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## Some Studies in Red Cell Turnover

By Steffen Birkeland, M. D.

From the Medical College of Virginia, Richmond, Virginia

Data were presented from a study in patients on the red cell deficit after burning, its magnitude, course and some possible mechanisms.

(a) Red cell volume (RCV,  $P^{32}$ ) and plasma volume (PV,  $T^{1824}$ ) were measured shortly after burning, thereafter at intervals. In one group of 18 patients (average age 39 years, average burn 14 per cent of body surface) the average RCV was found to be about normal at the end of day one after burning with a gradual decrease to about 85 per cent of normal 8 days post burn. In a second group of 21 patients (average age 41 years, average burn 49.8 per cent) the average RCV deficit was found to be 16, 22, 25, and 35 per cent of normal, respectively, at the end of days 1, 2, 3 and 8 after injury.

(b) Blood drawn 2 to 5-1/2 hours after burning from 5 patients was tagged with  $Cr^{51}$  and given back as autotransfusion within 24 hours after drawing. The same procedure was carried out in 5 healthy controls. The disappearance of tagged cells was followed quantitatively in both groups. In the 5 burn patients approximately 20 per cent more of the tagged cells disappeared during the first 3 days post transfusion than in the controls. Later the difference was much less. The significance of these findings was discussed with respect to thermal injury of the red cells.

(c) A method was developed whereby two isotopes were used simultaneously in the same patient:

$Cr^{51}$  tagged cells were used as an indicator of red cell destruction (" $Cr^{51}$  survival").

$P^{32}$  tagged cells were used for repeated measurement of total circulating RCV.

A pattern was described for the RCV-turnover in 3 burn patients from this group by correlating the above mentioned measurements with the volume of transfused RCV (corrected for storage time). The estimation of red cell output and red cell destruction in terms of ml of packed cells from the same data was briefly mentioned.