CELL PROLIFERATION AND DNA SYNTHESIS IN ORGANIZING WHITE MURAL NON-OCCLUSIVE AORTIC THROMBUS IN RABBITS. J. Sabolinski, B.L. Weisberg, K.H. More and A. Gotlieb. Department of Pathology, Pathology Institute, McGill University, Montreal, Canada.

White mural non-occlusive thrombus induced experimentally in the aorta of rabbits contains appreciable numbers of proliferating cells which contribute bulk and mass to the lesion. As these cells proliferate they produce appreciable amounts of collagen, elastin, and muco-polysaccharide which make the lesion resistant to dissolution by enzymes. In this study the proliferation of cells was monitored at serial time intervals up to 60 weeks by radioautography and chemical measurement of [3H]-thymidine incorporation into DNA in order to determine over what time intervals appropriate antiproliferative drugs might be tested to arrest the growth of these cells. TBA [3H]-thymidine incorporation into DNA became significant on Day 2, remained very high until Day 24 and then declined. The concentration of DNA per mg delipated dry weight of thrombus between Day 0 and 4 was highly variable (6 to 10 mg/mg) due to the highly variable ratio of nucleated cells (monocytes and polymorphonuclear leukocytes) to fibrin and platelets. Between Day 4 and 24 weeks the DNA concentration became less variable as the polymorphs and monocytes were replaced by macrophages and spindle-shaped cells (10 to 20 mg/mg per mg delipated lesion). After 4 weeks DNA concentration declined continuously until by 60 weeks there was 2 ± 1 mg/mg DNA/mg delipated dry weight of lesion as it was diluted by collagen, elastin, and muco-polysaccharide. It is concluded that if antiproliferative drugs are to be used, they must be started as early as Day 2 and be maintained for at least 2 weeks.

ELECTRON MICROSCOPY OF GLOBLAR HYALIN MICRO-THROMBI. H. Blevin. Dept. of Pathology, Faculty of Clinical Medicine, Mannheim, University of Heidelberg, Mannheim, West Germany.

Globular hyaline micro-thrombi (GHM) are round or oval, eosinophilic, strongly PAS-positive intravascular coagulation products with a diameter between 3 and 60 μm. Immunohistochemical investigations give strong evidence that they are composed of highly polymerized fibronogen derivatives. The ultrastructure of these GHM is characterized by spherical space lattices of frequently interconnected bundles of fibres with a periodic transverse striation and the fibrin-characteristic axial period of 73 nm. The densely-packed spherical space lattices are surrounded by a so-called corona, plump or slender bundles of fibrin fibres characterized by the same uniform periodic axial striation of 73 nm that spread radially over the surface of the micro-thrombi. GHM apparently originate from the interlocking and interlocking of intravascularly formed, partly polymerized, filamentary intermediate fibrinogen-fibrin conversion in the flowing blood. Part of these GHM, on the other hand, lack this axial periodicity and the fibrillar structure of the spherical space lattices is replaced by nearly amorphous fine-grained precipitates. The disappearance of the axial periodicity and of the fibrillar structure of the spherical space lattices is considered to be the morphological equivalent of a secondary fibrinolysis in the centre of the GHM. The morphogenesis of GHM in states of hyperdynamic shock is discussed.

EFFECTS OF A POLYETHYLENE DETERGENT ON PLATELET FUNCTION. P.G. Barron. Department of Biochemistry, University of Alberta, Edmonton, Canada.

Low concentrations of a polyethylene detergent, Brij 58, inhibited the secondary phase of platelet aggregation induced by AIP in human citrated platelet rich plasma but had no effect on primary aggregation. Thrombin-induced aggregation of washed human platelets suspended in Tyrode's buffer was inhibited after incubation of cells with 4.5 x 10⁻⁶ M detergent. Development of prothrombin-converting activity and efflux of [14C]-serotonin, 45Ca²⁺ and labile adenosine were abolished concurrently. Aggregation of washed platelets by collagen or sodium arachidonate and the attachment of cells to clean glass surfaces were also inhibited by the same concentration of Brij 58 that inhibited thrombin aggregation. This concentration of Brij 58 did not itself produce any release of a cytoplasmic marker, lactate dehydrogenase, from platelets. Higher concentrations of Brij 58, exceeding 10⁻⁴ M, lysed the cells liberating all of their serotonin, Ca²⁺ and lactate dehydrogenase. These results suggest that low concentrations of Brij 58 stabilize a membrane platelet stimulatory agents while high concentrations produce membrane destabilization and cell lysis. The presence of albumin (88%) in the suspending fluid increased by tenfold the concentrations of detergent required to elicit these effects and this could be attributed to competitive binding of the detergent to albumin, demonstrated with [14C]-acetylated Brij 58.