A quantitative study of eosinophil polymorphonuclear leucocytes in granulocytic sarcoma (chloroma)

Granulocytic sarcoma or chloroma may precede the haematological or clinical diagnosis of myeloid leukaemia. It is often difficult to diagnose histologically as the tumour cells are frequently undistinctive. Traditionally, the presence of eosinophil polymorphonuclear leucocytes has been a useful diagnostic pointer,\(^1,2\) but Whitcomb et al recently described the case of a tumour initially diagnosed as granulocytic sarcoma on the basis of its high eosinophil content which subsequently proved to be a T cell non-Hodgkin's lymphoma.\(^3\) The polymorphonuclear leucocyte cell content and frequent eosinophils seen in T cell non-Hodgkin's lymphoma may be a ready source of diagnostic confusion. To obtain objective data on numbers of eosinophil polymorphonuclear leucocytes in granulocytic sarcoma we examined 10 cases of granulocytic sarcoma which had previously been fully characterised clinicopathologically and by means of granulocyte markers.\(^4\)

Routinely processed sections 3\(\mu\)m thick which had been fixed in formalin and embedded in paraffin wax were used; these were stained by the vital new red (chlorazol fast pink BK) method.\(^5\) This is highly selective for eosinophil polymorphonuclear leucocytes, and where present their granules stained an intense red on a pale blue—mauve background. Counting of eosinophil polymorphonuclear leucocytes was performed independently by the authors using an eyepiece graticule; 100 consecutive high power fields were studied at \(\times 400\) magnification. The degree of differentiation of the specimens was also assessed by virtue of their content of recognisable granulocytic cells on haematoxylin and eosin or Giemsa staining.

The numbers of eosinophil polymorphonuclear leucocytes varied considerably from specimen to specimen, ranging from 0 per 100 high power fields to 247 per 100 high power fields (table). This was in the face of high interobserver consistency. The results show that even in a small series of cases of granulocytic sarcoma there is considerable variation in the number of eosinophil polymorphonuclear leucocytes. It is of interest that of the two cases where there was more than one biopsy specimen, one showed great variation between the three specimens taken, whereas counts for the specimens taken in the other case were closely correlated.

In a study of 61 cases of granulocytic sarcoma Neimann et al found that 49% were blastic with no evidence of eosinophil differentiation, the remainder being "well" or "poorly" differentiated with "numerous" or "occasional" eosinophil polymorphonuclear leucocytes, respectively.\(^2\) Our results agree with his findings in that about half of our cases were devoid or virtually devoid of eosinophil polymorphonuclear leucocytes, however, unlike him we did not find any correlation between the numbers of eosinophil polymorphonuclear leucocytes and the degree of differentiation of the neoplasms. It has been considered that eosinophilic differentiation is the single most useful histological feature of granulocytic sarcoma; it is uncertain whether the eosinophil polymorphonuclear leucocytes seen in granulocytic sarcoma are an intrinsic part of the neoplasms or have moved into the tumour from the blood stream. Our results, together with the case of T cell non-Hodgkin's lymphoma misdiagnosed as granulocytic sarcoma,\(^2\) suggest that distinguishing T cell non-Hodgkin's lymphoma, which may often contain many eosinophil polymorphonuclear leucocytes,\(^6,7\) from granulocytic sarcoma may be a recurrent problem. We believe that contrary to previous reports the presence of many eosinophil polymorphonuclear leucocytes is not a reliable guide to the diagnosis of granulocytic sarcoma.

### Table Numbers of eosinophil polymorphonuclear leucocytes in the specimens of granulocytic sarcoma

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Age</th>
<th>Site</th>
<th>No of eosinophil polymorphonuclear leucocytes</th>
<th>No of eosinophil polymorphonuclear leucocytes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>high power fields (counted by SM)</td>
<td>high power fields (counted by JC)</td>
</tr>
<tr>
<td>1</td>
<td>F</td>
<td>37</td>
<td>Nasal space</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>56</td>
<td>Breast</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>26</td>
<td>Retroperitoneum</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>26</td>
<td>Inferior turbinate</td>
<td>237</td>
<td>251</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>44</td>
<td>Nasal/ethmoid</td>
<td>93</td>
<td>41</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>75</td>
<td>Orbit/ethmoid</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>39</td>
<td>Sphenoid sinuses</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>


### Acute anaemia and aplastic crisis without haemolysis in human parvovirus infection

Human parvovirus infection (HPV) causes erythema infectiosum\(^1\) and aplastic crisis in chronic haemolytic anaemia.\(^2\) We report a case of aplastic crisis in an HPV infection without underlying haemolytic anaemia.

### Case report

A child aged 12 years was brought to hospital with a six day history of abdominal pain, vomiting, and headache. On admission he had a fever of 40°C, pallor, cervical lymph nodes, and absence of erythema and of splenomegaly but was not very ill. Blood count was as follows: haemoglobin concentration 4-7 g/dl, reticulocyte count less than 5 \(\times 10^9/\)l, platelet count 30 \(\times 10^9/\)l, white cell count 2-6 \(\times 10^9/\)l. His serum bilirubin concentration was normal (8 \(\mu\)mol/l), and a direct Coombs' test was negative. Bone mar-

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### References

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