Prioritizing treatment in cases of concurrent abdominal aortic aneurysm

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INTRODUCTION

Patients with concomitant abdominal aortic aneurysm (AAA) and intra-abdominal malignancy present a clinical dilemma because of the difficulty in deciding which pathology to address first. As this scenario is not commonly encountered, clear guidelines are not available to help in the decision-making process. Surgery for malignancy has been said to increase the risk of postoperative aneurysm rupture, but simultaneous cancer surgery and primary repair of the aneurysm may carry the risk of prosthetic graft infection. This paper describes a further complication that may arise in the setting of concomitant intra-abdominal malignancy carcinoma and AAA, namely peripheral embolism.

CASE REPORT

A 72-year-old man with chronic mental confusion was admitted with diarrhoea, weight loss and rectal bleeding. He was anaemic with a pulsatile mass in the epigastrium and a second (non-pulsatile) mass in the left iliac fossa. An ultrasound scan demonstrated an aortic aneurysm, 8 cm in diameter, with extension into the right common iliac artery (*Figure 1*). Flexible sigmoidoscopy with biopsy confirmed a carcinoma of the sigmoid colon. Signs of incipient large bowel obstruction lead to a decision to deal with the cancer before the aneurysm, but at laparotomy only a palliative resection could be performed with end sigmoid colostomy (Hartmann's procedure). Some 48 hours postoperatively he developed acute ischaemia of the lower leg (*Figure 2*). He declined re-operation so received conservative treatment with heparin and required above-knee amputation 2 weeks later.

Figure 1. Computed tomography scan of the abdominal aortic aneurysm.

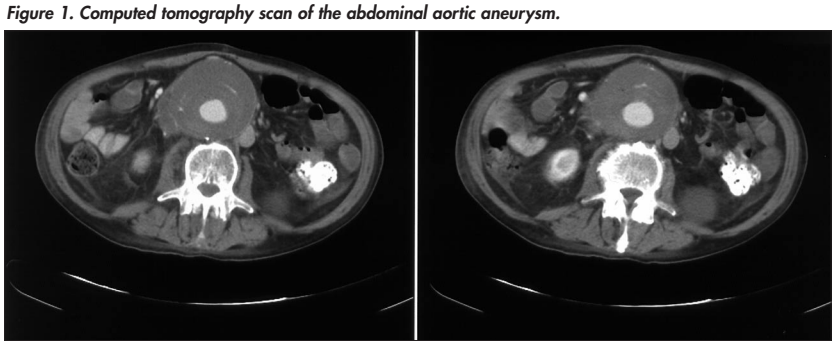

Figure 2. Patient's leg.

DISCUSSION

The management of concomitant AAA and intra-abdominal malignancy is a difficult dilemma. It is generally agreed that both lesions need to be treated for long-term survival (Komori et al, 1993), however, deciding the priorities of treatment in such cases has remained controversial. Decision making is easier for the surgeon if one of the two conditions is life threatening (Komori et al, 1994). The dilemma arises when both of them are unlikely to result in immediate complications or, alternatively, if both the conditions are critical and can endanger the life of the patient in equal measure.

Simultaneous operations would appear to be a simple option, however, this is theoretically not desirable for two reasons. First, the magnitude of the operation is increased considerably as is subsequent morbidity and mortality. Second, there is a risk of prosthetic graft infection, particularly if a bowel resection is being performed (Thomas, 1989). Aortic graft infection is a serious complication associated with a high mortality. Yeager et al (1985) reported a 43% mortality rate in their series of 25 patients with graft infection, while Bernhard (1980) reported a mortality rate as high as 65%.

The risk of graft infection may be present even if the cancer resection is

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delayed after the aneurysm repair, especially if the graft has not been isolated by fibrosis. The other argument against a primary aneurysm repair is that the postoperative recovery can be prolonged, thereby delaying the treatment for the malignancy.

On the other hand, if the tumour is treated first, there is the potential risk of postoperative rupture of the aneurysm. Some authors have suggested increased collagen lysis as a cause (Swanson et al, 1980) while others blame the direct operative trauma during surgery (Trueblood et al, 1976). The size of the aneurysm may also be an important factor, with larger aneurysms carrying a greater risk of rupture (Robinson et al, 1994).

