

A Case of an Ascending Aortic Aneurysm due to Mesoarteritis Complicated with Idiopathic Thrombocytopenic Purpura

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An 80-year-old man was referred to our hospital for the surgical treatment of an ascending aortic aneurysm. The diagnosis of idiopathic thrombocytopenic purpura was also made by hematological studies which included the examination of the aspirated bone marrow. Pre-operative chest computed tomography showed an ascending aortic aneurysm with a maximum diameter of 80 mm. Echocardiography demonstrated mild aortic regurgitation. The platelet count increased by intravenous administration of immunoglobulin. A prosthetic graft replacement of the ascending aorta and aortic valve repair were carried out with the aid of cardiopulmonary bypass, selective cerebral perfusion and hypothermic circulatory arrest. No difficulty was encountered in hemostasis and the postoperative course was uneventful. Histological examination of the aneurysmal wall showed chronic mesoarteritis with patchy destruction of musculo-elastic medial tissue and adventitial focal lymphocytic infiltrates that were similar to syphilitic mesoarteritis, although serological treponemal tests were all negative. Perioperative administration of gamma-globulin is useful to minimize the hemorrhagic complication in a patient undergoing cardiovascular surgery with idiopathic thrombocytopenic purpura. (Ann Thorac Cardiovasc Surg 2001; 7: 315-8)

Key words: idiopathic thrombocytopenic purpura (ITP), mesoarteritis, ascending aortic aneurysm, aortic valve repair

Introduction

Cardiovascular surgery on a patient with idiopathic thrombocytopenic purpura (ITP) has been rarely reported and no standard modality to increase the perioperative platelet count has been established. We report surgery on an 80-year-old man with an ascending aortic aneurysm and associated aortic regurgitation due to mesoarteritis accompanied by ITP.

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Case

The patient was an 80-year-old man. He was admitted to another hospital because of purpura caused by thrombocytopenia. The platelet count was 16000 cells/ μ l and he received 15 g of intravenous immunoglobulin for two days, which resulted in an increase in the platelet count. The chest-X-ray and computed tomography (CT) revealed an ascending aortic aneurysm and he was referred to our hospital on June 14, 1999. On admission to our hospital, a moderate diastolic murmur was audible at the third intercostal space along the right sternal border. Hematological studies showed white blood cell count 4300 cells/ μ l, red blood cell count 350×10^4 cells/ μ l, hemoglobin concentration 9.9 g/dl, platelet count 57,000 cells/ μ l, and remarkable elevation of PA-IgG, 111.3 ng/107 cells (normal range 0-25). The examination of aspirated bone marrow showed increased megakaryocyte with

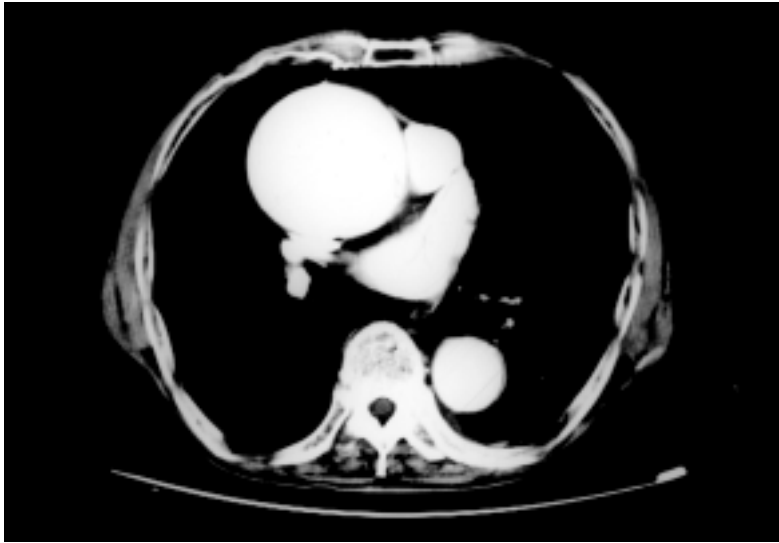


Fig. 1. Preoperative chest CT showing an ascending aortic aneurysm without intramural thrombus, with a maximum diameter of 80 mm.

normal morphology. The diagnosis of ITP was made by these findings and the absence of any identifiable cause of secondary thrombocytopenia.

Preoperative chest CT showed an ascending aortic aneurysm without intramural thrombus, with a maximum diameter of 80 mm (Fig. 1). Echocardiography demonstrated mild aortic regurgitation with normal left ventricular function. Aortography also demonstrated a large

ascending aortic aneurysm and Sellers II aortic regurgitation.

