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Ultrastructure of Erythroblasts in Health and Disease

S N Wickramasinghe

Department of Haematology, St Mary's Hospital, London W2 1NY

Occasional normal erythroblast profiles show minor ultrastructural peculiarities such as short (up to 520nm) intranuclear clefts and short ($< 1 \mu\text{m}$) stretches of duplicated nuclear membrane. Nearly 25% contain small autophagic vacuoles. In various diseases associated with disordered erythropoiesis, the erythroblasts display non-specific dyserythropoietic changes that are of no diagnostic value. The latter include abnormally long intranuclear clefts, extensive myelinisation or duplication of the nuclear membrane, abnormally large autophagic vacuoles and iron-laden mitochondria. In some disorders, diagnostically useful abnormalities are also present. For example, in congenital dyserythropoietic anaemia type I the heterochromatin of up to 60% of the erythroblasts shows a spongy or 'Swiss-cheese' appearance and in α - and β -thalassaemia syndromes intracellular precipitates of β - or α -globin chains, respectively, are seen and these have different ultrastructural appearances.

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Wickramasinghe, Sunitha N.; McCullough, Jeffrey

Alterations in the frequency and morphology of various types of marrow cells.
(Erythroblast EM - Page 95 & 96)