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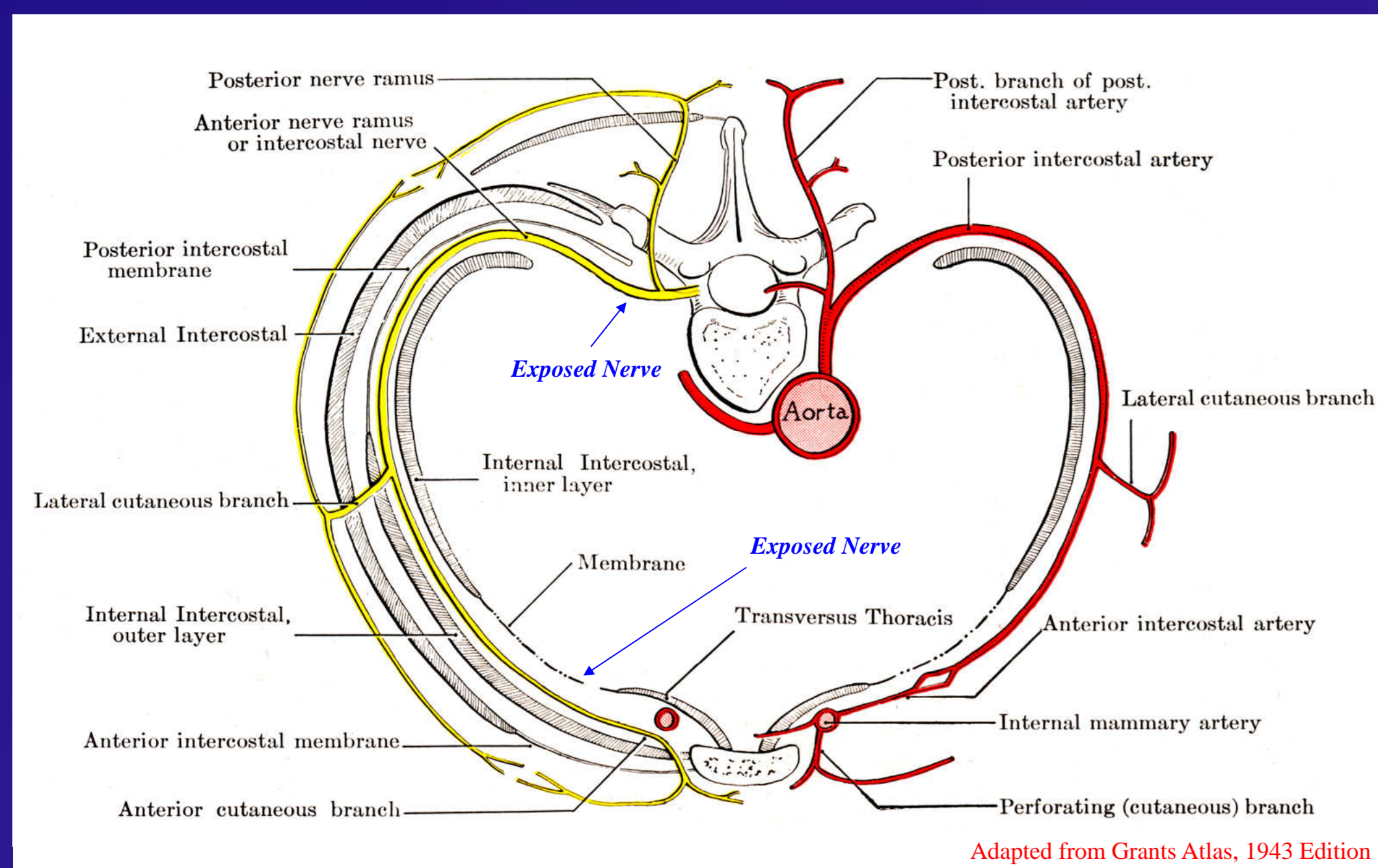
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Aim

This review was undertaken to ascertain the incidence of asbestos-related chest pain at presentation within two separate groups of patients referred with asbestos diseases. Group 1 were litigant referrals while Group 2 were clinical referrals. Factors including demographics, comorbidities, chest CT findings associated with chest pain were examined between the groups.

Figure 1: Cross section of chest indicating proposed pain from exposed nerves.



Background

For many years, chest pain has been a clinical problem commonly encountered by Australian respiratory and pain specialists managing patients with benign asbestos diseases. The intractable chest pain observed in a subgroup of asbestos disease patients is a significant clinical and legal issue rivalling dyspnoea and impaired lung function. The condition not only impacts on the patients but also on the loved ones supporting the sufferers.