Platelet counts increased to 112,000 cells/ μ l after two days intravenous administration of immunoglobulin at 15 g/day. The operation was performed on June 25, 1999. A median sternotomy was done. Some adhesions around the aneurysm were found and dissected bluntly and sharply. The brachiocephalic artery, the left common carotid artery, and the left subclavian artery were exposed carefully. Epiaortic ultrasonography showed no atheromatous plaque nor mural thrombus in the aneurysm. Cardiopulmonary bypass (CPB) was established with the cannulation to the ascending aortic aneurysm and venous drainage via the right atrium. A left ventricular vent was inserted through the right upper pulmonary vein. At the time ventricular fibrillation ensued during systemic cooling, the return to the circuit from the left ventricular vent suddenly increased with resultant reduction in systemic flow, which necessitated direct cardiac massage to pre-

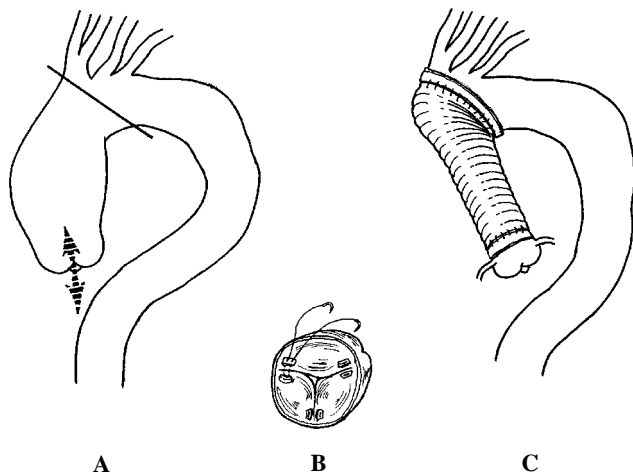


Fig. 2. Surgical procedure.

A: The solid line shows the distal transecting level. Aortic regurgitation was caused by the dilation of the aortic annulus and the sinotubular junction.

B: Subcommissural annuloplasty using three subcommissural stiches.

C: Proximal anastomosis at the level just above the coronary orifices, which reduced the diameter of the sinotubular junction to the size of the graft.

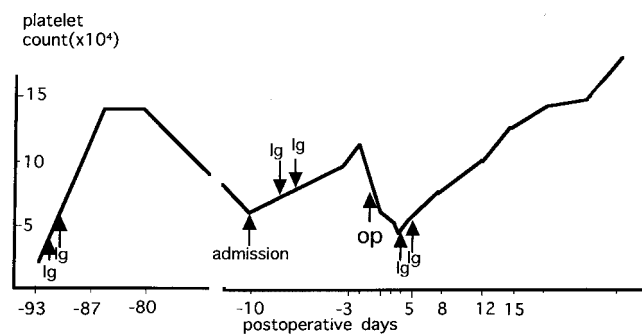


Fig. 3. Change in platelet counts.
Ig: immunoglobulin 15 g/day.

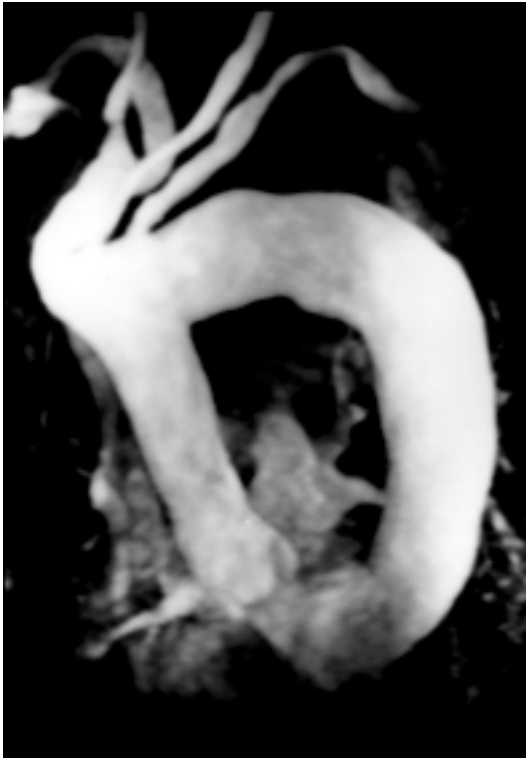


Fig. 4. Postoperative chest magnetic resonance imaging showing that the ascending aorta was replaced by the vascular prosthesis without any problem associated with each anastomotic site.

