Prostatic infiltration in chronic lymphatic leukaemia

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SUMMARY Forty six men with chronic lymphatic leukaemia (CLL) were studied for up to seven years. Six patients required surgery for prostatic outlet obstruction. Histological examination of the prostatic chippings showed variable degrees of infiltration with small mature lymphocytes in all six patients, suggestive of a leukaemic origin for the cells. Patients with chronic lymphatic leukaemia who undergo prostatectomy may have a higher incidence of leukaemic infiltration than has been previously recognised.

Chronic lymphatic leukaemia (CLL) is recognised as a rare cause of acute urinary retention. About 60 cases of leukaemic infiltration of the prostate have been reported,1 and most of these were in patients with chronic lymphatic leukaemia, although precise information on the type of leukaemia is not available in some of the earlier reports.2

Butler and O'Flynn3 reviewed 4863 consecutive prostatectomies over 15 years. There were 12 patients with chronic lymphatic leukaemia, of whom six were reported to have had prostatic infiltration, and in two cases the diagnosis of chronic lymphatic leukaemia was suggested by histological examination of the prostate. The authors noted that the clinical features of prostatic obstruction in these patients were indistinguishable from those due to simple benign prostatic hypertrophy. Their figures may not, however, reflect the incidence of prostatic infiltration in chronic lymphatic leukaemia as their patients were selected by virtue of having prostatic outlet obstruction.

A review of 495 necropsies on leukaemic patients4 included 48 patients with chronic lymphatic leukaemia. More than 60% of these (both male and female) had lymphoid infiltrates in liver, spleen, lymph nodes and kidneys. In contrast, up to 20% had prostatic infiltrates.

Case reports

We followed up a group of 46 men with chronic lymphatic leukaemia over a period extending up to seven years. Six of them required surgery for prostatic outlet obstruction. Table 1 summarises their clinical details.

All patients had peripheral blood smears and marrow aspirates consistent with chronic lymphatic leukaemia. All showed immunoglobulin light chain restriction on immunocytochemistry, and rosetting with mouse erythrocytes, enhanced by treatment with neuraminidase of the lymphocytes.

All patients underwent transurethral prostatectomy (TURP) uneventfully and were free from postoperative complications. Only case three had to be recatheterised because of a urinary tract infection that eventually responded to antibiotics. All six patients left hospital with good urinary function.

Histological examination of the prostatic chippings showed benign prostatic hypertrophy and variable degrees of infiltration with small mature lymphocytes in all six patients. (figs 1 and 2).

Table 1 Summary of clinical details

<table>
<thead>
<tr>
<th>Case No</th>
<th>Age at diagnosis</th>
<th>Year of and reason for presentation</th>
<th>Subsequent clinical course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>79</td>
<td>1978 Acute urinary retention</td>
<td>TURP 1978 No further urinary symptoms; died 1982</td>
</tr>
<tr>
<td>2</td>
<td>78</td>
<td>1985 Chronic prostatic obstruction</td>
<td>TURP 1985 Asymptomatic</td>
</tr>
<tr>
<td>3</td>
<td>77</td>
<td>1980 Chest infection</td>
<td>TURP 1981 Acute urinary retention following blood transfusion; died 1982</td>
</tr>
<tr>
<td>4</td>
<td>72</td>
<td>1982 Acute urinary retention</td>
<td>TURP 1982 Asymptomatic</td>
</tr>
<tr>
<td>5</td>
<td>75</td>
<td>1983 Acute epididymitis + chronic prostatism</td>
<td>TURP 1983 Asymptomatic</td>
</tr>
<tr>
<td>6</td>
<td>65</td>
<td>1981 Incidental lymphocytosis</td>
<td>TURP 1985 Acute prostatitis now asymptomatic</td>
</tr>
</tbody>
</table>

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Fig 1  Lymphocytic infiltrate in case 5.

Fig 2  High power view from same patient.
Table 2  Results at time of surgery

<table>
<thead>
<tr>
<th>Case No</th>
<th>Haemoglobin (g/dl)</th>
<th>White cell count (10⁶/l)</th>
<th>Lymphocytes (10⁶/l)</th>
<th>Platelets (10⁹/l)</th>
<th>Clinical stage</th>
<th>Lymphocytic infiltrate in prostate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14.9</td>
<td>25.4</td>
<td>22.6</td>
<td>242</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>13.2</td>
<td>11.0</td>
<td>7.3</td>
<td>105</td>
<td>C</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>11.1</td>
<td>172.0</td>
<td>154.8</td>
<td>78</td>
<td>C</td>
<td>+ +</td>
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<tr>
<td>4</td>
<td>14.0</td>
<td>24.2</td>
<td>19.4</td>
<td>183</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
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<td>11.4</td>
<td>273</td>
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<tr>
<td>6</td>
<td>10.1</td>
<td>15.6</td>
<td>13.0</td>
<td>166</td>
<td>C</td>
<td>+ + +</td>
</tr>
</tbody>
</table>

+, mild; + +, moderate; + + +, severe.

