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FREE COMMUNICATIONS I

Platelets: Clinical Disorders.

STORAGE POOL DISEASE: EVIDENCE FOR CLINICAL AND BIOCHEMICAL HETEROGENEITY H.J. Weiss, B.A. Lages, L.D. Witte, K.L. Kaplan, DeW. S. Goodman, H.L. Nossel and H.R. Baumgartner
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Patients with platelet storage pool disease have decreased numbers and contents (ATP, ADP, serotonin, calcium) of the dense granules. Our studies on 14 patients with this disorder suggest considerable clinical and biochemical heterogeneity. The most pronounced dense granule defect (lowest levels of ATP and ADP, undetectable serotonin) was found in the 5 albinos with the Hermansky-Pudlak syndrome. One non-albino patient is unique in showing a decreased content of β thromboglobulin (βTG), platelet factor 4 (PF4), and the platelet growth factor (PtGF) that stimulated the proliferation of cultured fibroblasts and arterial smooth muscle cells. Her platelets also contained a decreased number of α granules in addition to decreased dense granules, suggesting that βTG, PF4, and PtGF are localized in specific α granules which are morphogenetically related to dense granules. Another patient was unique in that ADP, epinephrine, and arachidonic acid evoked completely normal aggregation responses, associated with normal production of platelet malondialdehyde. Since his platelets were markedly deficient in ADP, these findings provide further evidence that ADP release is not an absolute requirement for 'second phase' aggregation and that PGG_2 or thromboxane A_2 may directly aggregate platelets independent of ADP release. Variable defects in malondialdehyde production in other patients suggest further heterogeneity of the release defect in storage pool disease.

HETEROGENEITY OF STORAGE POOL DEFICIENCY. F.I. Pareti, L. Mannucci, A. Capitanio and D.C.B. Mills. Hemophilia and Thrombosis Center, Univ. Milan, Italy and Specialized Center for Thrombosis Research, Temple University, Philadelphia, Pennsylvania, U.S.A.

Prolonged incubation of Storage Pool Deficient (SPD) platelets with 14C-5HT is followed by abnormally rapid catabolism of the amine. When a 1:1 mixture of normal and SPD platelets was incubated with 14C-5HT such abnormal metabolism was not detectable due to the compensatory effect of normal platelets. SPD or normal platelets were incubated with 2 μM 14C-5HT for 5 minutes, washed and resuspended in buffer. Addition of 20 μM imipramine was followed by a rapid efflux from SPD platelets of 14C-5HT, which was not degraded. Normal platelets were not affected. In mixtures of normal and SPD platelets treated with imipramine the efflux of 14C-5HT was proportional to the SPD platelet fraction and still evident when only 30% of SPD platelets were present. In three non-typical cases of congenital SPD no metabolism of exogenous 14C-5HT was observed. In two of these, platelets incubated with 14C-5HT, washed and treated with imipramine, showed a rapid efflux of 5HT, comparable to that seen in a 30% normal-70% abnormal mixture, suggesting that the defect only involves a part of the platelet population. In a third patient no efflux of 14C-5HT was seen after imipramine. Imipramine addition to platelets preincubated with 14C-5HT appears to be a good way of distinguishing among different types of SPD and of investigating the presence of a similar defect in acquired SPD in which only a part of the platelet population is likely to be involved.