Plasma Prothrombin Time in Skin Diseases

II. Clinical Investigation on Plasma Prothrombin Time

By

Yoshiro Hamada

From the Department of Dermatology, Tohoku University, Sendai;
Director: Prof. M. Ito

(Received for publication, April 19, 1955)

Materials and method of plasma prothrombin time determination is quite similar to those of the preceding article.

1) Response of Plasma Prothrombin Time (P.P.T.) during Treatments

P.P.T. is determined more than twice—before and during treatment in 73 skin diseases. Prompt recovery of protracted P.P.T., especially of 12.5% quite corresponding clinical improvement, is observed in 18 cases i.e. 3 cases each of contact dermatitis and urticaria chronica, 2 cases each of drug exanthema and erythema nodosum, one case each of ectodermose erosive pluriorificielle, toxic eruption and urticaria perstans papulosa and also in one case each of extensive burns, bullosis mechanica senilis, acrodermatitis continua Hallopeau and hydroa vacciniformis.

Elongation of protracted P.P.T., especially of 12.5% is observed in 2 cases pemphigus vulgaris and one case Hodgkin's disease and all the patients died short after the tests.

No recovery of P.P.T. was found in other almost unimproved cases such as eczema chronicum, purpura, eczema seborrhoicum, cutaneous tumor, pityriasis rubra Hebra and fungus infection.

In three cases of erythematodes discoides chronicus P.P.T. was determined at least once a month for over 10 months; Case 1) Female, 30 years, protraction of 12.5% P.P.T. was noticed at first after 2 months oral administration of Atebrin (daily 0.2 g.), then whole P.P.T. tended to protract one month later. Recovery was noticed at first in 12.5% P.P.T. following interruption of the drug and intravenous administration of amino acids. Case 2) Male, 61 years, protracted both P.P.T. at his admittance was recovered by 28.5 g. of Chloromycetin and 10 g. of streptomycin. Atebrin administration (0.2 g. daily for 40 days) protracted both P.P.T. and interruption of the drug and liver extract injection normalized both P.P.T. Case 3) Female, 27 years, protracted both P.P.T. at her con-
sultation tended to normal by 30 times of Mycillin injections. ACTH, cortisone and daily 0.3 g. Atebrin for 13 days with vitamin C mixed with 20 cc. of 20% glucose solution did not influence both P.P.T. It seems important that in all cases variations of P.P.T., especially of 12.5%, is always precursory to urobilinogen in urine and Takata reaction.

2) Relationship between P.P.T. and Other Clinical Tests

Urobilinogen in urine was tested comparatively in 370 cases. In cases of normal P.P.T. (102 cases) urobilinogen was negative in 86 cases (84%) but in cases of protracted P.P.T. (268 cases) urobilinogen was positive in 74 cases (28%). Takata reaction was tested comparatively in 120 cases and no significant finding was obtained.

Influence of vitamin K upon P.P.T. has been examined mostly in the field of internal medicine and detailed variations of P.P.T. after vitamin K injection were reported by many investigators. The author tried this in 18 cases of skin diseases and 3 cases of liver diseases as the control. P.P.T. is determined before and 24 hours after intravenous injection of vitamin K (5 cc. contains 100 mg. V.K₃—sodium bisulfite) dissolved in 20 cc. 20% glucose solution because of severe headache. Mean value of the difference of whole P.P.T. before and after the injection is—1.5 seconds and that of 12.5% P.P.T. is—20.2 seconds. In 4 cases of skin diseases which present decrease of both P.P.T. 24 hours after the injection no positive urine urobilinogen and Takata reactions were found, but in other cases P.P.T. tended to protract and especially 4 cases presenting above 20.0 seconds rose in their 12.5% P.P.T. 24 hours after the injection urobilinogen in urine and Takata reaction were always positive.

No constant variations of P.P.T. before and 1, 3 and 5 hours after intravenous injection of 20 cc. 10% sodium thiosulfite aqueous solution were found in 11 cases.

P.P.T. and sedimentation rate of erythrocyte were examined comparatively in 248 cases but no definite conclusion is obtained. The fact almost corresponds to the results of Yokota et al.1)

Also no intimate relationship between P.P.T. and eosinophilic response following epinephrine injection in 108 skin disease cases was found but 4 hours after subcutaneous injection of 0.5 cc. of 1:1000 epinephrine to 17 skin disease patients, 7 cases presented reduced P.P.T. after injection and in 10 cases P.P.T. tended to protract.

Aschner's phenomenon and P.P.T. were tested in 368 cases but no definite relationship was found.

3) Relationship between P.P.T. and Reticuloendothelial system (R. E.S.)

Yamagata et al.23) stated in their animal experiment that functional trial with the injection of congored solution presented less variation of
Plasma prothrombin time is determined on whole and 12.5% saline diluted plasma during treatment and is studied comparatively with certain clinical tests in skin disease patients.
1. Plasma prothrombin time of 12.5% saline diluted plasma is more sensitive indicator of prothrombin activity than that of whole plasma.

2. Plasma prothrombin time is considered to be the method of examining the multiple functions of liver cell which varies from urobinogen test in urine, Takata reaction and sedimentation rate of erythrocyte. The results of test depend chiefly upon the condition of function of the liver cell but partly upon that of reticuloendothelial system.

References

3) Yamagata, Reticuloendothelial system and liver function (Jap.), Igaku Shoin, Tokyo, 1954.