Malignant internal mammary lymph nodes during mobilization of the internal mammary artery

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Abstract

Malignant internal mammary node involvement may occur with a primary neoplasm or with metastasis. The incidental discovery of malignant internal mammary nodes from an unknown primary origin has not been previously described. Cardiac surgeons should be aware of pathologic internal mammary artery (IMA) nodes and any abnormally enlarged nodes encountered in the course of IMA mobilization should be sent for histological examination. The incidental discovery of malignancy does not preclude the use of the IMA as a bypass conduit. Once a diagnosis of malignancy is established, meticulous exhaustive investigation may be indicated to identify the primary lesion and definitive treatment instituted if appropriate. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

The incidental discovery of malignancy in the internal mammary nodes of two patients who underwent coronary surgery are reported. Histology revealed metastatic carcinoma in one and well differentiated adenocarcinoma in the other. Despite exhaustive investigation in both cases, the primary tumour site remained unknown until autopsy. Both patients had excellent results from their original cardiac surgery but died respectively 3 years and 12 months postoperatively. Atypically enlarged nodes encountered during internal mammary artery (IMA) mobilization should be sent for histological examination.

2. Case reports

2.1. Patient 1

A 65-year-old male smoker was admitted for elective coronary artery bypass grafting (CABG) in 1990 with unstable angina following a recent myocardial infarction. Angiography demonstrated anterolateral hypokinesia with three-vessel disease. During harvesting of the left IMA (LIMA) pedicle, a large hard ‘swollen’ lymph node was encountered, resected and sent for pathologic examination. The LIMA was anastomosed to the left anterior descending (LAD) vessel and vein grafts anastomosed to the circumflex vessels. He had an uneventful recovery. Lymph node histology revealed a well-differentiated adenocarcinoma with papillary differentiation. Chest radiograph (CXR) was normal and sputum cytology was negative. Computed tomography (CT) chest scan showed mediastinal peri-carinal lymphadenopathy but no primary carcinoma. Subsequent barium meal, barium enema and CT abdomen scan were normal. The patient refused further investigation, discharged himself home and was lost to follow-up. He died 3 years later. Post-mortem revealed bronchial adenocarcinoma.

2.2. Patient 2

A 72-year-old woman presented in 1995 with unstable angina despite maximal medical therapy. Angiogram showed triple vessel disease. CABG was performed urgently. During mobilization of the LIMA pedicle, an enlarged ‘swollen’ lymph node (2.5 cm) was encountered and sent for histology. The LIMA was anastomosed to the LAD vessel and vein grafts to the right coronary and circumflex vessels. She had an uneventful recovery. Lymph node immunohistochemistry was positive for cytokinin epithelial marker CAM 5.2 and negative for S100, suggestive of a poorly differentiated metastatic carcinoma of possible lung, breast or kidney origin. Subsequent isotope
bone scan, CT scans of chest and abdomen, mammogram and barium enema failed to yield the primary tumour site. Six weeks later she presented with right iliac fossa pain and diarrhoea. Examination was unremarkable and small bowel series performed was normal. She was referred to the oncologist who commenced chemotherapy empirically (carboplatin and 5-fluorouracil) due to persisting abdominal symptoms. Repeat CT abdomen scan 2 months later revealed ascites with omental thickening consistent with malignancy. Despite further chemotherapy she deteriorated and was managed conservatively, as she was not keen for any surgical intervention. She died 3 months later, a year following her initial cardiac operation. Post-mortem revealed ovarian adenocarcinoma with peritoneal involvement.

3. Discussion

The intra-operative discovery of malignant internal mammary lymph nodes during mobilization of the IMA for CABG has been reported once [1]. Guo et al. reported three patients in whom this incidental finding led to a diagnosis of metastatic breast carcinoma in one patient and lymphoma in two others. All patients were successfully treated, thus emphasizing the importance of sending off a biopsy specimen for histological assessment when abnormally enlarged IMA nodes are encountered. Our experience of two patients in whom pathologically enlarged IMA nodes were encountered yielded an incidental diagnosis of poorly differentiated metastatic carcinoma in one and well-differentiated adenocarcinoma in the other.

Despite extensive and methodical investigations, the primary origin of the tumour remained elusive in both cases. Patient 1, who eventually died of bronchial adenocarcinoma, had a normal CXR. Tracheal and carinal tumours may show no abnormality on CXR and furthermore with an adenocarcinoma, the tumour is often peripherally situated hence bronchoscopy would be a useful investigation in such cases. Unfortunately our patient was not keen for further investigation, discharged himself from hospital contrary to medical advice, and was subsequently lost to follow-up, thus precluding any endoscopic examination.

The incidental discovery of malignant internal mammary nodes from an unknown primary origin has not been previously described. Malignant lymph node involvement may occur with a primary neoplasm or in association with metastatic spread. Internal mammary adenopathy is an important site for occult metastasis in breast cancer. Involvement is often ipsilateral to the primary tumour and represents a site of regional spread much like the axilla. Lymphoma represents the other common malignancy to selectively target this nodal chain, usually the result of contiguous spread from the anterior mediastinal or paratracheal area to the other mediastinal lymph node groups.

Although the eventual lethal outcome in both of our patients was not prevented, we believe that cardiac surgeons should be aware of pathologic IMA nodes and any abnormally enlarged internal mammary nodes encountered in the course of IMA mobilization should be sent for histological examination. Intra-operative frozen section was not performed as this would not permit immunohistochemistry, which is often necessary to establish a conclusive histological diagnosis of lymphoma and thus differentiate from other epithelial cancers. Epithelial tumours would reflect a widely disseminated cancer by virtue of IMA nodal involvement and thus be unresectable. Frozen section analysis would contribute little to the surgeon’s decision-making process particularly in cases where the coronary bypass procedure is being performed to alleviate angina in highly symptomatic individuals like both patients described. However, in less symptomatic patients with extensive coronary disease who proceed to surgery primarily for survival benefit, frozen section examination identifying disseminated epithelial malignancy may make the decision to operate more clear.

Tumour markers, though often non-specific, may be helpful in elucidating tumour origin. However, it is not uncommon for derangement of haematological and inflammatory indices to occur following cardiopulmonary bypass, thus rendering blood concentrations of such tumour markers less reliable. For these reasons tumour markers were not verified in this setting.

The incidental discovery of malignancy does not preclude the use of the IMA as a bypass conduit. Once a diagnosis of malignancy is established, meticulous exhaustive investigation may be indicated to identify the primary lesion and definitive treatment instituted if appropriate. Long-term surveillance of such cases is of paramount importance and every effort must be made not to let such patients be lost to follow-up. Failure to do so may prove fatal as with our first patient.

References