Extended resection of a chest wall desmoid tumour with concomitant coronary artery bypass grafting

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Received 11 January 2001; received in revised form 27 July 2001; accepted 3 August 2001

Abstract

We report on the resection of a large desmoid tumour of the anterior chest wall in a 65-year-old male patient. The patient had a coronary artery bypass operation 2 years prior to the first detection of a tumour. Because the left internal mammary artery bypass to the left anterior descending coronary artery (LAD) was embedded in the tumour mass, it had to be resected together with the tumour. A saphenous vein aorto-coronary bypass to the LAD with an off-pump technique was then performed, and the chest was reconstructed with polypropylene mesh and a latissimus dorsi musculocutaneous flap. © 2001 Elsevier Science B.V. All rights reserved.

Keywords: Desmoid tumour; Chest wall; Coronary artery disease

1. Introduction

Desmoid tumours (aggressive fibromatosis) have been reported as one of the most common histological subtypes of chest wall soft tissue sarcomas [5]. These tumours are characterised by their propensity for slow incessant growth and invasion of contiguous structures. Although they grow locally aggressive, they do not metastasise [3]. However, recurrence is associated with significant morbidity and mortality.

2. Case report

A 65-year-old male patient presented with an elevation on the left side of the anterior chest wall. The computerised tomography (CT) and magnetic resonance (MR) (Fig. 1) study revealed a $11 \times 7 \times 9$ cm$^3$ tumour in the anterior mediastinum, with contact to the ribs and sternum anteriorly, and a close contact to the pulmonary trunk, to the posterior aspect to the left and right ventricle and to the left upper lobe of the lung. Needle biopsy was performed and the histological examination showed a typical picture of an aggressive fibromatosis.

The patient had been operated for triple coronary artery disease 2 years before the tumour was first diagnosed. At that time, he had saphenous vein bypasses to the right coronary artery and the marginal branch of the left circumflex coronary artery. The left internal mammary artery (LIMA) had been anastomosed to the left anterior descending coronary artery (LAD). Because of the close proximity of the tumour with the LIMA and the venous bypass to the marginal branch, the status of all bypasses was evaluated before surgery by catheterisation. All of them were patent.

Because of the above-mentioned proximity to the heart and the bypasses, the groin vessels were exposed for eventual institution of cardiopulmonary bypass and the heart–lung machine was on stand-by in the operating room. The patients’ electrocardiogram (ECG), arterial blood pressure and central venous pressure as well as pulmonary artery pressure were monitored. At operation, an extended chest wall resection was performed measuring $21 \times 17 \times 8$ cm$^3$ with appropriate distance from the tumour. This included a subtotal sternectomy (17 cm in length), 5 cm of the left clavicle and the parasternal part of the ribs 1–6. The tumour closely attached to the left upper lobe was separated from the lung by a wedge resection. The most challenging part of the operation was the dissection of the tumour from the epicardium of the right and left ventricle. The tumour could not be dissected free without sacrificing the LIMA bypass, since it was embedded by the tumour mass. Therefore, the LIMA was resected together with the tumour and a venous bypass was anastomosed to the LAD on the beating heart. The resulting defect in the chest wall was covered...
with polypropylene mesh and a latissimus dorsi myocutaneus flap.

At histology, the diagnosis of a desmoid tumour (13 cm in diameter) was confirmed, infiltrating the sternum and surrounding soft tissues, the parietal and visceral pleura and less than 1 mm of the subpleural tissue (resection margins 4 mm).

The pericardium and the LIMA bypass were not infiltrated, all margins were free of tumour infiltration, although there were only few millimetres of unaffected capsule at the posterior aspect of the tumour.

The postoperative course was complicated by renal insufficiency requiring haemodialysis for 3 days. The patient had, however, a compensated renal insufficiency preoperatively. He was discharged from hospital on the 16th postoperative day and remains well without signs for recurrence at control magnetic resonance imaging (MRI) after 2 years.

3. Discussion

Desmoid tumours are found in association with Gardner’s syndrome. However, trauma such as a major surgery is also often discussed as another possible cause [2].

In 10–28%, the chest wall is the primary site for desmoids [1]. Resection with a wide margin is mandatory, since the extent of resection influences subsequent local recurrence [1]. In the case presented, there were only a few millimetres of undiseased tissue at the posterior aspect of the tumour, which must be considered as limited margin resection [1]. However, the extent of the resection was limited by the anatomic location of the tumour. The local recurrence rates for extra-abdominal desmoid tumours after surgical resection is around 40% [3].

For the treatment of recurring tumours, radiotherapy is recommended, but it may not always be effective. A variety of pharmacological approaches have also been reported, such as c-AMP modulators (theophylline, chlorothiazid, ascorbic acid, testolactone), various chemotherapeutic agents, oestrogen blockade and prostaglandine manipulation [3].

This is an unusual situation in which a large desmoid tumour had close proximity to the heart, coronary artery bypasses and the left upper lobe. After extended resection of the tumour with concomitant coronary artery bypass grafting, the patient is free of recurrence 2 years after operation. With current techniques of chest wall reconstruction, chest wall stability can be achieved [4].

References