In this patient, peripheral embolism rather than rupture has been the major complication of leaving the aortic aneurysm and resecting the cancer. A duplex scan postoperatively showed thrombus in the aneurysm and patent common and external iliac arteries. It also showed that there was evidence of an acute and complete occlusion at the level of the left common femoral artery, making embolism from the aneurysm the most likely cause of his acute limb ischaemia.

Peripheral embolism from dislodged intra-aortic arterial debris has been described after aortic surgery. Tchirkow and Beven (1978) reported seven cases of intraoperative and postoperative leg ischaemia among 100 patients who underwent surgery for AAA. Distal embolization of thrombus and debris was found to be the cause in six patients, suggesting that manipulation of the AAA was the likely cause of this complication. With regard to whether operations on other intra-abdominal viscera can cause embolism from an AAA, there are few data in the literature. Magee et al (1994) reported two cases of peripheral atheroembolism from aortic aneurysm following transhiatal oesophagectomy. In this patient, it is possible that the operative manipulation during the colonic surgery dislodged debris from the patient's aneurysm. No other case of embolism from an aortic aneurysm following surgery for colonic cancer has been reported in the literature before.

AAA AND INTRA-ABDOMINAL MALIGNANCY

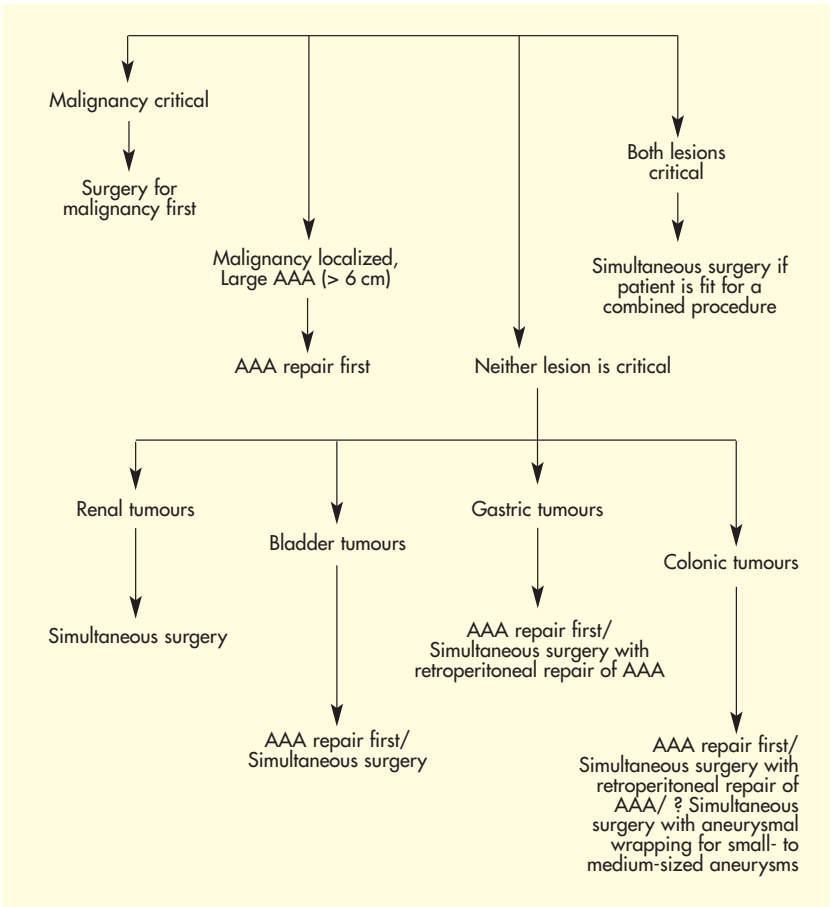
In relation to the management of concomitant AAA and intra-abdominal malignancy, practice varies depending on the type of malignancy and the preference of the surgeon (*Figure 3*). There are no randomized trials because of the small number of patients involved in many of the studies.

Colorectal malignancy

Reviewing the literature on the management of concomitant colorectal carcinoma (CRC) and AAA, there appears to be a preference either to operate on the aneurysm first or to perform simultaneous surgery. This is presumably because of the reported high incidence of postoperative aneurysm rupture (20–23%) after colonic resection, especially when the aneurysm is larger than 6 cm (Nora et al, 1989; Robinson et al, 1994). Robinson and colleagues reported two cases of postoperative aneurysm rupture among the 10 patients who underwent resection of a synchronous CRC. The aortic aneurysm was larger than 6 cm in both these patients.

