

Rare Seagull Cooing Murmur from Acute Aortic Dissection

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ABSTRACT

Acute aortic dissection is a rare but potentially fatal disease. The early recognition of this disease is important for timely treatment. Some signs and symptoms, such as past history of hypertension, tearing pain and pulselessness, can provide valuable clues to the diagnosis of this disease. In this case study, the mechanism of a seagull murmur from aortic dissection is first described. This information is potentially useful for the differential diagnosis of dissection.

Keywords: Aortic dissection, diagnosis, mechanism, seagull murmur

Raro Soplo de Gaviota Proveniente de la Disección Aórtica Aguda

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RESUMEN

La disección aórtica aguda es una enfermedad rara pero potencialmente fatal. El reconocimiento temprano de esta enfermedad es importante para el tratamiento oportuno. Algunos signos y síntomas, tales como antecedentes de hipertensión, dolor desgarrador, y falta de pulso, pueden proporcionar pistas valiosas para el diagnóstico de esta enfermedad. En este caso, primero se describe el mecanismo de un soplo de gaviota de la disección aórtica. Esta información es potencialmente útil para el diagnóstico diferencial de la disección.

Palabras claves: Disección aórtica, diagnóstico, mecanismo, soplo de gaviota

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INTRODUCTION

Acute aortic dissection is a rare but potentially fatal emergency with a 1% per hour mortality within the initial onset of 48 hours. Therefore, the early recognition of this disease upon admission is important for prompt medical or surgical intervention. A simple physical examination can sometimes provide some valuable clues to the differential diagnosis of this disease. In this case report, a characteristic seagull murmur occurring in the aortic position was clearly audible, which was previously primarily described at the apex from mitral valve prolapse (1). This study is the first to report on acute aortic dissection presenting with high-pitched seagull cooing murmurs.

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CASE REPORT

This study was conducted in accordance with the Declaration of Helsinki, with approval from the Ethics Committee of the People's Hospital of Zhengzhou University. Written informed consent was obtained from the participant. In December 2012, a 45-year old female patient was admitted to the hospital because of the sudden onset of tearing chest pain during sleep. She complained of palpitations, dyspnoea and cold sweat. One year prior to this admission, she was diagnosed with mixed connective tissue disease (MCTD) owing to high titre U₁-RNP (ribonucleoprotein) antibody, Raynaud's phenomenon, myalgia and arthralgia. She was administered with 10 mg prednisolone daily. Physical examination results are as follows: heart rate, 113 beats/minute; respiration rate, 27 breaths/minute; blood pressure, 149/95 mmHg (1 mmHg = 0.133 kPa); arterial blood gas PO₂, 96 mmHg; and percutaneous peripheral oxygen saturation, 85% on air. This patient exhibited central obesity with a "moon face", "buffalo bump", sparse hair, swollen and sausage-like fingers and non-pitting oedema. A high-pitched, systolic seagull musical murmur was heard at the right second intercostal space. Bilateral carotid, radial and femoral artery pulsations were symmetrical. Family history was negative.

Electrocardiogram showed paroxysmal tachyarrhythmia and ST segment depression. Chest radiography revealed a widened mediastinum and an enlarged heart. Transthoracic echocardiography showed severe aortic regurgitation, floating intimal flap and moderate pericardial effusion. Computed tomographic angiography demonstrated that the left and right coronary orifices were obstructed by the tearing of the intimal flap (Fig. 1). Based on these findings, the patient was diagnosed with acute aortic dissection complicated with MCTD and thus underwent emergency operation.