Despite its significance, the problem has been poorly documented in both Australian and international medical literature. There are some articles which both recognise the entity of chest pain in benign asbestos pleural disease, however there is a relative paucity of detailed knowledge of this condition [1]. To exacerbate the situation further, there are still some thoracic physicians, palliative care physicians and pain specialists who deny its existence, despite the evidence. This lack of knowledge and acceptance of the condition often leads to incorrect diagnosis, no diagnosis at all and sometimes inappropriate investigations for the sufferers. This was exemplified in a recent review on asbestos disease where there was no mention of benign asbestos chest pain [2]. Further investigation and documentation is necessary to allow a better understanding and diagnosis of this condition particularly in the general practitioner and cardiologist communities.

The proposed cause of “plaque” pain is thought to be due to the irritation of exposed intercostals nerves (Fig. 1), by plaques (Fig. 2), folded atelectasis (Fig. 2) and/or pleural thickening (Fig.3).

Here we have extended on the work of Mukherjee and co-workers [1] through a retrospective clinical study of asbestos disease patients.

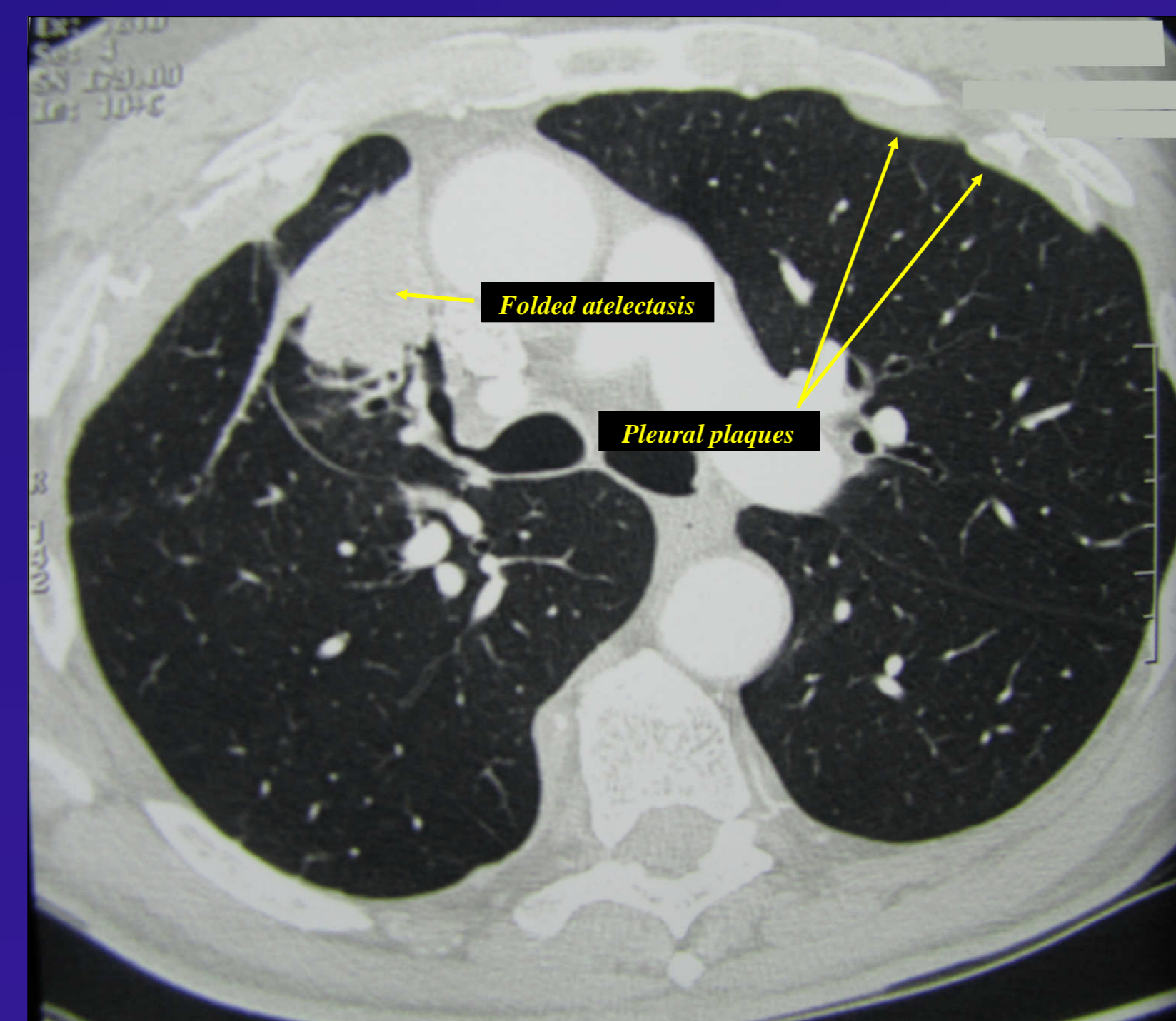


Figure 2: CT chest scan indicating pleural plaques and folded atelectasis.

