Editorial

TUMOUR IMMUNOLOGY

Human cancer producing an immune response through tumour antigens in the host is as yet a debatable subject. Experimental studies performed on mice showed the development of resistance to a subsequent challenge when immunized with the tumour (Gross 1943). A more definite conclusion could be drawn by producing a tumour in mice by carcinogens. This tumour was later excised and used again as a rechallenge (Klein et al., 1960). It was noted that cancerous tissue produced new markers which acted as foreign substances or antigens which in turn lead to the production of a specific immunity. The philosophic concept of immunologic surveillance against cancer was given forth by Burnet (1970) who proposed that a major function of the immunological mechanism in mammals is to recognise and eliminate foreign patterns arising in the body by somatic mutation or some equivalent process. This implied that tumour development occurred when the immune system of the body was not functioning well. These conclusions were drawn from experiments performed on animal models and using large doses of carcinogens. The application of these results to humans is not justifiable as no invivo studies can be performed due to ethical reasons. The different pattern of human epithelial cancers by showing early metastases and exposure of low dose carcinogens over prolonged period makes it uncertain if these possess tumour antigens and produce an immune response. The in-vitro experiments carried out in humans have been done to study cytotoxicity, leucocyte migration, lymphocyte transformation and leucocyte adherence. Attempts were made to analyze leucocyte cytotoxicity in cultures set up with leucocytes against tumour cells and normal cells of the same tissue from the cancer patient. The normal cells acted as a control. In 24 patients suffering from cancer of the colon, eight showed leucocytes cytotoxicity against their own tumour cells. But these also exhibited the same response to normal colonic cells (Nairn et al., 1971). Due to the difficulty in interpretation of results and lack of suitable controls, no definite conclusion could be drawn.

Leucocyte migration and lymphocyte transformation in the presence of tumour cells was studied in-vitro with tumour extracts from patients suffering from cancer of the breast, stomach, lung and melanomas (Mc Coy et al., 1974, 1975; Vose et al., 1977). A significant difference between the lymphocytes of normal persons and those of cancer patients made the assay doubtful.

Efforts have been made to detect tumour specific antibodies in the serum of cancer patients to demonstrate immunity against human malignant disease. Good evidence has been achieved for antibodies directed against melanomas (Mortan et al., 1968). Antibodies were present with minimal disease and disappeared when the melanoma disseminated (Lewis et al., 1969). Patients with osteogenic sarcoma showed a high incidence of specific antibodies in their serum (Bloom 1972; Eilber 1970), whereas serum from patients with epithelial tumours of the breast and intestine were found to be normal (Nairn et al., 1971; Roberts, 1976). Finally no decisive result could be achieved due to lack of an adequate control and comparable studies. With extensive experimental work being done in the field of tumour immunology, and development of more refined and sensitive techniques, it could be hoped to demonstrate and isolate the human tumour antigens which could be further investigated for their value and be applicable in clinical practice.

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