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Age-related alterations in the size of human hepatocytes. A study of mononuclear and binucleate cells.

[Watanabe T, Tanaka Y.](#)

Abstract

Age-related alterations in the size of human hepatocytes (both mononuclear and binucleate forms), were studied in histological sections and in separated cells and nuclei using cytophotometrical and microspectrophotometrical methods. The following results were obtained: 1. The volume of nuclear DNA increased in proportion to nuclear size. The increase occurred in a group pattern reflecting nuclear polyploidization. 2. Cell size increased in proportion to nuclear size. Tetraploid cells (4C) were roughly two times greater than diploid cells (2C). 3. In most of the binucleate cells examined, the ploidy class of the two nuclei in a binucleate cell was observed to be equal. Heterogeneity of the ploidy class among the nuclei of a binucleate cell was present in less than 1% of total binucleate cells examined. The nuclear DNA volume of individual nuclei in binucleate cells appeared to be the same as that of mononuclear cells. 4. The cell size of binucleate cells corresponded with that of mononuclear cells whose ploidy class was the same as the sum of the ploidy classes of two nuclei of a binucleate cell. 5. The incidence of binucleate cells in the lobular periphery was about 4 to 6% in the third decade, and increased slightly with age up to 5 to 7% in the tenth decade. 6. The incidence of binucleate cells in the liver at different ages followed a similar pattern to that observed in mononuclear cells whose ploidy class was half of the sum of ploidy classes of the two nuclei of the binucleate cell.

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