Idiopathic Thrombocytopenic Purpura Patients

Platelet survival studies were carried out in three White patients with idiopathic thrombocytopenic purpura. Platelet life-span was 34, 190, and 180 minutes respectively. Surface counting showed higher radioactivity over the spleen compared with the liver in two patients, while in the third the liver showed the greatest radioactivity.

Discussion

In-vitro labelling of platelets with radioactive sodium chromate is a valid technique for the determination of platelet life-span, which by this method ranges from 7 to 10 days in normal subjects, a value corresponding to that obtained with other radioisotopic methods (Baldini, 1966). In the present study platelet life-span in healthy subjects was seven to nine days.

In the four patients with onyalai the platelet life-span was greatly shortened in the thrombocytopenic phase when compared with normal healthy subjects who received aliquots of the same labelled platelets. These results and adequate megakaryocyte production in the bone marrow show the mechanism of the thrombocytopenia in onyalai to be peripheral destruction of platelets, and not the failure of megakaryopoiesis. This finding is similar to that described in patients with idiopathic thrombocytopenic purpura (Hirsch and Gardner, 1952) and confirmed in the White idiopathic thrombocytopenic purpura patients in the present study.

A thrombocytopenia-inducing factor has been demonstrated in the plasma of patients with idiopathic thrombocytopenic purpura. This was originally discovered in classical self-experimentation studies by Harrington *et al.* (1951), where infusion of plasma from patients with idiopathic thrombocytopenic purpura produced thrombocytopenia in normal subjects. In the present study attempts were made to demonstrate such a factor in the plasma of patients with onyalai. Previous incubation of normal platelets in onyalai plasma failed to reduce their life-span when subsequently infused into normal recipients. This does not exclude the presence of a humoral factor in the plasma of these patients, as the in-vitro conditions may not have been optimum for the action of such a factor. Ideally, to demonstrate such a factor the test plasma should be infused into control subjects, but such an experiment was thought to be too hazardous.

The surface radioactivity after infusion of labelled platelets to the onyalai patients was variable, though three of the four patients showed greater radioactivity over the spleen than over

the liver. In White patients with idiopathic thrombocytopenic purpura the findings are similar; decrease in platelet life-span is invariable, but there is no consistent surface counting pattern. Determination of sites of platelet sequestration does not correlate well with response to steroid therapy. In two of the onyalai patients high splenic radioactivity was associated with failure to respond to steroids, while a third patient with a similar surface counting pattern responded to this treatment. If a predominant splenic sequestration pattern is noted, however, splenectomy results in a good remission (Najean *et al.*, 1963). Lightly sensitized platelets are sequestered in the spleen, whereas heavily sensitized platelets are sequestered in the liver (Aster and Keene, 1969).

The similarity between onyalai and idiopathic thrombocytopenic purpura in Whites was recognized with the earliest description of the disease, and has been a cause for comment in many subsequent publications. The evidence that onyalai is a separate disease entity was reviewed by Metz and Kramer (1958), who concluded that the presence of haemorrhagic bullae in the mouth in thrombocytopenic states was independent of the cause of the thrombocytopenia, and therefore retention of the term onyalai as indicative of a separate disease entity was unwarranted. The results of the present study are compatible with this view. The mechanism of the thrombocytopenia in onyalai is similar to that of idiopathic thrombocytopenic purpura in Whites, as is the pattern of surface radioactivity after infusion of chromium-labelled platelets.

We wish to thank the Director, South African Institute for Medical Research, for facilities to carry out this study; Mr. D. Hart for technical assistance; and Dr. Fay Segal for referring one of the onyalai patients.

REFERENCES

- Aster, R. H., and Keene, W. R. (1969). *British Journal of Haematology*, **16**, 61.
 Baldini, M. (1966). *New England Journal of Medicine*, **274**, 1245.
 Blackie, W. K. (1937). *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **31**, 207.
 Gear, J. (1938). *South African Medical Journal*, **12**, 632.
 Harker, L. A. (1968). *Journal of Clinical Investigation*, **47**, 458.
 Harrington, W. J., Minnich, V., Hollingsworth, J. W., and Moore, C. V. (1951). *Journal of Laboratory and Clinical Medicine*, **38**, 1.
 Hirsch, E. O., and Gardner, F. H. (1952). *Journal of Laboratory and Clinical Medicine*, **39**, 556.
 Lewis, S. M., and Lurie, A. (1953). *Journal of Tropical Medicine and Hygiene*, **56**, 281.
 Metz, J., and Kramer, S. (1958). *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **52**, 411.
 Metz, J., Kramer, S., and Cassel, R. (1958). *South African Journal of Medical Sciences*, **23**, 93.
 Najean, Y., Ardaillou, N., Caen, J., Larrieu, M. J., and Bernard, J. (1963). *Blood*, **22**, 718.
 Wellman, F. C. (1904). *Journal of Tropical Medicine*, **7**, 52.

Medical Memoranda**"Antimongolism" Syndrome**

British Medical Journal, 1969, **4**, 148-149

Not more than 10 cases of "antimongolism" syndrome have previously been reported, and its clinical and cytogenetic entity has not yet been established clearly enough. We have recently studied a case of partial monosomy G syndrome in a Japanese infant, to our knowledge the first case in the Orient.

