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RECENT SOVIET WORK ON PRESERVATION OF BLOOD

{Comment: The following is a translation of excerpts from a report by Prof Ye. S. Drachinskaya entitled "Minutes of Meetings of the Surgical Society imeni N. I. Pirogov," which appeared in Vestnik Khirurgii imeni I. I. Grekova, Vol 75, No 4, Moscow, May 1955, pages 146-158.]

At the 1138th meeting of the Surgical Society imeni N. I. Pirogov, held on 10 November 1954, A. D. Belyakov presented a report on preserved blood which is stable at low temperatures. According to Belyakov, he has developed a method which makes it possible to keep the preserved blood at a temperature of -12° to -16°C for 70 days. The blood does not freeze, but remains liquid. Certain sugars and alcohols to which sinkol has been added are used as preservatives. The blood which has been made resistant to the effects of low temperatures stands fluctuations from room temperature to -16°C . In the blood thus stabilized hemoglobin is preserved better than in ordinary preserved blood. When the new type of preserved blood had been used clinically, a reduced number of adverse reactions was observed.

A. Ye. Kiselev presented a report in which he described his method of the two-stage preservation of blood. In this method the first stage consists of the production of a preservative solution which is filled into sterile flasks. The first stage is carried out at large central institutions of the blood distribution service (institutes of blood transfusion and large blood transfusion stations). The second stage, which consists of obtaining blood from donors and combining it with the preservative solution that has been supplied from the central institutions, is carried out at medical institutions and remote blood transfusion posts. The preservative solutions used hitherto are unsuitable for the two-stage preservation of blood, because they develop a turbidity on being stored for a long time. For that reason work has been done on the development of special preservatives, particularly of dry preservative media. The method of the preservation of blood in two stages will make it possible to carry out blood transfusions in the most remote regions of the USSR. In addition to the work described, the possibility of applying a new method of the stabilization of blood with the aid of ion-exchange resins has been investigated.

In the discussion of the reports which followed, A. N. Berkutov stated that the two-stage method of blood preservation was first used by A. Ye. Kiselev during World War II. At that time the preserved blood was often faulty because the preservatives were not prepared properly, a state of affairs which frequently led to difficulties under field conditions. The method of the two-stage preservation of blood completely eliminates the difficulties encountered in connection with the preservation of blood under field conditions in wartime.

A. N. Filatov stated that the two-stage method developed by Kiselev is also of great significance for peace-time applications, particularly at small hospitals where blood transfusions are not carried out every day and prolonged storage of ordinary preserved blood would lead to its spoilage. Furthermore, Kiselev's method eliminates danger that the blood may spoil in transportation. In connection with the work which is being done on artificially induced hypothermia, it will be possible to use blood which has been especially cooled and which is injected directly into the carotid artery. This possibility has already been checked experimentally.

N. G. Kartashevskiy said that several hundred flasks of the preservative to be used in the two-stage procedure were sent to remote points of the USSR. The preservative was stored up to 6 months. The blood which had been combined with the preservative remained sterile for 30 days. The frequency of reactions after transfusion of this blood amounted to only 2.3%. After 51 transfusions of cold-resistant blood stored up to 60 days, not a single reaction was observed.

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