A 74-year-old man presented with cough of 3 weeks' duration. Chest X-ray showed a large left-sided pleural effusion (figure 1) that was a lymphocytic exudate with normal adenosine deaminase level, and negative bacterial and mycobacterial cultures. Flexi-rigid pleuroscopy (LTF 160, Olympus, Japan) revealed candle-wax fibrotic parietal pleura (figure 2), which was sampled using the flexible forceps (FB-55CD-1, Olympus, Japan) with cusps measuring 2.4 mm when fully open, and a cryoprobe of 2.4 mm in diameter (20416-032, Erbokryo CA, Erbe, Germany). The cryoprobe was directed to the target area and a 4-second freeze time was applied. The pleuroscope and cryoprobe with the pleural specimen attached to the frozen tip were removed en bloc through the trocar. The tissue was retrieved by thawing in normal saline. Cryobiopsies revealed sarcomatoid malignant mesothelioma while those obtained with forceps were non-diagnostic (figure 3).

Diagnosis of mesothelioma can be challenging for early or sarcomatoid subtype as sampling site, technique and instrument can lead to false-negative histology, especially if biopsy samples are of inadequate depth. This arises from the need to fit the forceps through a small working channel of the pleuroscope, thereby limiting the size of the forceps and its mechanical strength in obtaining deep biopsies. Physicians advocate minithoracotomy, video-assisted thoracoscopic surgery (VATS) or insulated-tip knife to procure pleural specimens, which confer diagnostic accuracy ranging from 74–100%.1–3 Grossebner et al.1 demonstrated that VATS biopsy achieved 100% histology diagnosis but led to increased hospitalisation stay due to prolonged air leak. Kao et al.2 reported that thoracotomy was superior over VATS in achieving accurate subtype classification (83% vs 74%). Nonetheless, flexi-rigid pleuroscopy performed under local
anaesthesia remains an attractive diagnostic modality and two
small studies have demonstrated excellent safety in obtaining
pleural specimens using the flexible cryoprobe (table 1).4,5

Our report describes sarcomatoid malignant mesothelioma
diagnosed by pleuroscopic cryobiopsy where corresponding
specimens with standard forceps were negative. The cryobiopsies
were larger and of sufficient depth with better-preserved archi-
tecture compared with those obtained by the flexible forceps.
While cryobiopsy is not routinely performed during
pleuroscopy, this case highlights its potential role when smooth,
fibrotic pleura is encountered.

**Contributors** H-PC and PL were involved in the pleuroscopic biopsy and writing up
of the manuscript. M-FL was involved with the radiology and the writing up of the
manuscript. J-ES was involved in analysis of the histology and writing up of the
manuscript.

**Competing interests** None declared.

**Patient consent** Obtained.

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**Table 1** Comparison of studies looking at the use of thoracoscopic cryobiopsy of the pleura

<table>
<thead>
<tr>
<th></th>
<th>Thomas et al⁵</th>
<th>Rozman et al⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Gender (male/female)</td>
<td>21/1</td>
<td>12/3</td>
</tr>
<tr>
<td>Technique</td>
<td>2.4 mm cryoprobe applied to abnormal parietal pleura with 3 s freeze time</td>
<td>2.4 mm cryoprobe applied to abnormal parietal pleura with 3 s freeze time</td>
</tr>
<tr>
<td>Size (median, 25–75 IQR)</td>
<td>10, 7–15.8 mm</td>
<td>–</td>
</tr>
<tr>
<td>Crush artefacts</td>
<td>2/22 (9.1%)</td>
<td>18/42 specimens (42.9%)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>21/22 (95.5%)</td>
<td>14/15 (93.3%)</td>
</tr>
<tr>
<td>Malignancy</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Mesothelioma:</td>
<td></td>
<td>Adenocarcinoma:</td>
</tr>
<tr>
<td>11 ( epithelioid/not specified)</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Metastatic cancer:</td>
<td>1</td>
<td>Synovial sarcoma:</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Lymphoma:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Benign fibrinous pleuritis</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Non-specific</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Complications</td>
<td>5/22 (mild bleeding)</td>
<td>14/15 (mild bleeding)</td>
</tr>
</tbody>
</table>

REFERENCES


Use of cryobiopsy during pleuroscopy for diagnosis of sarcomatoid malignant mesothelioma
Hiang-Ping Chan, Mei-Fong Liew, Ju-Ee Seet and Pyng Lee

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