CASE REPORT

The patient, a boy aged 4 years, was the first and only child of a 25-year-old mother and a 27-year-old father. He was born after

an uneventful full-term pregnancy and normal delivery. The birth weight was 2,430 g. There was no history of parental radiation exposure, viral infection, or drugs being taken during early pregnancy.

He had had a sporadic clonic seizure about once a month, lasting for 5 to 20 minutes, after which he would fall asleep and become febrile. He cannot speak, partly because of mental retardation and partly because of deformities of the oral cavity.

Examination showed him to be underdeveloped and mentally retarded (intelligence equivalent to about a 1-year-old). Bilateral cataract, broad nasal bridge, low-set external ears (Fig. 1), inguinal hernia, hypospadias, scrotal dysplasia, and clubfoot were observed. These are common stigmata which have been noted in other reported cases of the syndrome (Lejeune *et al.*, 1964; Cohen, 1966; Penrose, 1966; Reisman *et al.*, 1966; Thorburn and Johnson, 1966;

Al-Aish *et al.*, 1967; Hall *et al.*, 1967). He also has cleft palate and harelip, which have not been associated with any other similar cases, and microphthalmia. An antimongoloid slant of the palpebral fissures was not prominent.

Dermatoglyphic examination showed the presence of an intermediate triradius r' , and on the finger-tips the ridge patterns were whorls on digits 2, 3, and 4, and ulnar loops on digits 1 and 5 on both hands. The palmar crease patterns were normal. Although

FIG. 1.—Facies of the patient.

Results of Leucocyte Cultures

No. of Cells Analysed	Chromosome Counts						
	<44	44	45	46	47	48	48>
108	M- 2	M- 1	M+ 16 M- 12 M? 3	M+ 86 M- 78 M? 3	M+ 2	M+ 1	0

M = Minute chromosome. + = Present. - = Absent.

FIG. 2.—Partial karyotype of the patient.

thrombocytopenia was not found, the prolonged bleeding-time (more than 19 minutes) and coagulation time (9–17 minutes) suggest an impaired coagulation mechanism. Chest x-ray examination showed hypertrophy of the thymus. Cardiovascular examination revealed low voltage in the electrocardiogram, but the phonocardiogram was normal.

Results of the leucocyte cultures of the patient are shown in the Table. The culture was done twice with the same findings.

Most of the metaphases analysed had 46 chromosomes, but karyotype analysis showed that they had only three G-chromosomes and one minute chromosome. This centric fragment appeared to be a G-chromosome, the long arms of which were absent to about half its length, and it appeared morphologically to be the same in most of the sets. The Y-chromosome was distinguishable from the G-chromosomes by its somewhat greater length and its approximately parallel position of the chromatids (Fig. 2). The size and morphology of the Y-chromosome was similar to that of the child's father. Chromosomes of other groups appeared morphologically normal. Of 16 cells with 45 chromosomes 12 had no minute fragment with only three G-chromosomes. This may suggest a mosaicism of two cell-lines of 45 XY,G- / 46 XY,Gq-, though chromosomes of tissues other than peripheral blood have not yet been successfully studied. Cytogenetic studies of peripheral blood taken from both parents showed no abnormality in their karyotypes.

COMMENT

We believe that for the "antimongolism" syndrome to be a true clinical and cytogenetic entity more case reports of a similar syndrome are needed, since patterns of chromosome anomaly (complete or partial deletion, degree of deletion, etc.) differ from case to case, and the diversity of stigmata among cases is notable (Reisman *et al.*, 1967; Bauchinger *et al.*, 1968). It should be mentioned that it is not yet clear which G-chromosomes of #21 or #22 are involved in the respective cases so far reported. Since, however, this may be the only autosomal anomaly of "le contre type" observed in humans, accumulation of more instances of a similar kind will not only establish a unique syndrome but also give fruitful help in the study of gene action (gene-dose effect, localization of genes, and gene-environment interaction).

AKIRA ENDO, M.D.

MASAHARU YAMAMOTO, M.D.

GEN-ICHI WATANABE, M.D., M.P.H.

Department of Hygiene, Niigata University, School of Medicine, Niigata City, Japan.

YOSHIBUMI SUZUKI, M.D.

KAORU SAKAI, M.D.

Department of Paediatrics, Niigata University, School of Medicine, Niigata City, Japan.

REFERENCES

- Al-Aish, M. S., de la Cruz, F., Goldsmith, L. A., Volpe, J., Mella, G., and Robinson, J. C. (1967). *New England Journal of Medicine*, 277, 777.
- Bauchinger, M., Schmid, E., and Röttinger, E. (1968). *Humangenetik*, 6, 303.
- Cohen, M. M. (1966). *Journal of Pediatrics*, 69, 793.
- Hall, B., Fredga, K., and Svenningsen, N. (1967). *Hereditas Genetiskt Arkiv*, 57, 356.
- Lejeune, J., *et al.* (1964). *Comptes Rendu Hebdomadaires des Séances de l'Académie des Sciences*, 259, 4187.
- Penrose, L. S. (1966). *Lancet*, 1, 497.
- Reisman, L. E., Kasahara, S., Chung, C.-Y., Darnell, A., and Hall, B. (1966). *Lancet*, 1, 394.
- Reisman, L. E., Darnell, A., Murphy, J. W., Hall, B., and Kasahara, S. (1967). *American Journal of Diseases of Children*, 114, 336.
- Thorburn, M. J., and Johnson, B. E. (1966). *Journal of Medical Genetics*, 3, 290.