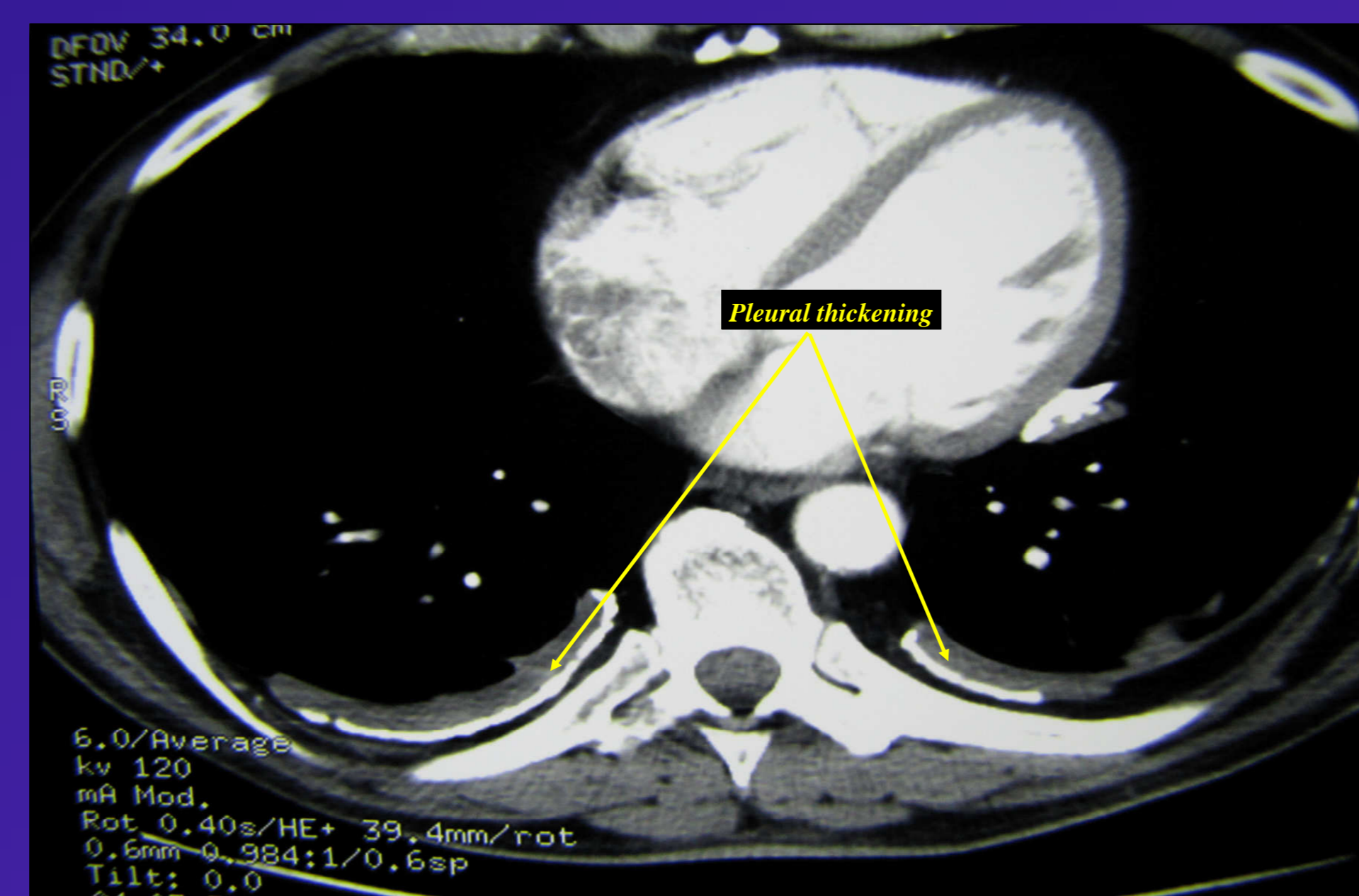


Figure 3: CT chest scan indicating pleural thickening.

Methods

Data Collection

Medical charts of patients presenting 1995-2008, audited for quality assurance, were chosen at random by data managers. Patients with mesothelioma, lung cancer and angina were excluded. Rigorous attempts had been taken by the authors to exclude other causes of chest pain.

Two groups of patients were studied. Group 1 (Litigants) comprised patients referred with asbestos diseases for medicolegal assessments while Group 2 (Clinical) had been referred by general practitioners for clinical assessment.

All patients had had a general and occupational history taken, a physical examination, lung function in a body plethysmograph with diffusing capacity and a high resolution CT chest with prone lung windows. Where appropriate, these tests included, stress echocardiography, coronary angiography, barium swallow with provocative posturing, upper endoscopy, CT scan and MRI of the thoracic spine, and radionuclide bone scanning. Particular care was taken to palpate the chest and to elicit localised bony or cartilaginous tenderness e.g. costosternal junction pain.

