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An Adult Case of Internal Mammary Arterio-Venous Fistula

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ABSTRACT

A left internal mammary artery to vein fistula was found incidentally in a 32-year-old woman with a continuous murmur. There was no significant history of trauma and no cardiac symptoms. A percutaneous embolization with vascular plug and coil was performed. (**Korean Circ J 2011;41:154-155**)

KEY WORDS: Arteriovenous fistula; Embolization, therapeutic; Cardiac murmurs.

Introduction

An internal mammary artery to vein fistula is very rare. This fistula has been previously described in patients with traumatic, iatrogenic, and congenital etiologies. However, in this case report, we present an internal mammary artery fistula in an adult patient without a definite etiology.

Case

A 32-year-old woman presented to the outpatient clinic with a cardiac murmur that had been detected at a local clinic. There were no associated cardiac symptoms and she did not complain of any other health issues. Her body weight was 64.5 kg and height was 159 cm. She appeared healthy and there were no abnormal findings on the physical examination except for a grade 3/6 continuous murmur at the left middle sternal border. There was no definite history of chest trauma. The chest X-rays were normal and the electrocardiogram was also normal. A 2-dimensional-echocardiogram was performed and there were neither intracardiac anomalies nor patent ductus ar-

teriosus. The chest computed tomography and angiogram showed that the left internal mammary artery (LIMA) was dilated; but the reason for this finding were not readily apparent. However, a further, selective angiogram showed dilated LIMA and a fistula from the LIMA to the internal mammary vein (Fig. 1). We did not evaluate the shunt amount but we decided to do the embolization. Total occlusion was completed with a 4 mm Amplatzer[®] vascular plug (AGA Medical Corp., Golden Valley, MN, USA); yet, a continuous murmur was still heard after the procedure. We decided that another embolization with two Gianturco coils of 3 mm and 5 loop (Cook, Inc., Bloomington, IN, USA) was needed because another fistulous tract in an anterior intercostal artery from the lateral thoracic artery to the internal mammary vein was detected (Figs. 2 and 3). During the procedure, a grade 1 or 2 continuous murmur was detected in the same area. Consequently, we decided to stop the procedure, but continue to follow the patient in the outpatient clinic.

Discussion

Generally speaking, a various traumatic etiologies have been reported for internal mammary artery to vein fistulas.¹⁻⁵ In one case, the etiology was described as a complication of pacemaker implantation.¹ Kirke et al.² reported a case of internal mammary artery to vein fistula arising from a puncture by a wire during sternal closure after an aortic valve replacement. To date, there have been no reports of a congenital internal mammary artery to vein fistula. In the case presented here, the origin of the internal mammary artery to vein fistula is uncertain, as no history of trauma was available from the patient. This patient was referred to our service due to the detection

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Fig. 1. The angiographic images show a dilated left internal mammary artery with a fistula to the internal mammary vein.

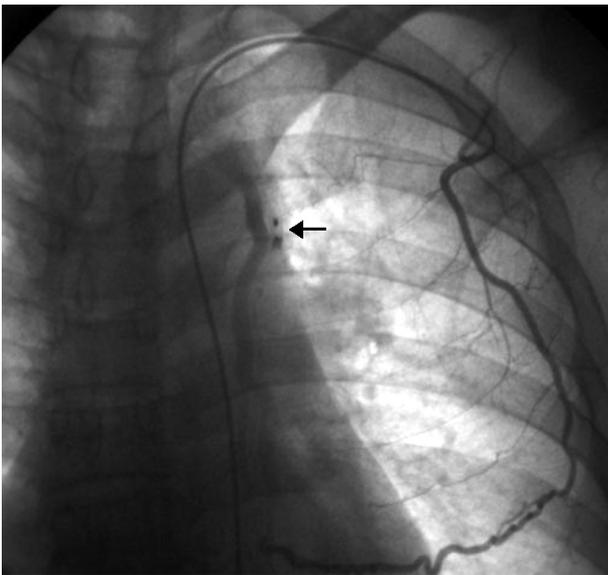


Fig. 2. The transcatheter embolization was performed with a vascular plug (black arrow) and another small fistula was detected in an intercostal artery to the internal mammary vein.

of a cardiac murmur during a recent routine examination.

