Numerous dots indicate the existence of in situ hybridisation in the lung tissue of a patient with necrotising sarcoid granulomatosis.

**Figure 1** (A) Open lung biopsy specimen revealing necrotising granulomas (arrow) with giant cells aggregated in masses and distributed in a lymphangitic pattern. (B) Granulomatous vasculitis was also present: granulomas infiltrated the vascular walls and almost completely occluded the lumens aggregated in masses and distributed in a lymphangitic pattern. (C) Open lung biopsy specimen revealing necrotising granulomas (arrow) with giant cells aggregated in masses and distributed in a lymphangitic pattern.

The patient was diagnosed with NSG. *P. acnes* DNA was detected in abundant amounts in the granulomas by in situ hybridisation (fig 1C).

This is the first report of NSG with *P. acnes* DNA found in the granulomas of lung specimens. This may indicate an aetiological link between NSG and *P. acnes*, and it also suggests that NSG is an atypical sarcoidosis with a common aetiology. The clinical and pathological differences between these diseases could be explained by variability in the host response to *P. acnes* or the histological location of *P. acnes*, although further study would be necessary to arrive at more definite conclusions.

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**REFERENCES**


Symptoms limiting activity in cancer patients with breathlessness on exertion: ask about muscle fatigue

Rehabilitation is an integral part of cancer care and aims to maximise the functional
ability and independence of patients, whatever the stage of their disease. To help achieve this, there is a need to identify which (if any) symptoms limit the patient’s ability to undertake activities of daily living. Patients with cancer commonly report breathlessness on exertion, and practitioners may assume that the breathlessness is the limiting symptom and may not enquire about peripheral muscle fatigue, even though this is known to contribute to exercise limitation in patients with cardiopulmonary disease and healthy volunteers.

We have begun to explore whether breathlessness and peripheral muscle fatigue limit activities of daily living in patients with cancer who report breathlessness on exertion. Ethical approval was received from Nottingham City Hospital ethics committee. Sixty-two patients (37 men) admitted to a specialist palliative care unit for symptom control or respite were included in the study. Their median age was 70 years (range 28–120). They had a variety of cancers (22 thoracic cancer. None had received surgery, lymphoma, 4 other) with one-third having either primary (14 non-small cell lung cancer, 3 mesothelioma, 1 small cell lung cancer) or secondary (2 colorectal, 1 renal) thoracic cancer. None had received surgery, chemotherapy or radiotherapy within the last month or were limited by pain.

Participants were asked to identify which one of the six statements (scored between 0 and 5) in the Dyspnoea Exertion Scale (DES) best described their experience of breathlessness. The DES is a modified version of the Medical Research Council Dyspnoea Scale which better discriminates patients breathless at lower levels of activity.

They also indicated the limiting symptom for various activities of daily living which they undertook independently: breathlessness alone, limb muscle fatigue alone, or breathlessness and limb muscle fatigue equally.

All patients scored between 2 and 4 on the DES scale. The results suggest that, in patients with cancer experiencing breathlessness at various levels of exertion, muscle fatigue is also an important limiting symptom (table 1).

Our findings are consistent with those in other patient groups such as patients with chronic obstructive pulmonary disease or those with cardiac failure undertaking lower limb exercise, and with the importance given to limb muscle exercise in rehabilitation programmes. It may be most appropriate to examine whether a similar rehabilitative approach offered to patients with cancer soon after diagnosis could help those undergoing potentially curative treatment to recover more quickly, or for those with incurable disease to remain as independent as possible for as long as possible. A more detailed and prospective evaluation of which symptoms limit activity is warranted, and we are currently undertaking this in patients with lung cancer carrying out a walking exercise test.

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Competing interests: None.

References


<table>
<thead>
<tr>
<th>Table 1</th>
<th>Symptoms limiting activities of daily living in 62 patients with cancer and breathlessness on exertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>DES score 2 Walking &gt;100 yards on the level at own pace (n = 21)</td>
</tr>
<tr>
<td></td>
<td>Symptom(s) limiting the activity</td>
</tr>
<tr>
<td>Walking/moving</td>
<td>Breathlessness</td>
</tr>
<tr>
<td>Washing</td>
<td>6</td>
</tr>
<tr>
<td>Bathing/showering</td>
<td>1</td>
</tr>
<tr>
<td>Dressing</td>
<td>1</td>
</tr>
<tr>
<td>Combing hair</td>
<td>1</td>
</tr>
<tr>
<td>Making a drink/light cooking</td>
<td>0</td>
</tr>
<tr>
<td>Dusting/light cleaning</td>
<td>1</td>
</tr>
<tr>
<td>Vacuum cleaning/brushing floors</td>
<td>2</td>
</tr>
<tr>
<td>Shopping</td>
<td>1</td>
</tr>
</tbody>
</table>

Patients were categorised using the Dyspnoea Exertion Scale (DES) according to the level of exertion at which breathlessness occurs. Within each category, the total number of responses for each activity reflects the number of patients who undertake that activity independently.