In summary, we have found a significant increase in MLH1 immunoreactivity in prostatic adenocarcinoma. The increased MLH1 expression in the precursor lesion HGPIN suggests a role of MLH1 in prostatic carcinogenesis. However, its expression may not be related to the aggressiveness of prostatic cancer, because the intensity of immunoreactivity is similar in both intermediate and high-grade prostatic adenocarcinoma. Lastly, we have demonstrated the feasibility of creating new cocktails containing antibodies specific for malignant (MLH1, AMACR) and benign (p63, 34bE12) prostatic epithelia.

Table 2. Proposed quadruple staining cocktail

<table>
<thead>
<tr>
<th></th>
<th>Nuclear</th>
<th>Cytoplasm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenocarcinoma</td>
<td>MLH1</td>
<td>AMACR</td>
</tr>
<tr>
<td>Benign glands</td>
<td>p63</td>
<td>34bE12</td>
</tr>
</tbody>
</table>

In summary, we have found a significant increase in MLH1 immunoreactivity in prostatic adenocarcinoma. The increased MLH1 expression in the precursor lesion HGPIN suggests a role of MLH1 in prostatic carcinogenesis. However, its expression may not be related to the aggressiveness of prostatic cancer, because the intensity of immunoreactivity is similar in both intermediate and high-grade prostatic adenocarcinoma. Lastly, we have demonstrated the feasibility of creating new cocktails containing antibodies specific for malignant (MLH1, AMACR) and benign (34bE12, p63) prostatic epithelia.

S-T Chuang1
B Adley1
M Han2
F Lin3
X J Yang1,2
W J Catalona2

Departments of 1Pathology and 2Urology, Northwestern University Feinberg School of Medicine, Chicago, IL, 3Department of Pathology, Geisinger Medical Center, Danville, PA, USA


Nodular histiocytic/mesothelial hyperplasia on transthoracic biopsy: another source of potential pitfall in a lesion frequently present in spontaneous pneumothorax

DOI: 10.1111/j.1365-2559.2007.02901.x

Sir: ‘Nodular mesothelial hyperplasia’, ‘lesions resembling histiocytoid (epithelioid) haemangiomata’, ‘mesothelial/monocytic incidental cardiac excrescences (MICE)’ and ‘nodular histiocytic/mesothelial hyperplasia (NHMH)’ are the designations used to describe an incidentally detected tissue consisting of small, discrete, nodular aggregates of numerous histiocytes with a minor component of closely intermingled mesothelial cells singly dispersed or disposed in clusters and/or strips.1–7 These completely benign lesions are generally found during cardiac surgical procedures2–4 and in hernial sacs,1,7 but also on transbronchial biopsies,5,7 pulmonary resections for pneumothorax or pelvic surgery.7

We describe a case of NHMH detected on transthoracic biopsy performed for a peripheral lung nodule. In this hitherto unreported setting, NHMH had some peculiar features that represent further potential pitfalls and should be highlighted to prevent misdiagnosis. In addition, we point out the frequent finding of NHMH in pneumothorax.

A 79-year-old man, an ex-smoker and retired building worker, presented in February 2007 with recurrent dry cough associated with exertional dyspnoea. The patient had a past medical history of chronic cardiac ischaemic, for which he had undergone a triple aorto-coronary by-pass 2 years previously. Standard
chest x-rays showed an irregular opacity of the left lower lobe. Chest computed tomography (CT) confirmed the presence of a 50-mm pleural-based mass in the left lower lobe involving the descending aorta and associated with concomitant pleural effusion and subcarinal lymph node enlargement. Since standard bronchoscopy was negative, a CT-guided transthoracic biopsy of the pulmonary mass using a 19-G needle was performed (Figure 1A). A 2-mm fragment of brownish tissue was obtained for histological examination (Figure 1B). It consisted of blood clot and a discrete nodular aggregate of cohesive polygonal round-to-oval

![Figure 1. Chest computed tomography (CT) scan showing a left lower-lobe pleural-based mass with concomitant pleural effusion (A). During CT-guided transthoracic biopsy a discrete nodular fragment (B) consisting of a dense aggregate of polygonal cells with grooved nuclei (C) was obtained. The great majority of cells are CD68+ (D), whereas scattered cells react with an antibody to calretinin (D). At the periphery, dispersed thyroid transcription factor-1-positive (F) cells can be seen. Subsequent transbronchial biopsy revealed a poorly differentiated squamous cell carcinoma (G).](image)
cells with ample pink cytoplasm and nuclei with prominent grooves, occasional nucleoli and moderate pleomorphism with a few mitotic figures, never atypical (Figure 1C). Immunohistochemically, most of the cells exhibited histiocytic differentiation immunoreactive for CD68 (PGM-1) (Figure 1D), whereas scattered poorly distinguishable cells were immunopositive for pan-cytokeratin (clone MNF-116) and calretinin (Figure 1E), thus appearing as mesothelial elements. No immunoreactivity was noted for S100, CD1a, p63, leucocyte common antigen or CD138. An insignificant MIB-1 labelling index was also observed.

This nodular mixture of histiocytes and mesothelial cells had the classic characteristics of NHMH. However, immunohistochemistry for cytokeratin and thyroid transcription factor (TTF)-1 (Figure 1F) revealed a few dispersed cells with moderate cytoplasm and small distinct nucleoli at the periphery of the nodule. These slightly atypical elements appeared suspicious for adenocarcinoma. However, in light of the inconclusive findings, a transbronchial biopsy was performed and revealed a poorly differentiated non-small-cell carcinoma (Figure 1G). Tumour cells were intensely immunoreactive with p63, but were negative for TTF-1, CD56/CD168/CD1a/CD138. An insignificant MIB-1 labelling index was also observed.

In conclusion, NHMH is a frequent occurrence in pleura-damaging processes (such as pneumothorax), and knowledge of such an occurrence and the use of appropriate immunohistochemistry are the main clues to the correct diagnosis. MIB-1, demonstrating very low proliferative activity, may be a useful adjunct to the diagnosis.

Sezione di Anatomia Patologica, Azienda Policlinico, Modena, 1Unità Operativa di Anatomia Patologica, Ospedale S. Maria Nuova, Reggio Emilia and 2Dipartimento di Diagnostica per Immagini and 3Pneumologia, Ospedale Civile, Mirandola, Italy