of Valsalva, . . .), avoiding unnecessary and potentially dangerous diagnostic procedure as coronary angiography, transoesophageal echocardiography, or coro-CT.

In this case, the normal pattern limited to systolic flow in the internal mammary artery, which is a high-resistance artery, was replaced by a biphasic flow, with two components, as seen with lower resistance artery. We hypothesize that the high metabolic activity and the development of collaterals occurring during lactation induce a drop in micro- and macrovascular resistance, allowing the diastolic component of flow to occur.

Higher frequency transducer might allow better visualization of dilatation of small arterial branches, which would further confirm the low-resistance status.

Our cardiac echography and Doppler confirm, for the first time, the arterial nature of this murmur described one century ago and recognized as the third differential diagnosis in order of frequency of continuous thoracic murmurs, after cervical venous hum and patent ductus arteriosus[3].

References

1. Van der Bergh A. Een Schijnbaar Hartgeruisch. Nederl. *Tijdscht Geneesk* 1908;**52**:1104.
2. Tabatznik B., Randall T., Hersch C. The mammary souffle of pregnancy and lactation. *Circulation* 1960;**22**;1069–73.
3. Sapira JD. *The Art and Science of Bedside Diagnosis*. Baltimore: Urban & Schwartzenberg, Lippincott Williams & Wilkins, 1990.