Nora and co-workers reviewed their series of 17 patients with concomitant AAAs and CRCs, of which 16 patients underwent an operation for their colonic neoplasm and nine had a AAA repair (eight both pathologies, eight carcinoma only, one AAA only). Of the eight patients who underwent an operation for the dual pathologies, six had staged resection of both lesions, and two had simultaneous surgery. There were only five long-term survivors (18 months to 4 years), all in the dual operation group. Of the eight patients who had cancer resection only, three patients died postoperatively as a result of rupture of their aneurysm. The group concluded that AAA repair should receive priority whenever possible.

Figure 3. Concomitant abdominal aortic aneurysm (AAA) and intra-abdominal malignancy.



The choice of management is not clear when one is faced with a CRC that is likely to cause immediate complications, along with a large aortic aneurysm in a patient who is not fit to undergo simultaneous surgery. Minu and colleagues (1992) reported three cases of concomitant CRCs and intra-abdominal aneurysms who underwent aneurysmal wrapping. One was an aortic aneurysm of 3.6 cm and the other two patients had common iliac and internal iliac artery aneurysms. After resection of the CRC, the aneurysms were wrapped with a Dacron or Teflon mesh. They found that the patients remained well after a follow-up of 3 years. However, in this small series, the aneurysms were small sized and the cancers were either Duke's A or B. This procedure may not be suitable for larger aneurysms or more advanced cancers.

In this case, the patient had locally advanced cancer that was considered incurable. This was the main factor in deciding against aneurysm repair although, preoperatively, it was felt that the patient would probably not be fit for a combined procedure anyway. However, if a patient has a curable CRC under similar circumstances, the surgeon may be forced to choose between simultaneous surgery with the risk of increased postoperative mortality, or resection of the cancer with the risk of postoperative aneurysm rupture.

Gastric malignancy

Komori and colleagues (1994) reported a series of seven patients with concomitant AAAs and gastric cancers, of which six had both lesions treated operatively. Three patients had the malignancy resected first, one had an aneurysm repair first and two patients underwent simultaneous procedures. The length of follow-up ranged from 4 months to 4 years and there were five long-term survivors. There was no reported case of postoperative aneurysm rupture among the three patients who underwent cancer resection first. Despite this, the authors concluded that the aneurysm should be repaired first unless the gastric malignancy is advanced, in which case cancer resection takes priority. They also advocated two separate approaches when simultaneous surgery is being performed, by repairing the aneurysm retroperitoneally and resecting the tumour transperitoneally.

Urological malignancy

In the presence of concomitant renal carcinoma and AAA, most reports favour simultaneous operations when possible as the risk of graft infection seems minimal. Hafez and colleagues (2000) compared 11 patients who underwent simultaneous nephrectomy and AAA repair with 16 patients who had staged surgery. The mean follow-up was 57 months and there were no graft infections reported in either group.

In bladder cancer, opinions vary between simultaneous surgery and staged surgery with the aneurysm being repaired first. Ginsberg and co-workers reported no major complications in their 12 patients who underwent simultaneous operation for AAA and urological neoplasms including bladder cancers (Ginsberg et al, 1995). Lierz and colleagues suggested that initial tumour resection is not the preferred option because of the risk of postoperative aneurysm rupture, and the risk of damage to the ureters and the conduit used for urinary diversion, during the second operation (Lierz et al, 1993).

CONCLUSION

Concomitant intra-abdominal malignancy and AAA remains a difficult management problem. If one of the lesions needs urgent operation, it should take priority. If the malignancy is localized, the aneurysm should be repaired first especially if it is larger than 6 cm, because of the risk of postoperative aneurysm rupture. However, if neither lesion is advanced, simultaneous surgery may be considered if the patient's general condition allows a combined procedure.

Peripheral embolism in patients with AAA following unrelated abdominal surgery is a complication that needs to be recognized. In order to minimize the risk of this complication, intraoperative manipulation of the abdominal viscera should be kept to a minimum and the AAA should not be disturbed unless a combined procedure is planned.

Despite the apparent risk, there is no conclusive evidence from the literature of an increased rate of graft infection following simultaneous operations for AAA and intra-abdominal malignancy. Treatment remains difficult in patients, when both the lesions are critical, and when they are not fit to undergo simultaneous surgery. HM

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