

PATHOLOGICAL MITOSES IN CULTURES OF HUMAN EMBRYO
FIBROBLASTS INFECTED WITH CYTOMEGALOVIRUS

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Cells with large intranuclear eosinophilic inclusions occur in cultures of human embryo fibroblasts (HEF) infected with human cytomegalovirus (CMV) (1-3). These cells are grouped in "rosettes" and "beds", outside of which the monolayer appears unchanged. The cytological changes develop slowly, in the course of 1-3 weeks.

This report is concerned with pathological mitoses in HEF cultures infected with CMV (strain C-133, adapted to HEF cultures, and strains isolated from sick children - 1). Infected cultures on coverslips were fixed 3-21 days after inoculation and stained with haematoxylin and eosin. We determined the mitotic activity, and the percentage and forms of pathological mitoses among cells undergoing division.



In a part of the infected cultures, the mitotic activities did not significantly differ from those in control cultures; in some infected cultures the mitotic activity was inhibited. In apparently intact areas of the cell layer, there was no increased proportion of pathological mitoses as compared with the control (the proportion of pathological mitoses was 2-8% of all mitoses). But in the zone of cytopathic activity and in its close vicinity this proportion reached 20-60%. Colchicine-like metaphase (Fig. a) with shortened malformed chromosomes was the prevalent form of pathological mitoses in CMV-infected HEF cultures. Occasionally, C-metaphases represented 40-90% of the pathological mitoses. In a part of cells in C-metaphase there occurred massive fragmentation of chromosomes, indicating the lethal character of the changes. In addition, metaphases with delayed chromosomes (Fig. b) and multipolar metaphases were seen in infected cultures. Pathological prophases (Fig. c) also occurred; they probably represented predecessors of C-metaphases.

Our results are in accordance with reports about the colchicine-like effect of CMV on cell cultures (4). It is probable that this effect can be exerted by different members of the herpesvirus group (5).

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