Inflammatory aortic aneurysms (IAAs) are characterized by a markedly thickened aortic wall and dense perianeurysmal fibrosis that extends to adjacent organs. Patients with such aneurysms frequently present with back and abdominal pain, an elevated erythrocyte sedimentation rate (ESR), and characteristic findings on CT scan. The first descriptions of such aneurysms are found in the urology literature with reference to ureteral obstruction. The term “inflammatory aneurysm” was coined by Walker et al. in 1972 in a description of their experience in Manchester, England, with 19 patients presenting with abdominal aortic aneurysms in association with retroperitoneal fibrosis. The majority of these patients were symptomatic at the time of presentation, and operative repair was associated with a 31% mortality rate. Since this initial report more than 350 cases of IAA have been added to the world literature. Although it has been described as a distinct pathologic entity, the incidence of IAA varies significantly among surgical series. Thirty-day operative mortality rates continue to be high (3% to 13%) and rates for intraoperative injury to adherent organs range from 5% to 15%. Moreover, the literature provides no consensus regarding the preferred approach for surgical repair other than a frequently repeated admonition to avoid duodenal dissection.

The purpose of this study was to review a recent experience with surgical repair of IAA at the Columbia-Presbyterian Medical Center. By correlating the preoperative radiographic and laboratory data with the intraoperative pathologic and surgical findings, an attempt was made to...
define the clinical spectrum of IAA and to determine whether one surgical approach is preferred over another.

PATIENTS AND METHODS

Beginning in March 1987, all patients who had evidence of an aortic aneurysm on clinical or ultrasonographic examination underwent abdominal CT scanning prior to surgical repair. An inflammatory aneurysm was suspected if a thickened aortic wall was seen with intramural calcification and perianeurysmal fibrosis. Twelve such patients were identified as of June 1994. These patients were specifically questioned regarding symptoms of abdominal or back pain, weight loss, previous abdominal surgery, and medications associated with retroperitoneal fibrosis. Preoperative ESRs were obtained in all but two patients. Operative repair was performed in all cases by a single surgeon. The preferred operative approach was tailored to the needs of each patient at the surgeon's discretion. The operative findings were carefully noted and were correlated with the preoperative CT scan findings at a weekly morbidity and mortality conference attended by members of the Departments of Vascular Surgery and Radiology. Patients were seen 2 weeks after discharge and then every 6 months during follow-up. Follow-up was 100%.

RESULTS

From March 1987 to October 1994, twelve patients had evidence of IAA on CT scans. This represents 4% of all patients undergoing surgery for abdominal aortic aneurysms at Columbia-Presbyterian Medical Center during this interval. The mean age was 68.3 years (range 58 to 93 years) and 83% (10/12) were men. The ESR was elevated in 90% (9/10) of the patients. Eleven of the 12 patients (92%) presented with back or abdominal pain, but none had evidence of aneurysm rupture. The CT scan correctly identified an IAA in 100% of the patients and there were no false positive findings. Average aortic aneurysm size was 7.3 cm and average aortic wall thickness measured 1.4 cm. Two patients had evidence of ureteral obstruction preoperatively.

At operation the duodenum was noted to be densely adherent to the aneurysm in each case. Duodenal dissection was avoided in all patients and proximal control was obtained below the renal arteries in 10 of the 12 patients. However, the degree and anatomic distribution of retroperitoneal fibrosis varied significantly among the patients. Findings on preoperative CT scans, although diagnostic of IAA in all cases, were poor predictors of the extent of perianeurysmal inflammation and fibrosis. At operation the fibrosis and inflammation were mild enough to allow safe, conventional repair in 7 of the 12 patients. Repair was performed via a transperitoneal approach in five patients, a left flank retroperitoneal approach in six, and an extra-anatomic bypass in one. The diagnosis of IAA was confirmed in each case when aortic wall pathology specimens were obtained (6/6).

Four patients had such severe retroperitoneal fibrosis and organ adherence that standard aneurysm repair was not possible. Aneurysm repair in these patients was tailored to the specific anatomic distribution of the retroperitoneal inflammation as the following cases illustrate.

Patient 1 was a 70-year-old woman who presented with back pain and claudication (Table I). Preoperative CT scan revealed a 5 cm infrarenal aortic aneurysm with a markedly thickened wall. Arteriography demonstrated right common iliac artery occlusion and left common iliac artery stenosis (Fig. 1, A). Repair was undertaken via a left retroperitoneal approach. The duodenum was densely adherent to the aneurysm, but the fibrotic process was relatively mild at the neck of the aneurysm allowing access to the infrarenal aorta for cross-clamping. However, the inflammatory process in the right retroperitoneum was intense and dissection of this area for bypass of the occluded right common iliac artery was not possible. A Dacron prosthesis was placed from the infrarenal aorta to the left profunda femoris artery. The distal aorta was oversewn and the right lower extremity was revascularized with an 8 mm prosthesis from the aortic Dacron graft to the right profunda femoris artery (Fig. 1, B). The patient is alive and well 50 months following aneurysm repair with no evidence of ongoing retroperitoneal fibrosis.

Patient 2 was a 62-year-old man with a history of heavy cigarette smoking, rheumatoid arthritis, and bladder carcinoma treated with transurethral infusions of thiotepa. He presented with back pain, and a CT scan revealed a 5 cm IAA with extension of the fibrotic process superior to the renal arteries (Fig. 2, A). Arteriography demonstrated complete occlusion of the left common iliac artery. Operative repair was undertaken via a left retroperitoneal approach. At operation an intense retroperitoneal fibrotic reaction was found to involve the region of the renal arteries as well as the more cephalad retroperitoneum. The aorta could not be distinguished from the sheet of