Paradoxical hemopericardium in type B acute aortic dissection

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Front row, left to right: Umemoto, Takagi; back row, left to right: Matsuno, Kato, Sekino, Manabe

Although hemopericardium often occurs in Stanford type A acute aortic dissection or intramural hematoma, any reports of this in type B dissection have never been found in the literature.¹ We here describe the first case of cardiac tamponade caused by hemopericardium in type B acute thrombosed aortic dissection.

Clinical Summary

A 71-year-old man who had been medicated for hypertension and gout presented with acute back pain and subsequent chest pain. Pallor, perspiration, neck vein distention, tachycardia (108 beats/min), hypotension (93/58 mm Hg), and anuria were rec-

ognized. Moderate pericardial effusion without aortic valve regurgitation was disclosed on echocardiography. Computed tomographic scanning revealed dissection in the descending thoracic aorta with a noncontrasted false lumen (Figure 1), a slightly dilated ascending aorta of 4 cm in maximum diameter without dissection or intramural hematoma (Figure 1, A), and pericardial effusion of 2.5 cm in maximum thickness (Figure 1, B). The patient was given a diagnosis of Stanford type B (DeBakey type III) acute aortic dissection with cardiac tamponade. Pericardiocentesis was urgently performed, and approximately 400 mL of bloody fluid was drained. The clinical conditions were remarkably improved, and intravenous antihypertensive treatment for type B acute aortic dissection was initiated immediately after the drainage.

Discussion

According to Motoyoshi and associates,² the incidences of preoperative pericardial effusion in patients with acute Stanford type A aortic intramural hematoma and dissection are 22% (8/36 patients) and 44% (22/50 patients), respectively. Although the former is significantly lower than the latter, early operation is preferred for

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Figure 1. Computed tomographic scanning revealed dissection in the descending thoracic aorta with noncontrasted false lumen (A and B), a slightly dilated ascending aorta of 4 cm in maximum diameter without dissection or intramural hematoma (A), and pericardial effusion of 2.5 cm in maximum thickness (B).

intramural hematoma involving the ascending aorta with cardiac tamponade. On the contrary, pericardial effusion is considered not to occur theoretically in type B acute aortic dissection or intramural hematoma because the ascending aorta is not involved.¹

The diagnosis of acute type A aortic dissection is predominantly based on the demonstration of an intimal tear or a dissection membrane. Attenhofer and collaborators,³ however, have described another pathogenetic mechanism in a patient with the typical features of acute aortic dissection with pericardial tamponade and a giant aneurysm of the ascending aorta, where no dissection membrane, rupture site, or intimal tear could be demonstrated by transesophageal echocardiography, intraoperative examination, or histologic examination. The histologic work-up showed an extreme form of cystic medial necrosis, with intramural hemorrhages consistent with a leaking aneurysm. In the setting of an extreme medial necrosis, blood can leak through the aortic wall, causing intramural hemorrhages with intimal leaks invisible to the surgeon's or echocardiographer's eye. In the present case involving type B acute aortic dissection, hemopericardium resulting in cardiac tamponade occurred paradoxically. Intramural hemorrhage invisible to computed tomographic scanning caused by cystic medial necrosis, which could cause the dissection, might have existed.

Cardiac tamponade frequently complicates acute proximal aortic dissection and is one of the most common causes of death from

aortic dissection. In Isselbacher and colleagues' study of 10 patients who were given diagnoses of both aortic dissection and cardiac tamponade,⁴ 3 died from electromechanical dissociation immediately on presentation; 3 other deaths all occurred shortly after successful pericardiocentesis, a procedure undertaken to stabilize the patients. The observations do raise the possibility that in patients with cardiac tamponade complicating aortic dissection, pericardiocentesis could be harmful rather than beneficial. Because neither acute aortic dissection nor intramural hematoma involved the ascending aorta in the present case, we performed pericardiocentesis to relieve the cardiac tamponade, and this fortunately stabilized the patient's condition.

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