ABSTRACTS

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ABSTRACTERS

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PERNICIOUS ANEMIA OF PREGNANCY


A 2-para, aged 32, attended the antenatal clinic and was found to have severe megaloblastic anemia. This responded to folic acid but not entirely satisfactorily. Three months later a living male infant was delivered. She did not return until seven months later and was found to have splenomegaly, increased red cell fragility, a raised plasma bilirubin level and an increased reticulocyte count. There was slight anemia. The patient was again pregnant, and developed megaloblastic anemia which responded to folic acid therapy. The spleen was removed after delivery and in a pregnancy which began six months after this, anemia did not develop. The hemolytic anemia was considered to be of the congenital type.—R. H. G.


Ten patients with megaloblastic anemia of pregnancy or the puerperium were selected. The term "megaloblastic" was used when there were giant metamyelocytes in the marrow and either Ehrlich megaloblasts or "intermediate megaloblasts" (transitional erythroblasts). After a control period cyanocobalamin was given by injection. There was a satisfactory response in the 7 patients treated after delivery, whether 100 μg. or 1000 μg. was given, but results were not as good as with folic acid. Three patients treated with cyanocobalamin before delivery did not respond, the marrow remaining megaloblastic in two, and showing partial conversion in one.—R. H. G.

SEASONAL INCIDENCE OF MEGALOBLASTIC ANAEMIA OF PREGNANCY AND THE PUERPERIUM. R. B. Thompson. From the Department of Medicine, King's College, University of Durham and Princess Mary Maternity Hospital, Newcastle-upon-Tyne, England.

The case records of 105 patients with megaloblastic anemia of pregnancy or the puerperium were studied, covering the period 1933 to 1956. It was considered that the time of onset of anemia could be assessed to within about a month. Of this group of patients
there were significantly more deliveries in the six-month period from February to July, inclusive, but this was not so with controls. The onset of megaloblastic anemia is commonly about two months before delivery, and there were 70 patients in whom it began between December and May, and 30 between June and November; in 5 the date of onset of anemia was uncertain.

It is postulated that dietary deficiency during the winter months plays a significant part in the etiology of megaloblastic anemia of pregnancy. The diets of the patients were not studied.—R. H. G.


Total serum vitamin B₁₂ levels in parturient mothers and the cord blood of their newly born infants ranged from 324-876 and from 296-892 μg./ml. respectively.—J. B. C.


The clinical material consisted of 198 pregnant or puerperal patients who had hemoglobin levels of less than 11 Gm. per 100 ml. In 42 cases the marrow was examined, and in 22, megaloblasts or transitional erythroblasts were found. In 16 of these, similar cells were found in the buffy coat, but in only 2 in an ordinary blood film. In the other 6, macrocytes and macronormoblasts were found in the buffy coat. In addition 8 patients who did not have marrow punctures showed megaloblasts in the buffy coat. One patient with a macronormoblastic marrow, and three with normoblastic marrow responded to folic acid.

It is concluded that examination of the buffy coat is a satisfactory screening test for cases of megaloblastic anemia of pregnancy.—R. H. G.

PIGMENT


Following previous studies that revealed high urinary concentrations of coproporphyrin in patients with Pemphigus foliaceus the authors measured the erythrocytic content of protoporphyrin in 10 patients, obtaining values ranging from 46 to 225 γ per 100 ml. No correlation with the clinical condition was observed.—M. J.


In 35 subjects with varying pulmonary pathology, the level of free red cell protoporphyrin was raised in 21 (60%). An increase is most commonly found in pulmonary tuberculosis or chronic bronchitis with marked respiratory insufficiency. The porphyrin disturbance is strictly localized to the red cells. Urinary porphyrin excretion remains normal. The increased cellular protoporphyrin is not related to the total number of red cells, the sedimentation rate, alterations in the general condition of the patient or to the nature of the pulmonary lesion. The authors suggest that it may be related to a hematopoietic disturbance leading to an increased rate of hemoglobin synthesis.—J. D.
PLASMA PROTEINS


The average molecular weight of gamma-globulin in several kinds of hyperglobulinemia was studied by computation from the diffusion constant and the specific gravity in general and also by ultracentrifugal method together in some cases. The molecular weight in 6 cases of myeloma was revealed to be somewhat smaller than in the normal. In one case which had already been reported by Miyoshi as a peculiar hyperglobulinemia "lymphoadenosis hyperglobulinemia," it was 1,340,000. Although it was within normal limits in 10 cases of liver cirrhosis and 7 cases of chronic infection diseases, it reached about 300,000 in some of them, which might be considered to be a transition to macro-globulinemia.—K. M.


Immunoelectrophoretic analysis of some pathological γ globulins (myeloma), Bence-Jones proteins and of normal γ globulins, has made it possible to deduce something of the structure of γ globulins generally and their relationship to Bence-Jones proteins. (a) Normal γ globulins have at least 4 groupings determining antigenic properties. (b) Bence-Jones proteins have one or other of these groupings and can be considered as γ globulin fragments. (c) Serum myeloma proteins are abnormal, incomplete γ globulins, with one or more groupings missing. The use of radioactive isotopes with immunoelectrophoresis has made it possible to separate normal and pathologic γ globulins. It has further been shown that each antigenic determining grouping is specific for a single antibody, with the result that the term "anti-gamma-globulin" covers a mixture of at least 4 different antibodies. Immunoelectrophoresis has demonstrated the existence of these antibodies as well as a difference in their electrophoretic mobility. Immune sera are not identical and may contain these antibodies in variable proportions. Certain groupings may be more strongly antigenic than others.—J. D.


