A "NEW" Rh ANTIBODY, ANTI-f

BY

R. E. ROSENFELD, M.D.

P. VOGEL, M.D.

NATALIE GIBBEL, A.B.

*Mount Sinai Hospital, New York, N.Y., and Bureau of
Laboratories, Department of Health, New York, N.Y.*

RUTH SANGER, Ph.D.

AND

R. R. RACE, Ph.D., M.R.C.S., F.R.S.

*Medical Research Council, Blood Group Research Unit,
the Lister Institute, Chelsea Bridge Road, London, S.W.1*

A "new" Rh antibody, which we propose to call anti-f, has been found in the serum of a man, Mr. Cl., aged 30, who suffers from haemophilia.

Since childhood Mr. Cl. has received about 35 transfusions of blood, the last of which, in December, 1951, was followed by a shaking chill. He was seen by us, for the first time, in March, 1952,* when three blood-group antibodies were found in his serum—anti-B, anti-K, and anti-S. In addition there was at least one other unidentified antibody. In the hope of clarifying the reactions of this antibody 0.25 ml. of O, NsNs, cDe/cde, kk blood was injected on two occasions; following this, the presence of anti-N was disclosed and, in addition, the antibody anti-f, which is the main reason for this publication.

The blood groups of Mr. Cl. are: A₁, MsMs, P+, CDe/cDE, Lu(a-), K-, Le(a+b-), Fy(a+), Jk(a+b+).

The serum of Mr. Cl. can be absorbed free of the other antibodies, leaving anti-f alone. This absorbed serum has been used to test the blood of 276 unrelated white people and 114 of their relatives. From the results it is clear that the antigen recognized by anti-f is part of the Rh complex of antigens; it is also clear that the antigen is not associated with any other of the known blood-group antigens, with sex, or with the ability to taste phenylthiocarbamide.

Properties

In brief, the antibody reacts with a product of the chromosomes cde and cDe, which may consequently be distinguished by the addition of f. We have been able to classify all the important chromosomes save the rare cD^ue (which we expect to have f).

If the absence of f is indicated by the letter F the chromosomes are:

cdef, cDef.

CDeF, cDEF, C^wDeF, CdeF, cDEF, CD^ueF, cD^ueF, CDEF, CD^ueF, C^wdeF, and CdeF.

These are the usual Caucasian chromosomes. For reasons which will be given in a later communication, we expect certain less common combinations to exist—namely, cDeF, cdeF, CDeF, and cDEF. We have found a sample of blood giving the reactions expected of cDeF/cdeF and one giving the reactions expected of cdeF/cdeF. If the genes are arranged in a linear order on the chromosome then the order DCEF fits best with the observed facts.

If anti-F exists, as we presume it does, it will be difficult to identify with the test cells commonly available: it will give the reactions of a mixture of anti-C and anti-E, and, furthermore, it may be combined also with anti-D.

Anti-f agglutinates red cells suspended in albumin, and the results can be confirmed by absorption tests. The reaction of homozygous, ff, cells is stronger than that of heterozygous, Ff, cells. The antiglobulin test is not particularly useful with this example of this antibody.

Anti-f does not promise to be of any great practical importance in routine Rh blood-group work. Certainly it splits off CDe/cde and CDe/cDe from CDe/cDE, CDe/cdE, and Cde/cDE; it also separates CDe/cde from Cde/cdE. But these are hardly day-to-day problems. There is evidence that anti-f may be present in some anti-e and anti-c sera, and so these sera are laid open to investigation from this angle.

From a theoretical point of view anti-f is obviously of the first importance and must be taken into account in any thought about the Rh groups. Many interpretations of this new antibody have been considered, but the reactions can be most simply and conservatively explained by the postulation of a fourth allelomorphic pair of Rh antigens, f and F.

A detailed account of the serological and genetical work on anti-f will be published soon, together with acknowledgment to many people who have helped us by collecting samples of blood of rare Rh genotypes.

THREE CASES OF SUPPURATION DUE TO FUSIFORMIS INFECTION

BY

W. M. R. HENDERSON, M.D.

Pathologist, Pembury Hospital, Tunbridge Wells, Kent

A number of non-sporing, non-motile, anaerobic bacilli have been isolated by different workers from necrotic lesions in man and animals. They represent an ill-defined group of organisms classified at the moment as the genus *Fusiformis* (Topley, Wilson, and Miles, 1948). The term "necrobacillosis" has been given to the disease they cause in man.

These organisms have been demonstrated in the normal flora of the mouth, intestines, and genito-urinary tract by Beveridge (1934) and others, and in a variety of human pathological lesions, including ulcerative colitis (Dack, Dragstedt, and Heinz, 1936), in osteomyelitis and mastoiditis (Chandler and Breaks, 1941), in infected wounds (Forbes and Goligher, 1944), in post-abortive fever (Jones, 1944), in puerperal fever (Harris and Brown, 1927), and in appendicitis (Veillon and Zuber, quoted by Topley *et al.*, 1948). These organisms have also been isolated from various necrotic conditions in animals, such as calf diphtheria and labial necrosis of rabbits. A fuller description of these organisms is given by Beveridge (1934), Lemierre (1936), and Schwabacher and Mitchison (1947).

Organisms of the *Fusiformis* group were isolated from the following cases of peritonitis (two cases) and ischio-rectal abscess (one case), and the characteristics of the organisms were substantially the same in all.

Case Reports

Case 1.—A married woman aged 45 was admitted to hospital on March 14, 1950, complaining of pain and tenderness in the right groin for the past eight days. On examination the abdomen was distended and shifting dullness was present. A large ill-defined mass was felt in the right loin and the overlying skin was red and oedematous. Laparotomy was performed next day and general peritonitis was

*Referred by the Hemophilia Foundation, Inc.