PRODUCTION OF L.E. CELLS *IN VIVO* BY TRANSFUSION OF SYSTEMIC LUPUS ERYTHEMATOSUS PLASMA

BY

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The plasma of patients suffering from systemic lupus erythematosus (S.L.E.) contains a factor which leads to L.E.-cell formation if normal bone-marrow or white blood cells are tested with this plasma *in vitro* (Haserick, Lewis, and Bortz, 1950).

This L.E. factor can be found not only in plasma, but in various other body fluids, such as the cerebro-spinal, pleural, and pericardial fluid (Bencze, 1956), in urine, and in cantharides pustules. This L.E. factor passes the placenta barrier, and Bridge and Foley (1954) have observed L.E. cells in the peripheral blood of a baby whose mother suffered from S.L.E.

Hitherto, the successful transmission of the plasma factor and the production of L.E. cells in normal persons *in vivo* has not been reported, nor have any such experiments been successful in animals. The present paper reports the production of the L.E.-cell phenomenon in patients without collagen disease, after the transfusion of S.L.E. plasma.

Method

Plasma was obtained from a patient suffering from S.L.E. (of blood group AB), in whose peripheral blood L.E. cells had repeatedly been observed (Fig. 1). The blood was taken under sterile conditions, using 16 ml. citrate to 100 ml. blood, kept for 24 hrs at -4° C., and centrifuged. The blood thus obtained was always L.E.-cell positive, as demonstrated by the rotatory method of Zinkham and Conley (1956) and the ring method of Snapper and Nathan (1955).

Experiments

(1) A man aged 24 (blood group B), in whom the diagnosis of Hodgkin's disease had been verified histologically, received 200 ml. of this S.L.E. plasma. The transfusion was uneventful. L.E. cells had never previously been found in his blood,

Fig. 1.—L.E. cell of a patient with systemic lupus erythematosus.

but 2 hours after the transfusion the peripheral blood contained many L.E. cells, which reached their maximum 6 to 24 hours later. 11 days after the transfusion, L.E. cells could only be observed occasionally, but they could still be recognized even 27 days later (Figs 2 and 3, opposite). As a control, 35 days later, the same patient was given 400 ml. normal plasma (blood group AB), obtained in exactly the same way as the S.L.E. plasma. The transfusion was uneventful. L.E. cells were searched for 30 minutes, 2, 4, 6, 24, and 48 hours after the transfusion, but without success.

(2) A man aged 72 (blood group O), with a diagnosis of carcinoma of the prostate with metastases, received 200 ml. S.L.E. plasma. L.E. cells had not previously been found in this patient's blood,

Fig. 2.—L.E. cells in peripheral blood of receptor 24 hours after transfusion.

Fig. 4.—L.E. cells in peripheral blood of receptor 24 hours after transfusion.

Fig. 3.—L.E. cells in peripheral blood of receptor 27 days after transfusion.

but 2 hours after the transfusion the peripheral blood contained a large number of L.E. cells, which reached their maximum 6 to 24 hours later (Fig. 4). After 24 hours their number slowly decreased; some could still be found on the tenth day, but from the eleventh day only occasional L.E. cells were observed.

(3) A woman aged 52 (blood group A), with a diagnosis of carcinoma of the ovary with metastases, received 140 ml. S.L.E. plasma. No L.E. cells had previously been observed in her blood. After the transfusion she developed a chill and her temperature rose to 39° C., but she soon recovered without other complications. Her peripheral blood contained a striking number of L.E. cells and 10 days later they were still numerous.

Discussion

The L.E.-cell phenomenon has been produced in the blood of three patients suffering from conditions other than collagen disease by transfusing plasma from a patient with S.L.E. In all three, many typical L.E. cells could be observed as early as 2 hours after the transfusion, and for 10 days afterwards, the maximum being seen from 6 to 24 hours after the transfusion. The number of induced L.E. cells surpassed that in the blood of the donor patient. In one case, 60 to 80 L.E. cells per 1,000 leucocytes were present as compared with 30 to 40 per 1,000 granulocytes in a smear from the donor. From the eleventh day L.E. cells were found only occasionally, but in the first case a few could still be observed after 27 days.

These experiments prove that plasma from S.L.E. patients contains a factor which is responsible for the formation of L.E. cells, and which enables the L.E.-cell phenomenon to be reproduced in other

subjects. Up to now the existence of the L.E. factor in plasma has been demonstrated only *in vitro* by treating normal bone marrow or white blood cells with S.L.E. plasma. The present experiments have proved the transmission of L.E. factor by producing L.E. cells in persons without S.L.E.

Future experiments will aim at discovering whether the plasma factor can be held responsible for any changes occurring in S.L.E.

Summary

200 ml. plasma from an L.E.-cell positive woman was administered to three patients with malignant disease, in whom L.E. cells formed almost at once, with a maximum between the 6th and 24th hours.

REFERENCES

- Bencze, G. (1956). *Mag. belorv. Arch.*, 2, 33.
 Bridge, R. G., and Foley, F. E. (1954). *Amer. J. med. Sci.*, 227, 1-9.

- Haserick, J. R., Lewis, L. A., and Bortz, D. W. (1950). *Ibid.*, 219, 660.
 Snapper, I., and Nathan, D. J. (1955). *Blood*, 10, 718.
 Zinkham, W. H., and Conley, C. L. (1956). *Bull. Johns Hopk. Hosp.*, 98, 102.

Production des cellules L.E. *in vivo* par transfusion du plasma affecté par lupus érythémateux généralisé

RÉSUMÉ

On administra à trois femmes atteintes d'une maladie maligne 266 c.c. de plasma provenant d'une femme chez qui on avait démontré la présence de cellules L.E. Les transfusés formèrent des cellules L.E. presque immédiatement, avec un maximum entre la 6ème et la 24ème heure.

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SUMARIO

Se administraron a tres mujeres afectas de una enfermedad maligna 266 c.c. de plasma procediendo de una mujer con células L.E. comprobadas. Las receptoras formaron células L.E. casi inmediatamente, con un máximo entre las 6 y las 24 horas.