



# Pleural Plaques

Information for Health Care Professionals

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# Pleural Plaques

## Information for Health Care Professionals

### KEY POINTS

- Pleural plaques are discrete circumscribed areas of hyaline fibrosis of the parietal pleura and occasionally the visceral pleura.
- The cause of pleural plaques is exposure to asbestos fibres, most commonly in an occupational setting.
- Pleural plaques are benign and are the commonest manifestation of past exposure to asbestos.
- Plaques only indicate that there has been exposure to asbestos. The risk of other asbestos-related conditions is best quantified according to the latency period, duration of exposure, level of exposure and cumulative exposure.
- Pleural plaques are nearly always asymptomatic.
- In asymptomatic patients with pleural plaques, further investigations are not indicated and may be harmful.
- The knowledge that pleural plaques are there can engender anxiety.
- When talking to patients, it is important to be absolutely clear about the distinction between pleural plaques and other asbestos-related conditions.
- Patients should be given any information they want about the risks of serious lung disease as a result of their exposure to asbestos. This should include advice about warning symptoms such as progressive dyspnoea and persistent chest pain.
- As the law stands in England and Wales, individuals with pleural plaques are not compensated unless plaques cause symptoms. In Scotland, it may be still be possible for individuals to obtain compensation if a claim is made soon after diagnosis.

# Pathology

The pleura are membranes lining the thoracic cavity (parietal pleura) and covering the lungs (visceral pleura). The parietal pleura folds back on itself at the root of the lung to become the visceral pleura (Figure 1).

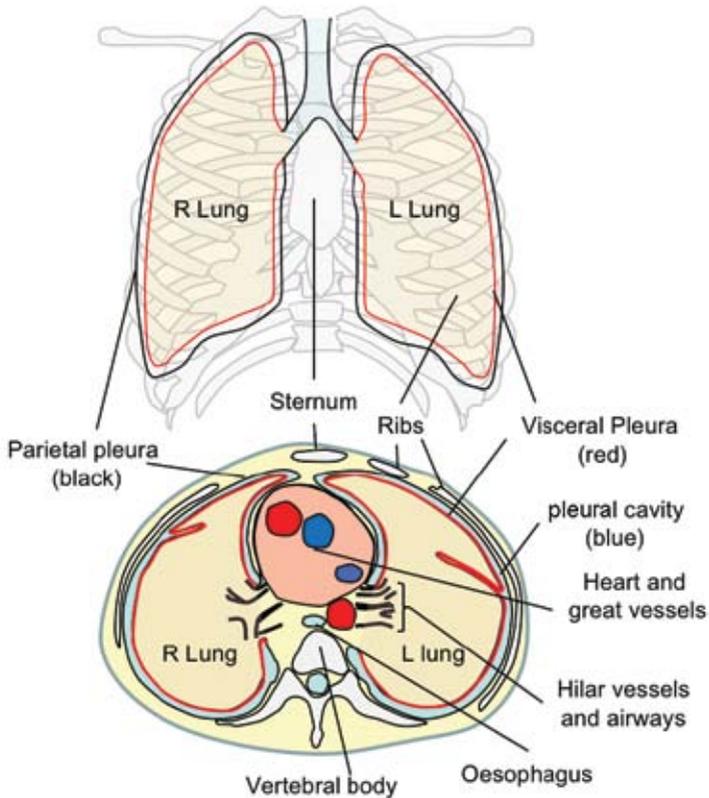


Figure 1: anatomy of the pleura a) frontal aspect; b) cross-section

These two pleural layers are normally in contact and exude a small amount of fluid. The space between the pleurae is the pleural cavity.

In health, the pleural cavity is only occupied by a small amount of pleural fluid (10–15ml). There are two pleural cavities, the right and the left. The pleura are made up of a single layer of mesothelial cells that covers an underlying layer of elastic tissue.

Pleural plaques are discrete circumscribed areas of hyaline fibrosis that are most commonly found on parietal pleura but also occasionally found on visceral pleura. They comprise dense conglomerations of collagen fibres arranged in a basket-weave pattern. Over time, usually many years, they often become partly calcified. They are benign and are not pre-malignant. The radiographic appearance is shown in Figure 2.

