STRUCTURAL ANALYSIS OF THALASSEMIC PLATELETS

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ABSTRACT

Morphological studies of thalassemic platelets were performed in 40 cases of beta-thal/Hb E disease patients (25 of NS and 15 of S). Platelet profiles were analysed and classified into disc, hemishere, sphere and other forms. There was significant difference in all forms of platelet profiles as well as discoidness index of thalassemic platelets as compared to 30 cases of normal healthy volunteers with P-value less than 0.05. The DI value and platelet count, DI value and hemoglobin level showed no correlation. The reduction in the disc formed platelets in these patients might suggest an activation in vivo. Platelet profiles of S and NS beta-thal/Hb E disease patients, however, showed no difference.

Electron microscopic findings supported the idea of platelet activation in the circulation of these patients. These included the evidences of an increase number of disc formed platelets with many pseudopods, increase number of irregular shaped platelets. There were more platelet aggregates seen and the prominent and dilatation of the surface open canalicular system (OCS) noted in platelets prepared from the directly fixed whole blood.

Thalassemic platelets also supposed to be more sensitive to stimulations. Observations of granules centralization, granules fusion in cold activated platelets as well as marked dilatation of OCS in platelets subjected to temperature transformation from ice-bath to 37°C supported this idea. Furthermore, in almsot all of the preparations for ultrastructural study of thalassemic platelets, there was an increase incidence of granules in association to rod-shaped elements similar to platelets which devoid of membrane and in this way more easily be destroyed by mechanical stimulation during samples preparation process. This study, however, could not explain whether these abnormalities of platelet profiles were primary or secondary to the formation of pulmonary arterial thromboembolism.