In conclusion, these data show that, although there is no gender difference in the prevalence of asthma, women have a considerably higher risk than men of being admitted to hospital for the disease. This raises the possibility of gender-related differences in the severity of asthma or, perhaps, in the management of the disease, including admission thresholds.

The following are members of The Copenhagen City Heart Study Group: G Jensen, P Schnohr, M Appleyard, J Nyboe, M Grenbæk, B Nordestgaard, P Lange. This study was supported by The National Union against Lung Diseases, The Danish Heart Foundation, and The Danish Medical Research Council (12–1661–1).

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Thorax 1997;**52**:289–290

Occult lung cancer in patients with bullous emphysema

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Abstract

***Background* – The incidence of lung cancer is increased in patients with bullous emphysema.**

***Methods* – A series of 95 patients undergoing excision of bullous lung tissue was reviewed to determine the incidence and long term outcome of occult carcinoma present in the resected material.**

***Results* – Four patients (4.2%) had peripheral foci of large cell carcinoma in the resection specimen (three bullectomies and one lobectomy).**

***Conclusions* – Resected bullous lung tissue should be carefully examined for areas of bronchogenic carcinoma. The results of incidental complete excision are favourable.**

(*Thorax* 1997;**52**:289–290)

Keywords: bullous emphysema, lung cancer.

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Received 2 February 1996
Returned to authors
23 April 1996
Revised version received
10 July 1996
Accepted for publication
25 September 1996

Early diagnosis and complete resection are considered key factors in achieving long term survival in non-small cell lung cancer. The incidence of this malignancy is reported to be 32 times higher in patients with bullous emphysema.[1–3] These patients may, however, also require surgery for excision of bullous air spaces because of functional impairment or other complications. Since scar carcinoma has been reported,[4–6] we routinely perform complete gross and histological examination of the wall of the resected bulla, with multiple samples of scars, areas of increased thickness, and grossly normal bulla wall.

We report our experience with four patients who underwent surgery for giant bullous emphysema with an incidental finding of microscopic occult lung cancer localised in a macroscopically normal section of the wall of the bulla.

Methods

From 1979 to 1993 95 patients with bullous emphysema of the lung underwent surgical bullectomy. Four (4.2%) of these patients (aged 40, 44, 48, and 51 years) were found on routine histological examination of the resected material to have occult carcinoma and are the subject of this retrospective study. Normal phenotypes for α_1-antitrypsin were found. Chest radiography and computed tomographic (CT) scanning were diagnostic for giant bullous disease with enlarged air spaces accounting for at least 50% of the involved hemithorax. No increased pleural thickness, lung nodules, or other solid lesions were evident at preoperative evaluation. Pulmonary function tests showed a mean forced expiratory volume in one second (FEV_1) of 1.32 l, a mean functional residual capacity (FRC) of 5.51 l, and a mean Pao_2 of 9.0 kPa; the mean MVV was 32% of predicted. Pulmonary perfusion and ventilation scans were consistent with the presence of poorly ventilated unperfused air spaces. Angiography revealed that the pulmonary vessels of the residual lung were dislocated and compressed by the bulla with no sign of anomalous vascular proliferation. Fibreoptic bronchoscopy did not show any endobronchial lesion. Three bullectomies and one lobectomy were performed through a standard posterolateral thoracotomy as these cases predated the advent of video-assisted thoracoscopy. The pathologist sampled

every area of increased thickness or scar either at the base or on the wall of the bulla, in addition to random multiple sampling of several apparently normal areas. After the histological diagnosis of cancer was obtained the four patients were staged with total body CT scanning and a bone scan.

Results

No postoperative complications were observed. Postoperative pulmonary function tests showed increased values with a mean FEV_1 of 1.81 l, a mean FRC of 4.2 l, a mean MVV of 66% of predicted; mean PaO_2 increased to 11.09 kPa. Macroscopically, the surface of the bullae was smooth in all cases without any pleural retraction and no sign of suspicious lesions. All scars and areas of increased thickness of the wall were histologically classified as fibrosis. Microscopic foci of lung carcinoma were obtained in areas without any significant macroscopic alteration or scars. The lesions were composed of large atypical cells with prominent nucleoli and abundant clear cytoplasm.

Postoperative staging did not show the presence of lymph node involvement or distant metastases and the patients were classified as T1N0M0. The patients are alive and free of disease after 10, eight, seven, and five years, respectively.

Discussion

The increased incidence of lung cancer in patients with bullous emphysema may pose several problems regarding the timing and strategy of surgery. There are many reports in the literature regarding radiologically evident bronchogenic carcinoma presenting simultaneously with bullae or years after their surgical resection,[1–3 7–10] but we have found no other report concerning the detection of occult lung cancer associated with giant bullous emphysema. The presence of scars, the smoking habit of the patients, and air trapping within the bulla may contribute to the development of cancer if the enlarged air space is not removed.[4–6] Accurate preoperative imaging is necessary to detect any dubious area on the wall of the bulla or in the residual lung. Nevertheless, microscopic lesions can be detected only at pathological examination and even frozen sections may not be of help. In fact, in all our cases the foci of neoplastic cells were detected "by chance" on random biopsy specimens of macroscopically normal areas of the wall of the bulla. The lesions were some distance from the scars and thus we did not classify them as "scar carcinoma".

Any lung mass associated with bullae should be considered an indication for surgery. On the other hand, patients with giant bullous disease detected radiologically, without evidence of parenchymal lesions, require different considerations. These patients undergo surgery on the basis of the dimensions of the bulla, the degree of functional impairment, and the presence of complications.

For these reasons, a bulla should be completely excised rather than plicated or folded at its base to reinforce the suture line as has been proposed by others.[11] Similarly, the Monaldi procedure and its modifications[12] should be considered only in patients unfit for surgery. In all our patients the tumour was far away from the stapler line and thus the resection could be considered complete.

On the basis of our limited experience we believe that the incidence of occult lung cancer in this subset of patients may be underestimated. Surgical resection of emphysematous bullae should be as complete as possible and accurate histological examination of all resected material should be undertaken.

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