RES MEDICA
Journal of the Royal Medical Society

Research topic

An Investigation into the Specificity or Antiplatelet Serum Prepared in Rabbits

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Abstract

This summer I spent six weeks in the Immunopathology Laboratory in the Pathology Department of the University, investigating this antiplatelet serum. This antiscrum had been prepared by multiple immunisation of several rabbits with human platelets, and I was trying to find out, among other things, if this antiserum was specific for platelets, or if it reacted with other tissues and organs of the human body.

ISSN: 2051-7580 (Online) ISSN: 0482-3206 (Print)
Res Medica is published by the Royal Medical Society, 5/5 Bristo Square, Edinburgh, EH8 9AL

Res Medica, Spring 1967, 5(3): 32
doi: 10.2218/resmedica.v5i3.468

RESEARCH TOPIC

AN INVESTIGATION INTO THE SPECIFICITY OF ANTIPLATELET SERUM PREPARED IN RABBITS

This summer I spent six weeks in the Immunopathology Laboratory in the Pathology Department of the University, investigating this antiplatelet serum. This antiserum had been prepared by multiple immunisation of several rabbits with human platelets, and I was trying to find out, among other things, if this antiserum was specific for platelets, or if it reacted with other tissues and organs of the human body.

The main technique used for the serological investigations was gel diffusion in Ouchterlony plates. These are Petri dishes containing agar to a depth of about 4mm., in which wells may be cut in the required patterns. The "antigen", which in this case might be a suspension of disintegrated platelets, is placed in one well, and the "antibody", in this case antiplatelet serum, is placed in an adjacent well. Provided both reagents are in a diffusable state, they diffuse through the agar and a line of precipitate is formed where they are present in optimal proportions. This line is specific for this particular antigen/antibody reaction.

In some experiments antiplatelet serum and extracts prepared from various human organs and tissues such as bone marrow, liver, gastric mucosa and spleen were placed in adjacent wells, and in each case multiple lines were formed. The platelets used for immunising the rabbits were probably contaminated with serum proteins from the donors, and so the antiplatelet serum would contain, as well as antibodies to platelets, antibodies to these serum proteins. If this were the case, any serum proteins contaminating the platelets and organ extracts used in the experiments would combine with these antibodies, forming multiple lines. To get rid of these unwanted antibodies in the antiplatelet serum, the antiserum was adsorbed to normal human serum, which combined with the antiserum protein antibodies. The adsorbed antiserum was then more specific for platelets.

The results of these experiments indicate that platelets have "antigens" in common with several other organs and tissues of human origin, and hence that an antiserum prepared by immunisation with platelets contains antibodies against at least one component of other human tissues. The fact that platelets, as it were, represent other human tissues may prove useful in a test which it is hoped may be developed to assist in tissue transplantation.

At the moment the main work of the laboratory is concerned with tube tissue cultures of macrophages obtained from the peritoneal cavity of mice, and with the way in which these macrophages react to various things such as red blood cells when these are added to the cultures. My last set of experiments was to investigate how the macrophages reacted to platelets and if this reaction differed if the platelets had previously been incubated with antiplatelet serum. It was found that the platelets treated with the antiserum were phagocytosed, while the untreated platelets were rejected. Phagocytosis indicates that an antigen/antibody reaction of some kind has taken place.

At the moment the applications of these results are not clear, and as much still remains to be done on this subject they are largely a matter for speculation.

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