

Hughes-Jones N C & Szur L. Determination of the sites of red-cell destruction using ⁵¹Cr-labelled red cells. *Brit. J. Haematol.* 3:320-31, 1957.

[Medical Research Council's Blood Transfusion Research Unit and Radiotherapeutic Research Unit, London, England]

A semiquantitative method was developed for determining the amount of red cell destruction in the spleen and liver in patients with hemolytic anemia. The technique involved surface counting following the injection of ⁵¹Cr-labeled red cells; accumulation of ⁵¹Cr in the spleen is an indication for splenectomy. [The SC[®] indicates that this paper has been cited in more than 105 publications.]

The Spleen: To Remove Not to Remove

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The work described in this paper was carried out shortly after I had taken up full-time research as a career, and it formed part of my PhD thesis. The work was carried out in Patrick Mollison's Medical Research Council (MRC) Blood Transfusion Unit, at the Postgraduate Medical School (PGMS) in Hammersmith, at a time when there was a great deal of intellectual excitement over the subject of normal and abnormal red cell survival. It was only in the previous decade¹ that it had been established that human red cells survive in the circulation for 120 days. Estimation of the life span was carried out by the laborious method of transfusion of group O red cells into group A recipients and estimating the survival of the group O cells by differential agglutination. The situation was transformed by the discovery by S.J. Gray and K. Stirling² that red cells could be trace-labeled with ⁵¹Cr. The technique was invaluable in the investigation of the survival in vivo of incompatible red cells, since it enabled the injection of small and harmless amounts of red cells to be made. It also proved to be immensely useful in

determining the optimal conditions for the storage of blood in vitro—work stimulated by the necessity for obtaining the optimum conditions for storage during World War II.

The major significance of the trace-labeling technique was undoubtedly the way in which it allowed the estimation of the red-cell life span to be made within the patient's own circulation; moreover, because the ⁵¹Cr gamma-rays penetrate tissue, the site of destruction of red cells can be ascertained by surface counting.

The motivation for the investigation presented in this paper arose from the fact that only certain patients with hemolytic anemias destroy red cells in the spleen and hence respond to splenectomy; a means of identifying these patients was therefore required. The main contribution of this paper was to standardize the surface-counting method and to allow a semiquantitative estimate of the extent of splenic and hepatic destruction that could be correlated with the benefits of splenectomy. Although the surface counting technique leaves much to be desired in the way of precision, no better test has yet been devised,³ and it is still being used in patients with complex forms of hemolytic anemias.⁴

The collaboration with Leon Szur, who was working in the Radiotherapy Department, resulted in part from the general ambience of research at the PGMS at that time. It was small, it contained a mixture of university, hospital, and MRC staff, and everybody knew each other and the nature of their research; this mutual interaction resulted in the realization that we were both interested in the same problem.

Szur bravely submitted himself to cardiac bypass surgery in the early days of that procedure and sadly died of post-operative complications.

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