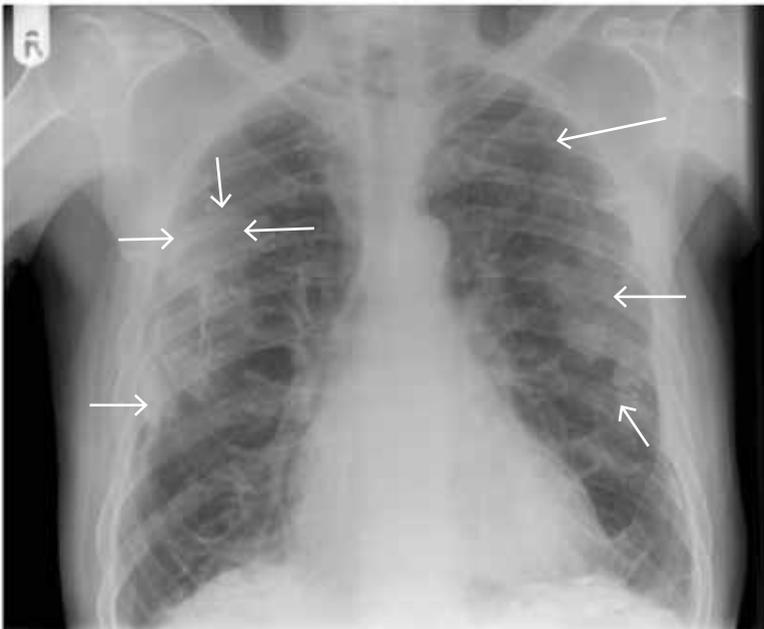


Figure 2: chest radiograph of bilateral calcified pleural plaques (arrows)

## Aetiology and prevalence

The cause of pleural plaques is exposure to asbestos fibres, most commonly in an occupational setting. The prevalence is most strongly related to the length of time since first exposure and when detected there is usually a latent period of 20–40 years. Prevalence is also statistically related to the duration of exposure, the level of exposure and the cumulative exposure.<sup>1–3</sup> Pleural calcification may also be seen in other conditions such as healed pleural tuberculosis and healed thoracic trauma, but these often have characteristics on imaging that distinguish them from asbestos-related pleural plaques.

Pleural plaques are the commonest physical manifestation of asbestos exposure. The detection of pleural plaques varies according to the imaging method used (computed tomography (CT) detects more plaques than chest X-ray); the time since first asbestos exposure (as plaques become calcified over time and are then more readily detectable); and the population studied (those with asbestos exposure have more plaques detected). Figure 3 shows the appearance of calcified pleural plaques on CT.

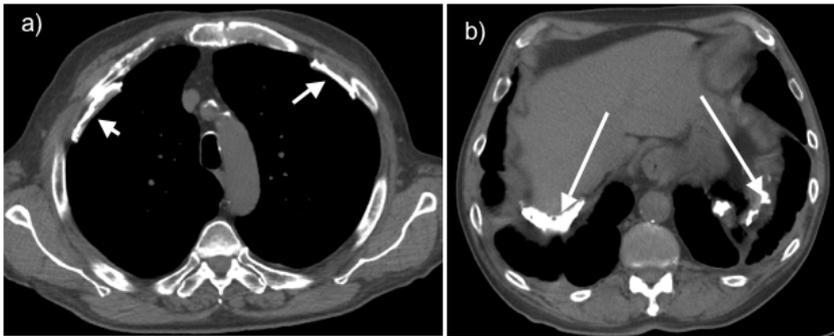


Figure 3: thoracic CT appearances of calcified pleural plaques a) on parietal pleura; b) on diaphragmatic pleura (arrows)

In two recent CT screening studies in France the prevalence in 5545 asbestos exposed workers was 15.9% and in a second study, 46.9% of 1011. For both studies the mean latency period was

around 40 years.<sup>1-2</sup> Other estimates indicate that between 5 and 15% of those with occupational exposure will have plaques after a latent period of 20 years, rising as the latent period increases.<sup>3-4</sup> Sophisticated imaging techniques, such as CT, are not indicated to screen for pleural plaques.

## Association with other asbestos-related conditions

Asbestos exposure is linked to a number of other conditions that may have serious implications on health. It is important not to confuse these conditions with pleural plaques.

### Other conditions caused by exposure to asbestos

- **Asbestosis** is a form of pulmonary fibrosis that is usually progressive. It results in severe respiratory disability and often premature death. It is linked to the cumulative exposure to asbestos and type of asbestos.
- **Bronchial carcinoma** is also linked with the cumulative exposure to asbestos but it is not clear whether a diagnosis of asbestosis is required before bronchial carcinoma can be attributed to asbestos exposure. The risk of bronchial carcinoma is increased in a multiplicative fashion by tobacco smoking.
- **Mesothelioma** is a malignancy of the pleura or peritoneum with a poor prognosis and with limited therapeutic possibilities. It is strongly associated with length of latency period but also with cumulative exposure.
- **Diffuse pleural thickening** is a progressive condition that affects larger confluent areas of pleura than pleural plaques. This condition sometimes causes respiratory disability.
- **Pleural effusion** may occur in asbestos-exposed individuals. This can cause dyspnoea and usually requires investigation to look for mesothelioma, bronchial carcinoma or other causes.