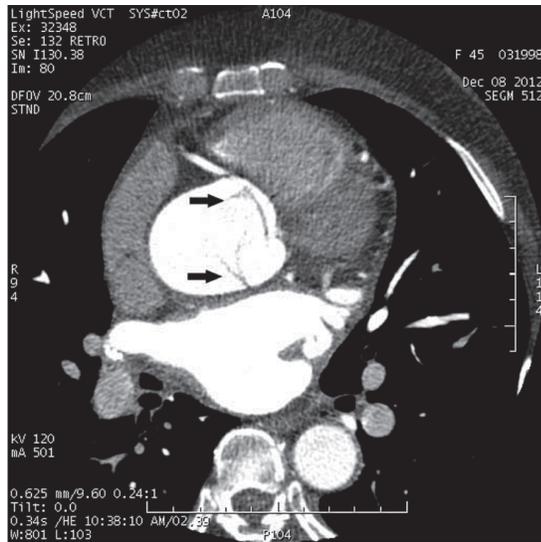


Fig. 1: Arrows identify tearing intima flap in aortic root and partly obstructed left and right coronary orifices.

Intraoperatively, the dissection flap in the aortic root stretched across the aortic valve orifices and partly obstructed the left and right coronary orifices. The aortic valve showed moderate adhesion and calcification. The aortic valve and aortic root were resected and then implanted with a prefabricated composite valve-graft conduit with a 21 mm (interdiameter) bi-leaflet mechanical valve (Carbomedics, Sorin Company, Rome, Italy). An intradrainage from the aortic adventitia to the right atrial appendage was performed to reduce postoperative blood loss. Postoperative recovery was uneventful. The patient was discharged from hospital two weeks later and was maintained on 20 mg of prednisolone. At follow-up six months later, the patient had already returned to work, with prednisolone tapering down to 10 mg daily.

DISCUSSION

Seagull cooing murmurs, with a single-frequency musical tone, mostly occur in mitral valve prolapse (Fig. 2A) owing to chordae tendineae rupture, elongation (2, 3), or bioprosthetic valve degeneration (4). The underlying mechanism can be attributed mainly to the prolapsed leaflet, which periodically oscillates following the regurgitant blood. Additionally, Moreli *et al* (5) also reported typical cooing sounds in the areas of cranial vessels complicated with cerebrovascular disorders. This phenomenon was attributed to the formation of a pressure

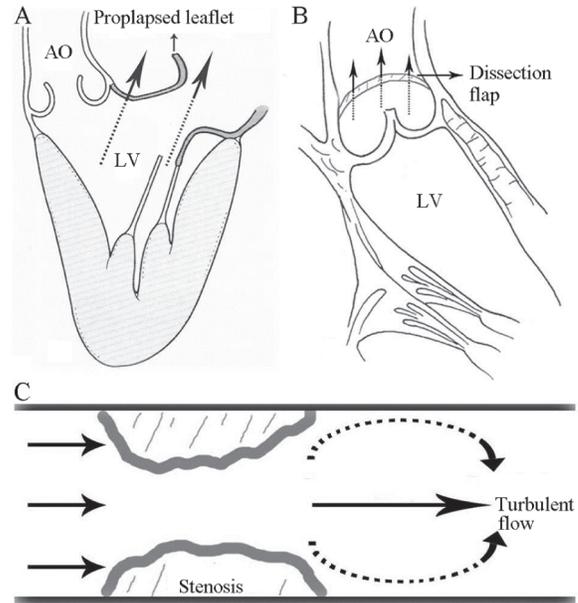


Fig. 2: The mechanism of various seagull cooing murmurs. A: the prolapsed mitral leaflet suddenly tightens and makes seagull cooing murmurs under the regurgitant blood flows. B: dissection flap acts as the string of a guitar. C: turbulent flows initiate harmonic vibrations of the vessel walls downstream.

gradient and turbulent flows through the stenotic lumen, subsequently initiating harmonic vibrations of the downstream vessel wall (Fig. 2C). In this case, the mechanism of aortic dissection differed from the aforementioned conditions. At intraoperative observation, the dissection flap stretched across aortic valve orifice similar to an arch structure (Fig. 2B). During systole, the intra-aortic floating dissection flap rhythmically fluttered and made musical murmurs similar to those made by the string of a guitar.

In conclusion, early recognition and diagnosis of aortic dissection, a life-threatening disease, is important to perform timely treatment. Once the characteristic murmurs are auscultated in the aortic area, differential diagnosis of dissection should promptly be performed.

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