William Dameshek: haematologist whose research initiated organ transplantation

This year marks the 50th anniversary of the death, on 6 October 1969, of William Dameshek, who may be regarded as one of the founders of clinical haematology and whose experimental work with Robert Schwartz on acquired tolerance triggered the beginning of clinical organ transplantation.

Dameshek was born in 1900 in Voronezh in western Russia and was brought by his parents to the USA as an infant when they emigrated. He graduated in medicine at Harvard Medical School, Boston, in 1923. After a few years postgraduate training in medicine at the Boston City and the Beth Israel Hospitals, he joined the New England Medical Center, Boston, where he set up a blood research laboratory which rapidly became the foremost centre for training in haematology, first in the USA and then worldwide.

In 1946, Dameshek founded the first American journal devoted to haematology, appropriately named *Blood*, and went on to found the International Society of Haematology in 1954, becoming its first President. Two years later, he successfully included haematologists from the communist countries in the society, at a time when relations between the USA and the Eastern bloc were strained.

Dameshek participated in the first studies of the use of nitrogen mustard (a drug developed during World War II, as a result of the use of mustard gas in warfare, where it was noted to produce leucopenia) in the treatment of leukaemia – the very first attempt at treating malignant disease with chemotherapy.

Collaborating with Dr Robert Schwartz, a haematologist at Tuft's University Medical School in Boston, Dameshek showed that the drug 6-mercaptopurine, when administered to rabbits at the same time that the animals received an injection of foreign protein, would prevent the rabbits from developing antibodies to the foreign protein, although they were able to react to other foreign proteins. They labelled this phenomenon as 'drug-induced immunological tolerance'. This interesting piece of experimental work was published in *Nature* in 1959.

Now occurred some remarkable serendipity. A young surgical registrar at St. Mary's Hospital, London read the paper in *Nature* (not a journal commonly perused by surgical trainees), and wondered whether 6-mercaptopurine might be effective in allowing organ transplantation between donor and recipient animals. In fact, would it allow a kidney to be transplanted from one animal to another without rejection taking place? Roy Calne carried out preliminary studies transplanting kidneys, first in rats and then using dogs receiving 6-mercaptopurine, with some encouraging results. Calne then reported his interesting findings to Dr Joseph Murray, the surgeon who had performed the first successful renal transplant between identical twins in 1954, at the Massachusetts General Hospital, Boston.

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Murray invited Calne to join him in Boston. Now using an improved analogue of 6-mercaptopurine called azathioprine to carry out kidney grafts in dogs, Calne was able to report successful long-term canine renal transplants between unmatched animals.

Incidentally, Dr George Hitchings and his co-worker, Dr Trudy Elton, working at the Burroughs Wellcome Laboratories, New York, were subsequently awarded the Nobel Prize for Chemistry for their work in synthesizing the drugs 6-mercaptopurine and azathioprine.

After his return from Boston in 1962, I invited Roy Calne to become my first senior lecturer on the newly established Professorial Department of Surgery at the old Westminster Medical School, London (now part of Imperial College). Over the next 2 years he carried out the first human kidney grafts using azathioprine and steroids as the anti-rejection agents, with some encouraging results, although many lessons had to be learned in this difficult field of surgery. Calne was then appointed the foundation Professor of Surgery at Cambridge, where he set up a pioneer organ transplantation unit that was to achieve worldwide fame.

Organ transplantation was just one example of how Damashek's work could generate major advances in fields other than his own. Thus, he pioneered bone marrow aspiration, later the possibility of bone marrow transplantation and of the concept of autoimmune disease. Damashek was a prolific author, producing a series of books on various aspects of haematology. These included *The haemorrhagic diseases*, *Haemolytic syndromes*, *The spleen and hypersplenism* and *Chemotherapy of leukaemia and leukosarcoma*.

Dameshek was obviously a remarkable personality, whose presence at any meeting would electrify the atmosphere. His former fellows in haematology could be found in major medical centres worldwide. He had a tremendous capacity for work. Although he retired from the New England Medical Center in 1965, 4 years before he died, he continued in active medical practice and had a full schedule of lectures and travelling programme to near the end of his life. A week before his death, he took part in a meeting on leukaemia.

The American Society of Hematology established the Dameshek Prize in his honour. Each year it is awarded to an individual who has made an outstanding contribution to the study of haematology. **BJHM**

Conflict of interest: none.

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