Plaques only indicate that there has been exposure to asbestos. The risk of other asbestos-related conditions is best quantified according to the latency period, duration of exposure, level of exposure and cumulative exposure.

## Physiological effects

Pleural plaques are nearly always asymptomatic although the knowledge that pleural plaques are there can engender anxiety that may produce symptoms that include dyspnoea and chest tightness. A grating sensation in the chest is described in less than 1%. There are no physical signs.

In some studies, subjects with pleural plaques have been shown to have a small but statistically significant reduction in lung volumes of around 5% compared with matched controls.<sup>5-6</sup> Other studies have not confirmed this after controlling for parenchymal changes representing fibrosis.<sup>7</sup> The fact that plaques are present on the parietal pleura means that they have little effect on lung expansion. The lung function changes (if any) are considered too small, in a legal sense, to attract compensation. Extensive and confluent plaques are uncommon but can result in a restrictive ventilatory defect that results in disability.<sup>8</sup>

## Psychological effects

Patients may be aware that they have been exposed to asbestos, but the finding of pleural plaques is evidence to them that the asbestos exposure has had a physical effect. This may increase the anxiety about the risk of other asbestos-related diseases. Patients may also misunderstand the term pleural plaque and may assume they have asbestosis. This requires careful input for the healthcare professional (see below).

## Counselling patients with pleural plaques

Patients may feel anxious about the diagnosis of pleural plaques and unclear what they are. It is therefore important at the outset to be absolutely clear about the distinction between pleural plaques and other asbestos-related conditions, particularly asbestosis that is often a misused term by patients (and some healthcare professionals). It is important to explain to patients with pleural plaques that they are at no more risk of developing serious lung disease than those individuals who have had the same exposure to asbestos. This requires a careful explanation that plaques are benign and their presence does not imply any extra susceptibility to other conditions over and above that resulting from asbestos exposure. Patients should be advised that further investigations such as repeat X-rays are not helpful in the absence of any symptoms and result in unnecessary exposure to harmful radiation. However, it is important to ensure patients are given any information they want about the risks of serious lung disease as a result of their exposure to asbestos. This should include advice about warning symptoms such as progressive dyspnoea and persistent chest pain. Patients should be given smoking cessation advice because of the association of asbestos exposure with bronchial carcinoma. Some patients may be sufficiently anxious about their plaques to warrant psychological intervention; however, most patients are reassured when they understand that plaques only indicate that there has been asbestos exposure and are not, in themselves, harmful.

## Referral criteria

Patients who have symptoms such as dyspnoea, chest pain, haemoptysis, persistent cough or who meet those criteria set out in the 2005 NICE guidelines on management of lung cancer.<sup>9</sup> should be referred to a consultant respiratory physician for further evaluation. Asymptomatic patients with pleural plaques do not require investigation.

## Legal aspects and compensation

There are four potential routes by which people with asbestos-related diseases can obtain compensation:

- by claiming Industrial Injuries Disablement Benefit;
- by filing a civil law claim for damages;
- by claiming a lump sum from the Department for Work and Pensions under the Pneumoconiosis Act of 1979;
- by claiming under the 2008 Diffuse Mesothelioma Scheme.

As the law stands in England and Wales, none of these routes are open to people with asymptomatic pleural plaques alone. A scheme has been introduced<sup>10</sup> to enable people to receive a special payment from the government of £5,000 if they had begun, but not resolved, a legal claim for compensation for pleural plaques at the time of a House of Lords ruling in relation to the civil law in October 2007. A telephone helpline has been set up for applications and enquiries from anyone who thinks they may be able to claim, and the number is 0300 303 8150. However, this scheme does not extend to diagnoses of pleural plaques since October 2007 or in the future. In Scotland, a civil law claim for damages may still be possible<sup>11</sup> and in Northern Ireland a consultation on draft legislation will close on 6 September 2010.<sup>12</sup>

An information leaflet for patients is available from the British Lung Foundation.

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BTS  
17 Doughty Street  
London WC1N 2PL  
**tel:** +44 20 7831 8778  
**fax:** +44 20 7831 8766  
**email:** [bts@brit-thoracic.org.uk](mailto:bts@brit-thoracic.org.uk)

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