

EDITORIAL

IMMUNOHEMATOLOGY

CHAUFFARD,¹ the great French clinician and clinical investigator, made the suggestion in 1908 that a new specialty, "immunohematology," might well be considered. Chauffard had discovered an hemolysin in the blood of a case of acute hemolytic anemia which he described under the designation of "acute hemolysin anemia." Shortly thereafter his Parisian colleagues, Widal, Abrami, and Brulé,² described autoagglutinins in cases of acquired hemolytic anemia and stated that this type of antibody was characteristic of the acquired cases as opposed to those of the congenital type.

The full merit of Chauffard's suggestion has only recently come to the fore, notably through the great advances in the field of the Rh factors. Our own findings of iso-antibodies in the blood of cases of acquired hemolytic anemia revived Chauffard's original suggestion and led to the production of experimental hemolytic anemia with spherocytosis by the use of immune antibody.³ Further studies demonstrated various types of hemolysins and agglutinins, the latter causing injury to the envelope of the red cell, which was then hemolyzed by such physical factors as mechanical trauma within the circulation.⁴ Levine's concept⁵ of iso-immunization with the Rh factor resulting in the development of anti-Rh agglutinin and subsequent iso-agglutination of the fetus' red cells appeared highly reasonable in the light of these considerations.

The intensive work with the Rh antibodies in hemolytic disease of the newborn has led to the uncovering of many new facts relating to iso-antibodies and thus indirectly to advances in the broader field of hemolytic anemia in general. Many of these advances were the subject of discussion at the recent Dallas-Mexico City meetings.⁶ Demonstration of the so-called anti-Rh "blocking" antibody by the use of plasma, serum, or bovine albumin has led to the finding that similar antibodies are present in acquired hemolytic anemia in general.⁷ In our own experience, sera completely negative for iso-antibodies, using salt solution as a diluent, may show a distinct concentration of antibody with the use of bovine albumin.

What is more, the antiglobulin test by Coombs, Mourant, and Race⁸ for demonstrating antibodies adsorbed to the red cell was found of distinct value by Hill and Haberman⁹ in bringing out or "developing" the presence of an anti-Rh agglutinin in erythroblastosis foetalis. Boorman, Dodd, and Loutit¹⁰ applied this test in cases of congenital and acquired hemolytic anemia and demonstrated a positive reaction in the acquired cases, the congenital cases giving a completely negative test. They concluded that in the acquired cases antibody was adsorbed to the red cell, thus confirming the hypothesis advanced originally by Dameshek and Schwartz.¹¹ Hill and Haberman¹² recently concluded that at least three orders of antibodies could be distinguished: (1) those readily demonstrable in salt solution, (2) those demonstrable in bovine albumin solution, plasma, or serum, but not in a salt solution medium, and (3) those demonstrable neither in salt solution nor albumin media but adsorbed to the red cell.

The Rh and Hr factors have proved to be of considerably greater complexity and interest than the first-described naturally occurring agglutinogens A and B. Hundreds of articles have appeared within the last few years dealing with their determination, their frequencies in various population groups, their hereditary and gene frequency relationships, their application to problems of disputed paternity, their occurrence in erythroblastosis foetalis and related conditions, their relationship to problems of blood transfusion, the various types of associated antibodies, etc.

Thus Chauffard's original idea of a special field of immunohematology has come to rapid fruition in the last few years. Undoubtedly still further advances will be made as the science of immunochemistry reaches its full development.

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