Statistical Analysis

Data was analysed with the assistance of a biostatistician using software package PASW 17 (SPSS Inc., Chicago, IL, U.S.A.). The tests used most frequently were Student's t-test, Chi-square and z-test for differences between proportions.

Results

There were 167 patients who were medicolegal referrals (Group 1 – Litigants) and 115 clinical referrals (Group 2 - Clinical).

Co-morbidities were broadly grouped as indicated (Table 1.). The proportion of co-morbidities was not significantly different in the two groups, although the proportion of patients with ischaemic heart disease was relatively high.

Chest Pain

Although the patients in the litigant group tended to have more severe disease, there was no difference in the proportion of subjects in the two groups with “asbestos-related chest pain” 46% (76/167) and 56% (64/115) respectively (Table 2.). The proportion with pain in Groups 1 and 2 respectively was as follows; pleural plaques (47% and 60%, P= 0.000), diffuse pleural thickening (51% and 67%, P= 0.000), folded atelectasis (71% and 83%, P= 0.151) and asbestosis (44% and 53%, P= 0.003).

CT Chest Scans

High resolution CT scans of the chest showed a higher proportion of litigants with more severe disease (Table 2) while the proportion with chest pain for each radiographic diagnosis is shown in Table 3. Of all those with folded atelectasis 17/23 (74%) had chest pain (P= 0.015). Of all patients with asbestosis, 60/131 (46%) had chest pain although many also had concurrent pleural disease.

Table 1: Comorbidities in Group 1 and 2

Comorbidities	Litigants Group 1 (n = 167)		Clinical Group 2 (n = 115)		Statistical Significance
	n	%	n	%	
None	28	17%	22	19%	N.S.
IHD/CVS	63	38%	44	38%	N.S.
Prior cancer	23	14%	16	14%	N.S.
COPD	65	39%	32	28%	N.S.
Chronic renal failure	3	2%	0	0%	N.S.
Obesity (BMI > 30Kg/m ²)	33	20%	22	19%	N.S.
CVA	8	5%	4	4%	N.S.
Diabetes	24	14%	13	11%	N.S.
Sleep apnoea	25	15%	36	31%	N.S.
Other	17	10%	9	8%	N.S.

Shows no significant difference in comorbidities between litigants and clinical referred patients.

Table 2: Proportion with chest pain by group.

CT Chest diagnosis	Litigants (Group 1)	Clinical (Group 2)	P value
Pleural plaques	47%	60%	0.000
Diffuse pleural thickening	51%	67%	0.000
Folded atelectasis	71%	83%	0.151
Asbestosis	44%	53%	0.003
Total	46%	56%	0.94

Chest pain was more common in clinical referred patients than litigants.

Table 3: High resolution CT chest findings by group

CT chest diagnosis	Litigants Group 1 (n=167)	Clinical Group 2 (n=115)	P value
Pleural plaques	89%	63%	0.000
Diffuse pleural thickening	76%	32%	0.000
Folded atelectasis	10%	5%	0.135
Asbestosis	61%	26%	0.000

Shows the litigants had more severe disease than the clinical referrals.

Discussion

This retrospective study reveals that chest pain appears common in two groups of patients with benign asbestos diseases, presenting over a thirteen year period. This retrospective study was done as a “snap-shot” of past clinical experience rather than a prospective study which may have resulted in a selection bias. Although the litigants had more severe asbestos-related diseases than the clinical group, they had no higher incidence of chest pain. The higher proportion of chest pain in those with folded atelectasis and diffuse pleural thickening is not surprising as these are related inflammatory processes emanating from the pleura and often causing entrapment of the adjacent lung. Pleural plaques were also associated with chest pain. The data in our study indicated that many patients suffered from this type of pain which was poorly recognised by the medical community and often inadequately treated. Self-medication with simple analgesics was common. Improved recognition of this entity is needed along with practical management guidelines for the general practitioner. Further studies are envisaged by the authors.

References

- [1] Mukherjee S, de Klerk N, Palmer LJ, Olsen NJ, Pang SC, Musk AW. Chest pain in asbestos-exposed individuals with benign pleural and parenchymal disease. Am J. Resp. Crit. Care Med. 2000; 162: 1807-1811.
- [2] Park E-K, Hannaford-Turner KM, Hyland RA, Johnson AR, Yates DH. Asbestos-related occupational lung diseases in NSW, Australia and potential exposure in the general population. Industrial Health 2008; 46:535-540.

Summary and Conclusions

- Pleural pain is very common
- The condition is under recognised by medical professionals
- It has a neuropathic element
- Therefore may be difficult to control
- Usually leads to chronic pain