Some cytogenetic aspects of diabetes mellitus

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The present study began with 80 adult albino rats of both sexes (60 females and 20 males). The animals were divided into 4 equalgroups each comprising 15 females and 5 males. The first group servedas controls and its animals were injected with distelled water, theremaining groups served as experimentals as follows:-- Females and males of the first experimental group were injectedwith a freshly prepared aqueous solution of the diabetogenic agentStreptozotocin in a single dose of 40mglkg body weight one weekbefore mating.- Only females of the second experimental group were injectedwith the diabetogenic agent.- Only males of the third experimental group were injected withStreptozotocin.The offspring of each group were further subdivided into 3subgroups (A, 8 and C) according to their ages (2, 4 and 12 weeksrespectively). As well, and according to the random blood glucose level,the offspring were divided into diabetic (200 mg/dL or more), nondiabetichyperglycemic (> 120 200 mg/dl.) exhibitedsigniflcantly lower -proliferation indices. However, non-diabetichyperglycemic offsprings showed non significant differences from theirage corresponding controls.- Histological changes concerning fl and a-cells were directlyproportional with the level of blood glucose. Beta cells showedpyknotic and karyorrhexic nuclei, hyDROPic degenerative changes intheir cytoplasm, and lastly ballooning and complete loss of the cell.Alpha cells, on the other hand, showed extensive eosinophilia withdiabetic animals; indicating accumulation of secretion in theircytoplasm.- Morphometric study of J3-cells showed that their nuclei were enlargedsignificantly in a trial cope with the state of hyperglycemia. Finally, thecells were exhausted and their nuclei showed the different stages ofdegeneration.III COilC/usioll, the present investigation provided an evidencethat hyperglycemic milieu found surrounding the foetuses during theirintrauterine life might affect their J3-cells colonies and result in theproduction of endocrine pancreatic mass which is unelTicient inproducing the required amounts of insulin. However, paternal diabeteswas found to be of negligible effect. Accordingly maternaillealth andcare of prediabeties and diabeties must take a prime importance in itsregulation and control during the earliest weeks of pregnancy orpreceding pregnancy if possible.