Malignant Lymphomas

**Positron emission tomography with [18F] 2-fluoro-D-2-deoxyglucose in primary cutaneous T-cell lymphomas**

Whole body positron emission tomography using 18-2-fluoro-2-deoxy-glucose ([18F-FDG-PET]) was performed in 13 consecutive patients with histologically verified cutaneous T-cell lymphomas (CTCL). None of the patients in stage Ia had a positive scan, whereas all patients with stage IV disease did so; [18F-FDG-PET] might add valuable clinical information in this latter context.

**Table 1. Characteristics of patients with primary CTCL at the time of [18F-FDG-PET] scan.**

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Sex/ Age (yr)</th>
<th>Histology</th>
<th>Clinical signs/ Location</th>
<th>Stage</th>
<th>PET result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M/44</td>
<td>MF</td>
<td>Patch-plaque/ groin, lower back</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>2</td>
<td>F/80</td>
<td>Sézary syndrome - *large cell peripheral T-cell lymphoma</td>
<td>Erythroderma; axillary lymph node/ generalized</td>
<td>IVa</td>
<td>positive</td>
<td>dead</td>
</tr>
<tr>
<td>3</td>
<td>F/85</td>
<td>CD30+ T-cell lymphoma</td>
<td>Central necrotic papules/ generalized</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>4</td>
<td>F/68</td>
<td>MF</td>
<td>Patch-plaque/ lower back</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>5</td>
<td>M/63</td>
<td>MF</td>
<td>Plaques, tumors; axillary, inguinal lymph nodes; bone marrow; peripheral blood/groins, axilla, lower back</td>
<td>IVb</td>
<td>positive</td>
<td>alive</td>
</tr>
<tr>
<td>6</td>
<td>F/87</td>
<td>*large cell peripheral T-cell lymphoma</td>
<td>Plaques, tumors; axillary, inguinal lymph nodes/ generalized</td>
<td>IVa</td>
<td>positive</td>
<td>dead</td>
</tr>
<tr>
<td>7</td>
<td>F/44</td>
<td>MF</td>
<td>Patch-plaque trunk</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>8</td>
<td>F/77</td>
<td>MF</td>
<td>Patch-plaque back</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>9</td>
<td>F/63</td>
<td>*large cell peripheral T-cell lymphoma</td>
<td>Plaques, tumors; muscle involvement left thigh/generalized</td>
<td>IVb</td>
<td>positive</td>
<td>dead</td>
</tr>
<tr>
<td>10</td>
<td>F/46</td>
<td>MF</td>
<td>Patch-plaque back</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
<tr>
<td>11</td>
<td>M/55</td>
<td>MF</td>
<td>Patch-plaque generalized</td>
<td>Ia</td>
<td>positive (HD)</td>
<td>alive</td>
</tr>
<tr>
<td>12</td>
<td>M/61</td>
<td>MF</td>
<td>Patch-plaque back</td>
<td>Ia</td>
<td>positive (lung cancer)</td>
<td>alive</td>
</tr>
<tr>
<td>13</td>
<td>F/38</td>
<td>CD30+ T-cell lymphoma</td>
<td>Patch-plaque lower back, lower extremity</td>
<td>Ia</td>
<td>negative</td>
<td>alive</td>
</tr>
</tbody>
</table>

*Mycosis fungoides; *transformation in the course of the disease, †at the time of imaging. The patients had a performance status < 2 according to WHO criteria.

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of the lung in one and mediastinal Hodgkin's lymphoma in PET scan led to the detection of a squamous cell carcinoma course of disease and is associated with a poor outcome.9,10 Aggressive T-cell lymphoma may also occur during the

By contrast, 18F-FDG uptake, in histologically verified sites PET does not appear to be useful for staging in such patients.

The negative results in all 9 cases with stage la disease are not readily explainable by recent concepts. One might speculate that the biology of MF stage la would per se imply a low glucose metabolism in the skin lesions, resulting in negative scan results. Recent data in other indolent lymphomas of B-cell lineage, however, show positive 18F-FDG uptake in spite of low proliferation of tumor cells.3

Based on our results, we do not recommend the use of 18F-FDG-PET for routine staging of patients with CTCL. In patients with advanced disease, 18F-FDG-PET might add valuable clinical information and assist in locating sites for potential biopsy, to facilitate planning of therapy and follow-up.

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Key words: cutaneous lymphoma, mycosis fungoides,

18F –FDG-PET.

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References


116 haematologica 2004; 89(1):January 2004

Figure 1. Coronal F18-FDG-PET image in a 62-year old female with MF which transformed into large cell peripheral T-cell lymphoma in the foci of 18F-FDG uptake. These findings suggest that a positive 18F-FDG-PET scan heralds transformation to a more aggressive type of lymphoma and might thus provide clinically relevant information for the management of patients with CTCL.

Nevertheless, 18F-FDG-PET did not provide identify all sites of involvement. Three patients had transformation to a large cell images were reconstructed using previously published standard methods.2 Of the 13 patients, 9 patients had stage Ia (7 MF patients, 2 with CD30+ T-cell lymphoma) and 4 patients had stage IV (2 patients IVa and 2 IVb) (Table 1).

None of the 9 patients in stage Ia had a positive 18F-FDG-PET scan at the sites of CTCL, irrespective of CD30 expression on tumor cells. In 2 of these patients, positive 18F-FDG-PET scan led to the detection of a squamous cell carcinoma of the lung in one and mediastinal Hodgkin's lymphoma in the other patient.

The 18F-FDG-PET scan was positive in all 4 patients with stage IV disease. In 1 patient uptake correlated well with two cutaneous localizations and axillary lymph nodes (Table 1, patient #5), but no tracer accumulation was seen in the bone marrow despite lymphomatous involvement. In 3 patients, subsequent transformation to a large cell peripheral T-cell lymphoma at the sites 18F-FDG accumulation had occurred. One female patient had a positive 18F-FDG-PET scan in axillary lymph nodes (Table 1, patient #2), another female patient, in the left thigh, corresponding to muscle involvement (Table 1, patient #9) (Figure 1). Skin lesions, however, were not visualized in either case. The last patient, showed focal accumulation both in involved lymph nodes and in skin lesions (Table 1, patient #6). The clinical course of MF is usually indolent, but is characterized by a high rate of recurrences following treatment.5 Transformation to an aggressive T-cell lymphoma may also occur during the course of disease and is associated with a poor outcome.9,10 As the prognosis of MF is also based on the extent of disease at presentation,7 staging is as important as consequent follow-up.

Seventy percent of our 13 patients were classified as having stage Ia disease and, according to our results, 18F-FDG-PET does not appear to be useful for staging in such patients. By contrast, 18F-FDG uptake, in histologically verified sites of disease was seen in all patients with stage IV disease. Nevertheless, 18F-FDG-PET did not provide identify all sites involved. Three patients had transformation to a large cell peripheral T-cell lymphoma in the foci of 18F-FDG uptake. These findings suggest that a positive 18F-FDG-PET scan heralds transformation to a more aggressive type of lymphoma and might thus provide clinically relevant information for the management of patients with CTCL.

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References


