Case Report

Perigraft Seroma After Surgical Aortoiliac Aneurysm Repair with Knitted Polyester Grafts: Report of Two Cases

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Perigraft seroma usually occurs both polyester and polytetrafluoroethylene (PTFE) graft which are placed superficially for axillofemoral and femorofemoral bypasses, while it is a rare complication of conventional abdominal aortic and iliac arterial aneurysm repair. The cause of the seroma has not been elucidated, and several hypotheses have been proposed such as immunologic response to graft materials, discharge of serous fluid through the graft wall, and so on. The seroma sac occasionally increases their size finally leading to rupture. The treatment of perigraft seroma has not been established so far; there have been various recommended procedures including aspiration, graft removal followed by other material graft replacement, cessation of antithrombotic drugs, and careful observation. We report two cases of perigraft seroma after conventional aortoiliac aneurysm repair with a knitted polyester graft via left pararectal retroperitoneal approach, which were gradually shrinking by themselves.

Key words: perigraft seroma, aortoiliac aneurysm, polyester graft

INTRODUCTION

Perigraft seroma has been reported in a variety of vascular procedures including peripheral bypass grafting, conventional abdominal aortic aneurysm repair as well as endovascular abdominal aortic aneurysm repair. Perigraft seroma frequently occurs in polyester and polytetrafluoroethylene (PTFE) grafts placed superficially for axillofemoral bypass and femorofemoral bypass,¹⁾ while it is a rare complication of surgical abdominal aortic aneurysm and iliac arterial aneurysm repair. We report two cases of perigraft seroma after conventional

aortoiliac aneurysm repair with a knitted polyester graft via left pararectal retroperitoneal approach and discuss the etiology, diagnosis, and treatment of this complication.

CASES

Case 1

A 69 year-old-man was referred to our hospital for treatment of a 5-cm-diameter infrarenal abdominal aortic aneurysm with chronic obstructive pulmonary disease. He underwent elective aortoiliac graft replacement with a bifurcated knitted polyester graft via left pararectal retroperitoneal approach. He had atelectasis after operation but soon recovered well. Two weeks after the operation, he felt an asymptomatic mass at the left lower abdomen. Contrast-enhanced computed tomography (CT) revealed a large low-density area around the left limb of the graft, which was measured 10 cm in the maximal transverse diameter and was no enhancement of the area (**Fig. 1A**). We suspected a perigraft seroma because he was uneventful with no progress of infection and anemia. We stopped aspirin and cilostazol administered for angi-

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na and peripheral arterial disease and observed carefully. Nine months after the operation, an abdominal mass was not palpable, and CT showed that the seroma disappeared almost completely (**Fig. 1B**).

Case 2

A 73 year-old-man was referred to our hospital for treatment of left common iliac artery aneurysm. He had past history of congestive heart failure, previous pace maker implantation for sick sinus syndrome, chronic renal failure and chronic obstructive pulmonary disease. He underwent aortoiliac graft replacement with a bifurcated knitted polyester graft via left pararectal retroperitoneal approach. Six days after the operation, he had suddenly weakness of his left upper limb. We suspected cerebral infarction and started to use aspirin and cilostazol. The symptom gradually recovered well. Two weeks after the operation, a left abdomen was distended and CT showed a low-density area around the left limb of the graft, which was measured 17 cm in the maximal transverse diameter (**Fig. 2A**). There was no symptom of the infection and progress of anemia. We suspected the perigraft seroma and observed carefully. We stopped his antiplatelet therapy. Eight months after operation, an abdominal distension was not palpable, and CT showed that the seroma disappeared completely (**Fig. 2B**).

DISCUSSION

Perigraft seroma is a rare complication of graft replacement for arterial aneurysms. Blumenberg et al.¹⁾ reported that the seroma usually occurred to prosthetic PTFE grafts are placed superficially for axillofemoral or femorofemoral bypass. They reviewed 279 cases of seroma formation, of which 88% were knitted polyester or PTFE grafts. Other authors have described that a seroma occurs less frequently after aortoiliac bypass or replacement, and that all cases have been associated with PTFE grafts.²⁾

The cause of perigraft seroma formation remains unclear, but several hypotheses have been proposed.¹⁻³⁾ Some authors have proposed that it is related to an immunologic reaction to the graft material.³⁾ Resolution of the seroma has occurred with graft re-replacement with other type of graft, which may reflect a patient-specific tolerance to certain grafts. Others have proposed that it is related to a low-grade infection, with the formation of a biofilm and reactive seroma, as is often seen with indolent infections years after graft placement.¹⁾ Other authors

Fig. 1

A: Contrast-enhanced computed tomography (CT) revealed a large low-density area around the left iliac artery graft, which was measured 10 cm in the maximal transverse diameter.

B: Nine months after surgery, CT showed that the seroma disappeared completely.

have proposed that it is related to the extravasation of a serous ultrafiltrate through the graft matrix. This is a flow-related phenomenon that has been shown to occur with PTFE grafts in both experimental and clinical settings.²⁾ Our two cases suggest that antiplatelet therapy may be related to this flow-related phenomenon; the seroma reduced and disappeared after antiplatelet drugs were stopped. Antiplatelet drugs may induce a fibrinolytic and anticoagulant state, thereby activating the fibrinolytic cascade with the collection of proteinaceous fluid that can increase the flow of fluid through the graft matrix.

The differential diagnosis of perigraft seroma is often difficult, and is usually established by exclusion. Kalman described the presence of fluid or blood around the graft after 28% of conventional abdominal aortic aneurysm re-

Fig. 2

A: CT showed a low-density area around the left iliac graft, which was measured 17 cm in the maximal transverse diameter.

B: Eight months after operation, CT showed that the seroma disappeared almost completely (arrow).

pairs, and that the collected fluid was dissolved and absorbed within about a few months after surgery.⁴⁾ Graft infection can be diagnosed by fever, high count of white blood cells, and aspiration and culture of the fluid. A false aneurysm can be diagnosed by angiography or enhanced CT. Postoperative hematoma can be diagnosed by magnetic resonance imaging, enhanced CT, progress of anemia, and blood in the retroperitoneal drainage tube. Lymphatic fluid collection can be diagnosed by previous fluid collection as well as aspiration and biochemical analysis of the fluid.

The management of seroma remains to be established,

but several treatments have been proposed including careful observation, aspiration or drainage of the fluid, fenestration of the sac to the abdominal cavity, graft replacement and plasmapheresis. We selected a careful observation of the seroma in both cases reported here because the patients did not complain of any other complications such as abdominal pain, nausea, fullness, obstruction of the ureter or bowel or infection. Fortunately the seroma gradually dissolved in both cases and finally disappeared, but they still required long-term follow-up.

There have been several recent case reports of endovascular graft replacement of abdominal aortic aneurysms in which the sac was enlarged and/or ruptured with no endoleak, especially when a PTFE graft has been used.^{3, 5)} This phenomenon is termed endotension, which may be similar to the formation of a perigraft seroma following conventional abdominal aortic aneurysm repair.

CONCLUSIONS

We have reported two cases of the formation of perigraft seroma after aortoiliac graft replacement with a knitted polyester graft via left pararectal retroperitoneal approach. In both cases the seroma gradually dissolved and finally disappeared. However, a long-term follow-up is necessary in such cases because the prognosis of the seroma has not been elucidated.

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