The antiglobulin inhibition test is a useful method for the quantitative determination of gamma-globulin concentrations too low to be detected by electrophoresis. It also proved to be a suitable means in screening of hypo- and agamma-globulinemia, and in the determination of the life span of injected foreign globulin in patients with these disorders. It could be shown that in patients with the "antibody deficiency syndrome" due to hypo- or agamma-globulinemia traces of the foreign gamma-globulin could still be detected after 5 months following the injection, while in patients with hypogamma-globulinemia due to nephrosis it was lost within a few days through the kidneys.—M. —H. H.

Renal plasma flow, glomerular filtration rate and maximal tubular excretory capacity were determined in 10 cases of myelomatosis with proteinuria. On the whole the results obtained indicated a parallel reduction of the glomerular, tubular and vascular functions of the myeloma kidney. Renal venous catheterisation studies, however, indicated that a relatively better preservation of the renal blood flow may exist. The renal arteriovenous oxygen difference was normal, and the oxygen consumption varied with the degree of renal impairment.—M. S.


The mechanisms controlling normal capillary permeability, and those increasing permeability in many pathologic states, are largely unknown. When serum is diluted, a plasma factor is activated that increases permeability. The PF/Dil possibly has a role in inflammation, but it may be of equal importance in the control of normal capillary permeability or in the increase of permeability in those edema states where no inflammation is present. The skin was used as a test site in 10 human subjects who had received an intravenous injection of Evans blue. In each case, autologous plasma diluted with isotonic saline produced an increase in capillary permeability as judged by the appearance of bluing at the site of injection.—O. P. J.

RED CELLS


The authors discuss the methods for determination of inorganic phosphate in red cells and stress the importance of immediate cooling of the blood and centrifugation and protein precipitation in the cold. The mean inorganic phosphate concentration in packed unwashed red cells was 0.27 mg./100 ml., the range 0.1-0.4 mg./100 ml. The inorganic phosphate in trapped plasma contributed most of this value. It is concluded that the concentration of inorganic phosphate in normal erythrocytes must be extremely low.—M. S.


It has previously been shown that a proportion of normoblasts from the marrow of patients with thalassemia major react positively to the periodic acid-Schiff (PAS) stain. In the present study these findings were confirmed in 3 cases of thalassemia major. In addition, positive results were obtained in a further 3 cases who were suspected of carrying the thalassemia trait. Tests were done in several other blood disorders, including iron deficiency anemia, megaloblastic anemia, acquired hemolytic anemia, chronic myeloid leukemia, homozygous sickle cell anemia, and congenital hypoplastic anemia. In all these conditions the results were negative. In 2 out of 6 cases of congenital spherocytic anemia and in 1 case of paroxysmal nocturnal hemoglobinuria a number of normoblasts showed the presence of a few PAS positive granules. Differentiation from thalassemia was, however, possible as only a few normoblasts were affected and the granules were smaller in size and much paler in color.

It was hoped that the test might prove a means of distinguishing morphologically between thalassemia and erythremic myelosis. However in an addendum the authors note that positive staining was also obtained in two cases of erythremic myelosis.—T. H. B.
THE INFLUENCE OF HEPARIN ON THE VOLUME OF RED BLOOD CELLS IN VIVO. Pospisil, M.

Experiments carried out in rabbits showed that one, two and three hours after the intravenous injection of 10,000-15,000 m.u. of heparin (Heparin Novo), an increase occurred in the volume of the red blood cells (evaluated by the hematocrit method). In the control rabbits, on the other hand, from which blood was collected for examination at the same intervals, a decrease in volume took place. These changes are evaluated as an expression of nonspecific stress and confirm the antagonism between the action of heparin and activation of the suprarenal glands in the course of general adaptation. Together with volume changes, there were also differences between the two groups as regards changes in the total number of red blood cells, with a decrease in the heparin group and an increase in the control group. The communication discusses the nature of these changes.—M. N.


The burr cell is a peculiar red cell measuring about 7.5 μ or less in diameter with one or more large spiny projections along its periphery. Examinations for it were done in a total of 29 azotemic patients. It was found most characteristically as a component of terminal uremia, though it occurred occasionally in reversible azotemia. It would appear to be a serious prognostic sign but the anemia of progressive renal failure must be differentiated from the acute hemolytic anemia that may occur in association with renal disease in children.—R. H. G.


A 10-year-old Negro boy presented with typical findings of an aregenerative crises of hereditary spherocytosis. Rather extensive family studies were carried out demonstrating a total of 6 relatives affected with the disease. A pattern of expected simple dominant inheritance was found. A comprehensive review of reported cases in Negroes is given. Forty-two instances of hereditary spherocytosis in 13 Negro families were found in the literature. Females predominate in a ratio of 3:2. Previously a much higher incidence of affected Negro females had been suggested.—N. J. S.