Lymphoma of Prosthetic Aortic Graft Presenting as Recurrent Embolization

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We describe the case of a patient who presented with transient ischemic attack 4 years after bicuspid aortic valve repair, ascending aorta, and hemiarch replacement. Workup included cross-sectional imaging consistent with thrombus in the ascending aorta graft. Warfarin was initiated, but another episode of cerebral ischemia occurred despite therapeutic anticoagulation. Surgery was performed to avoid further embolization as replacement with a homograft aorta. Histologic analysis of the material found within the graft demonstrated large B cell lymphoma. At 39 months postoperatively, he had no evidence of recurrence.


The carcinogenic potential of Dacron has previously been suggested by the findings of animal models that demonstrated polymeric-material-induced sarcoma in rats with a latency period of 1–2 years [1]. A few cases of lymphoma developing in proximity of Dacron have been reported [2]. In one case, the tumor arose at the suture line of an ascending Dacron graft and then invaded the heart and the adjacent mediastinum [3].

A 55-year-old man presented with a transient ischemic attack manifest as right arm numbness and weakness. Four years earlier, he underwent bicuspid aortic valve repair, remodeling of the noncoronary sinus, and ascending aorta and hemiarch replacement. Initial brain imaging was negative for stroke, but a CT scan of the chest abdomen and pelvis showed thickening in the ascending aortic graft that was consistent with a thrombus and a splenic infarct. Anticoagulation was started with warfarin, but 3 weeks later he developed left arm tingling and weakness, left facial droop, and dysarthric speech. Another brain CT was obtained and again showed no intracranial abnormalities. He was transferred to our hospital for further evaluation and treatment.

His medical history was positive for prostate adenocarcinoma treated with hormone therapy and chronic lymphoid leukemia that was diagnosed 9 years before this presentation and 5 years before his initial aortic repair for bicuspid aortopathy. The diagnosis of leukemia was based on an incidental finding of leukocytosis and was never treated because he lacked symptoms or lymphadenopathy associated with it. His condition was consistently stable during follow-up of this problem and was considered to be in stage 0.

Upon admission, the examination revealed a well-appearing man with a slight left facial droop and mildly dysarthric speech. Otherwise, his motor and sensory examination results were normal, as was his cardiovascular and the rest of his examination results. Laboratory values were mostly normal except the INR, which was therapeutic at 2.5.

Additional extensive workup was undertaken. A transcranial Doppler with continuous monitoring and bubble study failed to show any evidence of microembolic events. Ultrasound of the carotid arteries showed 20% stenosis of the internal carotids bilaterally. Transesophageal echocardiography ruled out an intracardiac source of thrombi, but was unable to visualize the ascending aorta adequately. The CT angiogram of the aorta showed moderate irregular wall thickening within the ascending aortic graft, suggestive of adherent wall thrombus or plaque without kinking stenosis or other abnormalities of the graft (Fig 1).

The decision was made to proceed with surgery to avoid additional embolization events. A redo median sternotomy was performed, and an 8-mm graft was sewn to the right axillary artery. After dissection of the heart, full cardiopulmonary bypass was initiated via right axillary artery and right atrium. The patient was cooled to 18°C, retrograde brain perfusion was started via the superior vena cava, and the circulation was arrested. The ascending aorta graft was then opened, and a large amount of firm but friable white material was encountered (Fig 2). All the prosthetic graft material was excised. A 27-mm homograft aorta was sutured to the aortic arch under circulatory arrest for the distal anastomosis. Full flow and rewarming was re instituted while the proximal end of the homograft was sewn end-to-end to the sinotubular junction. A specimen was sent for pathologic and histologic analysis, which demonstrated malignant B cell neoplasm, most consistent with large B cell lymphoma.

Postoperative course was uneventful, and the patient was discharged on postoperative day 9 with scheduled follow-up with hematology and oncology. A full body workup during the early postoperative course was negative for lymphoma in any other sites. He underwent multiple cycles of chemotherapy. At recent follow-up 39 months postoperatively, he had no evidence of recurrence and has had no further episodes of embolization.

Comment

The current case is unique in that it describes the extension of a tumor in a completely intravascular position and grossly confined to the prosthetic graft material. It is possible that the tumor represents transformation.
from the chronic lymphocytic leukemia. At the time of his initial diagnosis of leukemia 9 years earlier, the patient underwent flow cytometry analysis to confirm the diagnosis, and follow-up was scheduled regularly. Without any evidence of graft abnormality or other disturbance of flow within the graft on initial postoperative imaging studies, it was unclear why the tumor cells accumulated in this location.

This case emphasizes the importance of imaging follow-up in patients who have undergone aortic surgery. Because of the laminar patterns within the ascending aorta, it is rare to have thrombus formation in an old graft in this location. When a mass is found in a graft in this position, it is important to include tumor in the differential diagnosis. This is especially true if a fully anticoagulated patient continues to have thromboembolic events. Surgical repair with circulatory arrest should be considered promptly as both a diagnostic and therapeutic tool in such situations.

References

Concomitant Femoro-Femoral Bypass Graft During Surgery for Acute Type A Dissection to Treat Lower Limb Malperfusion

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We report the case of a 69-year-old male patient who was admitted to our department with an acute type A dissection complicated by ischemia of the left lower limb. During surgery for acute type A dissection, the patient underwent concomitant femoro-femoral crossover bypass graft placement to ensure blood supply of the left lower limb during surgery and minimize ischemia–reperfusion injury. The patient underwent supracoronary