	Total No.	No. + Bence Jones	Percentage of Total No.
Myelomatosis	708 ¹	488	70
Soft tissue plasmacytoma	34	21	60
Malignant lymphoma, excluding Hodgkin's	116 ¹	25	22
Waldenstrom's macroglobulinaemia	33	26	78
Chronic lymphatic leukemia	104 ¹	15	15
Primary cold agglutinin disease	45	4	9
Lichen myxoedematosis	6	0	0
Transient	5	0	0
Benign (for at least 5 years)	40	0	0
Unknown as yet	68	21	—
Totals	1 159	600	52

Table Breakdown of all Bence Jones protein detected during 1963-72

¹Including some cases without paraprotein

The Emergence of New Tumour Lines during Therapy

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During the relapse from an initial response to treatment with cyclophosphamide or melphelan, evidence that their tumour had 'changed its spots' was found in 45% of 155 patients in the first MRC myeloma trial. These changes all seemed to evolve a tumour with a faster growth rate and this occurred either alone, growth rate escape (2%), or with other changes: Bence Jones escape¹ (32+3%) was seen as a disproportionate increase in Bence Jones proteinuria relevant to the initial proportions of Bence Jones to whole paraprotein and in a few patients Bence Jones appeared where it had not formerly been detected in urine concentrated 300 times (*de novo* 3%). Mutation escape¹ (5%) was the emergence of a new paraprotein closely related (eg, one amino acid difference) to the parent one: non-paraprotein escape² (3%) was seen as terminal reticulosarcoma with very little paraprotein, but enough to relate the primitive tumour to the initial myeloma. In this series monocytic leukemia³ has not yet been seen.

All these new lines emerged mostly two to five years after treatment and have rarely been witnessed in the natural history of the disease. Successful prolongation of life could have allowed a natural tumour progression to show, but I fear the treatment, which acts by altering DNA, may have induced mutants, the most prolific of which are seen in the relapse. This explanation could also apply in patients given immunosuppressive therapy for renal transplants. Cytotoxic drugs are best reserved for otherwise fatal diseases.

References

- ¹Hobbs, J. R. (1969). *Brit. J. Haematol.*, **16**, 607.
- ²Hobbs, J. R. (1971). *Brit. med. J.*, **2**, 67.
- ³Osserman, E. F. (1969). Transactions and Studies of the College of Physicians of Philadelphia, **36**, 134.

Fibrin in the Kidney in Myelomatosis

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Renal involvement in myelomatosis is a frequent occurrence both as a mode of presentation and as a cause of death. The nature of the renal involvement is varied but the precise mechanism by which renal failure occurs is obscure. Attention has recently been focused on the role of fibrin in the development of renal lesions, in both the experimental and clinical situations. The deposition of fibrin has been shown in the renal glomeruli in proliferative glomerulonephritis but not in membranous glomerulonephritis or in the nonproliferative phases of the nephrotic syndrome. This correlation of fibrin with proliferation has been confirmed in the experimental model. We have conducted a retrospective study of the renal histology in a necropsy series of 32 cases of myelomatosis. Intravascular fibrin was demonstrated within the glomeruli of more than one third of the cases and this was usually associated with proliferation of the mesangium. The presence of intravascular fibrin and mesangial proliferation was not associated with any particular immunoglobulin abnormality or with the presence or concentration of Bence Jones proteinuria. In addition to fibrin within the glomerular capillaries, fibrin was also demonstrated in intertubular capillaries in three cases of myelomatosis with acute tubular necrosis.

Although the precise significance of the presence of fibrin within the renal glomerulus in myelomatosis is obscure, we believe that it may be of importance in the pathogenesis of the renal dysfunction which occurs in myelomatosis, and that this merits further study.

Production of Lymphomata following Intrapleural Inoculation of Silica

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Crystalline silica was injected into the right pleural cavity of Wistar rats at 6-30 weeks of age. Alkaline-washed quartz, less than 5 μ in size, was used. Approximately 37% developed tumours belonging to the reticulosos group, whilst another third had an altered or hyperplastic reaction. Very few tumours have been reported previously following exposure of various animals to silica by other routes. The distribution of the tumours was from 300 to 1 000 days in a spread out fashion. They were mainly found in the mediastinum and on the diaphragm, as were the benign silicotic nodules. The majority of tumours were believed to be malignant histiocytoses, although some malignant lymphomas with a predominant lymphoblast or mature lymphocyte were found. A few spindle cell sarcomas were also found.

In order to study the development of these tumours, rats were killed at five-week intervals after intrapleural injection of silica. The distribution of the dust was noted and it was found to reach the tracheo-bronchial lymph nodes and the region of the thymus. Eventually it entered the thymus. The thymus appeared to be involved in the tumours: likewise silica and tumour tissue was also, but not always, found in the spleen, liver, and in occasional abdominal lymph nodes.

Rats have also been given intrapleural coal and carbon, but no tumours have developed. Three different types of silica have been used, and tumours have developed with all three types when given by this route. However, when the silica was given intravenously and intraperitoneally, tumours were not found.

Two Cases of Haemangiopericytoma Arising in the Uterus

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The first case occurred in a woman aged 39 years, who for three months had pro-