In most previously reported cases, continuous murmurs were identified at the left precordium with or without symptoms.¹⁻³⁾ These murmurs might be louder than expected because the fistula exists in anterior chest very close to the surface. Some patients had signs of congestive heart failure and others had no symptoms.¹⁾²⁾ While the natural history of small internal mammary artery fistulas is not well known, embolization is usually recommended due to the potential risks of infection and degeneration.⁴⁾ A percutaneous catheter embolization, with various devices, is effective, easy to perform, and high success rate and low morbidity.⁵⁾

The case described here illustrates the event of an internal

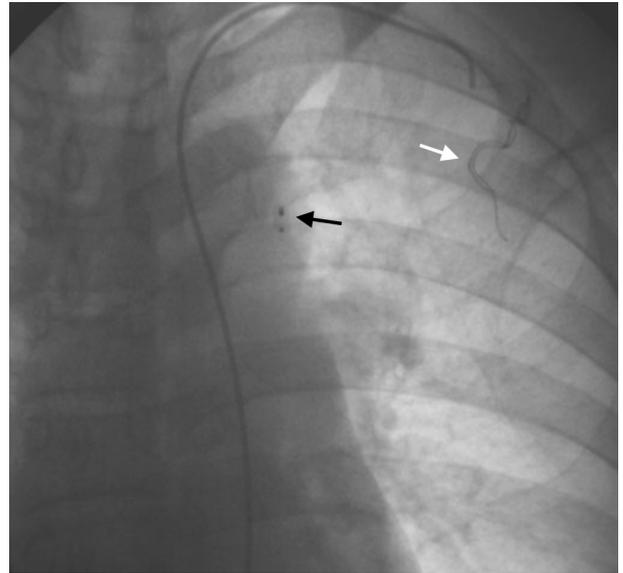


Fig. 3. The last angiogram demonstrated one vascular plug (black arrow) and two Gianturco coils (white arrow) implanted in fistulous arteries.

mammary artery fistula in an asymptomatic patient with a continuous murmur and uncertain etiology. The fistula was embolized to reduce potential risks and because a definite murmur was detected. However, the continuous murmur was persistent in spite of the complete occlusion of the main fistula with a vascular plug, which led to the discovery of another intercostal artery fistula. Additional embolization did not make the murmur disappear. The reason for continuing murmur are unclear, but it is possible that it could be due to another small collateral supply to the distal site of fistula that was revealed by the final angiogram. Surely other reasons for this continuous murmur should be considered, such as a venous hum, but the murmur was not changed by the positional change of the head. It was neither a typical functional murmur nor a definite pathological murmur. In conclusion, this case shows a rare internal mammary artery to vein fistula of no definite etiology and demonstrates an unusual response to embolization.

REFERENCES

- 1) Anguera I, Real I, Morales M, Vazquez F, Montana X, Pare C. *Left internal mammary artery to innominate vein fistula complicating pacemaker insertion: treatment with endovascular transarterial coil embolization.* *J Cardiovasc Surg (Torino)* 1999;40:523-5.
- 2) Kirke R, Keal R, Hickey M. *Internal mammary artery-to-vein fistula diagnosed by multidetector computed tomography angiography.* *Eur J Cardiothorac Surg* 2007;32:165.
- 3) Moura R, Uflacker R, Yoshida WB, Rollo HA, Lastoria S, Maffei FH. *Arteriovenous fistula between the right internal mammary artery and the subclavian vein: percutaneous closure with detachable balloon-catheter embolization.* *Cardiovasc Surg* 1993;1:86-8.
- 4) Zullo MA, Wallerson DC, Lang S. *Formation and spontaneous closure of arteriovenous fistula after transvenous pacemaker placement.* *Chest* 1991;100:572-4.
- 5) Lee SJ, Lee S, Kim KS, et al. *Four cases of management of congenital coronary arteriovenous fistula.* *Korean Circ J* 2002;32:163-9.