The presence of a monomorphic infiltrate of small mature lymphocytes surrounding the glands and extending into the stroma plus the absence of the other cells normally found in an inflammatory process, suggest a leukaemic origin.

The sections were examined by one of us (MM) without prior knowledge of the patients' clinical condition and the degree of lymphocytic infiltration assessed. (table 2).

Discussion

Benign prostatic hypertrophy can be identified in almost all men above the age of 40; and it will cause symptoms requiring prostatic surgery in as many as 10% of those surviving to the age of 80. As chronic lymphatic leukaemia is predominantly a disease of the elderly, in whom there is likely to be a high incidence of benign prostatic hypertrophy, it is difficult to assess the importance of a leukaemic infiltration in the pathogenesis of urinary obstruction in these cases.

Dajani and Burke suggested that the leukaemic infiltrate may be a precipitating cause of acute urinary retention—but only in the presence of other factors such as benign prostatic hypertrophy. There is one report of prostatic obstruction without benign prostatic hypertrophy in a 40 year old man with chronic lymphatic leukaemia, but in the absence of currently used cell marker studies it is possible that this patient had a leukaemic lymphoma rather than chronic lymphatic leukaemia.

All six of our patients (13% of the men with chronic lymphatic leukaemia) undergoing surgery had prostatic infiltration, suggesting either that the incidence is greater than previously recognised or that the leukaemic infiltrate had an important role in precipitating the symptoms of urinary obstruction.

Four of our six patients presented with urinary problems before the diagnosis of chronic lymphatic leukaemia was known; three of them (cases 1, 4, and 5) were stage A. Case 2 had advanced chronic lymphatic leukaemia (stage C) at the time of surgery, but his first symptoms of prostatism had occurred six years previously at a stage when he was probably already leukaemic. The two patients who developed urinary obstruction while under our care both had stage C disease and had very dense lymphocytic infiltration in their prostatic chippings.

Even if it is accepted that a leukaemic infiltrate in the prostate can cause urinary obstruction, however, our patients all had coexisting benign prostatic hypertrophy, and it seems likely that both disease processes contributed to the problem.

Earlier reports have stressed the potential hazards of surgery in leukaemic patients but fail to differentiate patients with chronic lymphatic leukaemia from those with more aggressive leukaemias. Fishman and Taylor quoted an overall operative mortality of 44% and suggested prostatic radiotherapy as an alternative. The 12 patients with chronic lymphatic leukaemia, however, reported by Butler and O'Flynn and the 24 similar patients reviewed by Dajani and Burke had few operative or postoperative problems which agrees with our experience.

There are reports of three patients with chronic lymphatic leukaemia treated by radiotherapy alone. One of these required an indwelling catheter for more than one month during which antibiotics for urinary infections were given, but the other two had good responses within a few days. One of these subsequently required a second course of prostatic radiotherapy two and a half years later.

Merimsky et al recommended performing a prostatic needle biopsy in all patients with leukaemia or lymphoma being considered for prostatic surgery and treating those with positive biopsy specimens by radiotherapy alone. It seems likely, however, that the patchy nature of the infiltrate would result in a high number of false negative results.

We would also argue that patients with chronic lymphatic leukaemia should be treated as a separate group because they tend to be elderly and are therefore likely to have benign prostatic hypertrophy, which may be the major factor responsible for their prostatic outlet obstruction; this is unlikely to respond to radiotherapy, but surgery can be safely undertaken in most cases with good results.

Patients with chronic lymphatic leukaemia undergoing prostatectomy may have a higher incidence of
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leukaemic infiltration than previously recognised. Transurethral prostatectomy can be safely undertaken even in cases with advanced chronic lymphatic leukaemia, although platelet and red cell transfusional support may be required as well as broad spectrum antibiotic cover. Prostatic radiotherapy offers an alternative approach for patients who are profoundly thrombocytopenic or who have other contraindications to surgery, but operative intervention is considered to be the treatment of choice because patients with chronic lymphatic leukaemia tend to be elderly and consequently have a high incidence of benign prostatic hypertrophy, which is unlikely to respond to other measures.

References


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