vent the distension of the left ventricle. Therefore, we decided to repair the aortic valve. At a rectal temperature of 23°C, circulatory arrest was induced after the initiation of selective cerebral perfusion. The aneurysm was incised longitudinally and cardioplegia was infused directly into both coronary orifices. There was no visible evidence of atherosclerosis. The beveled transection from the ascending aorta, just proximal to the origin of the brachiocephalic artery, towards the aortic arch, as shown in Fig. 2A, was performed and the distal end of one-branched 24-mm Gelseal vascular prosthesis was anastomosed using 4-0 Prolene with Teflon felt reinforcement. The graft was then clamped and bypass circulation was restarted through the branch of the Gelseal graft. Because the aortic leaflets looked normal and aortic regurgitation appeared to be due to the dilation of the aortic annulus and the sinotubular junction (Fig. 2A), annuloplasty using three subcommissural stitches was carried out (Fig. 2B) and followed by a proximal anastomosis at the level just above the coronary orifices using 4-0 Prolene with Teflon felt reinforcement. The diameter of the sinotubular junction was thus reduced to the size of the Gelseal graft (Fig. 2C). Weaning from CPB

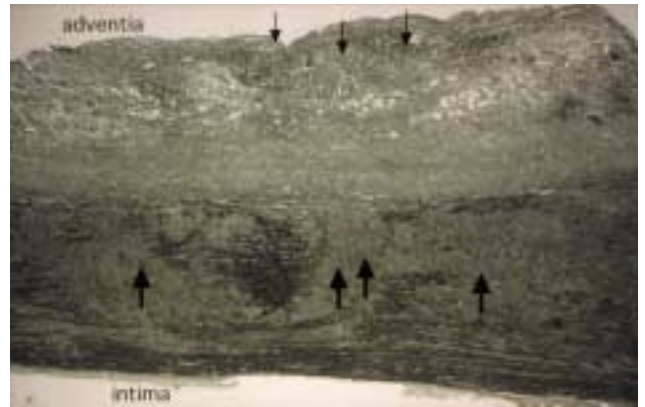


Fig. 5. Histological examination of the aneurysmal wall showing chronic mesoaortitis with patchy destruction of musculo-elastic medial tissue (large arrows) and adventitial focal lymphocytic infiltrates (small arrows). (Elastica van Gieson stain, $\times 20$)

was uncomplicated and no difficulty was encountered in hemostasis. Seven units of red cell concentrate and 30 units of concentrated platelets were transfused perioperatively. On the 4th postoperative day, the platelet count fell to 43,000 cells/ μl and was again increased by intravenous immunoglobulin therapy (Fig. 3). The postoperative course was uneventful and he was discharged on the 24th postoperative day. Postoperative echocardiography demonstrated reduction of aortic regurgitation. Postoperative chest magnetic resonance imaging showed no pseudoaneurysms nor other problems associated with each anastomotic site (Fig. 4). Histological examination of the aneurysmal wall showed chronic mesoaortitis with patchy destruction of musculo-elastic medial tissue and adventitial focal lymphocytic infiltrates (Fig. 5) without intimal thickening or atherosclerosis. These findings were similar to syphilitic mesoaortitis although preoperative and postoperative serological treponemal tests, including TPHA and FTA-ABS, were all negative.

Discussion

Reports of cardiovascular surgery on patients with ITP are scarce and no standard or recommendation to increase preoperative platelet counts has been established. Therapeutic modalities for chronic ITP include steroid, azathiopurine, gamma-globulin, and splenectomy. Steroid and azathiopurine might be harmful for surgical patients because these drugs may increase the risk of infection. Splenectomy is invasive, especially in the elderly such as in our case. High-dose gamma-globulin has been used since Imbach et al.¹⁾ reported its successful imple-

mentation in children with ITP. The effect of gamma-globulin is immediate and lasts for up to two weeks.²⁾ Thus gamma-globulin therapy is palliative for ITP, and its adverse reactions are rare. Oba et al.³⁾ reported a case of successful mitral valve replacement in a patient with ITP, and summarized other previous reports about cardiac surgery on patients with ITP. He concluded that gamma-globulin therapy is preferable as a first-line preoperative treatment because of its efficacy, immediate reaction, rare side effects and harmlessness to surgical patients. In the present case, the preoperative and postoperative administration of gamma-globulin was also useful in minimizing perioperative hemorrhagic complications by increasing platelet counts without side effects.

In recent years a diagnosis of syphilitic aortitis has been rarely made since antibiotic therapy for syphilis was established. A syphilitic aortic aneurysm is usual located in the ascending aorta with occasional regurgitation.⁴⁾ In our case, histological findings, including little atherosclerotic change, patchy destruction of musculo-elastic medial tissue, and adventitial focal lymphocytic infiltrates, were similar to syphilitic mesoaortitis, and the site of the aneurysm was also compatible with a syphilitic aneurysm.⁴⁾ However, serological tests were negative. Kuramochi et al.⁵⁾ stated that serologically proved syphilis is necessary to make a diagnosis of syphilitic aortitis. Therefore, the diagnosis in this case should be

mesoaortitis of unknown cause.

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