Cytogenetic Investigation of Spontaneous Abortions

A. M. KULIEV

Laboratory of Cytogenetics of Institute of Human Morphology AMS USSR, Moscow, and Biological Department of Azerbaijan State Medical Institute after N. Narimanov, Baku

Received December 19, 1969/March 18, 1971

Summary. 88 spontaneous abortions were investigated cytogenetically, 18 of them proved to have anomalies of chromosomes. Cells with aberrations were exposed to continuous cultivation. Successful prolonged cultures were grown from embryos with the following karyotypes: trisomy D, trisomy C and mosaicism (46,XX/47,XX,C+/48,XX,C+E+). It was shown that nonmosaic abnormal karyotypes were stable in the process of prolonged cultivation.


The role of chromosome aberrations in antenatal death of embryo was determined by numerous investigations. All papers on this subject include both data on the frequency of spontaneous abortions of chromosomal origin in different populations and description of the more ordinary or the rare chromosomal anomalies causing abortions.

In the previous reports of our laboratory (Kuliev, 1969a, b; Kuliev et al., 1969; Stonova and Selezneva, 1968) different chromosomal anomalies in spontaneous abortions were described. This paper contains the results of investigations on passing and continuous cultivation of cell clones with aberrative karyotype lethal to human embryo or fetus.

Material and Method

The material for the investigations was spontaneous abortuses received from the Moscow gynecological hospitals. Cultivation of embryo tissues and chromosome preparations were made according to previously described methods (Stonova et al., 1966). In most cases cell cultures were received after trypsinization. Fragments of fetuses and trophoblast were exposed for 15—30 min to 0.25% solution of trypsin. After removing the trypsin from the fragments of tissue they were suspended in a medium containing 50% Eagle's Basal Medium, 30% lactalbumin hydrolysate, 20% bovine serum and seeded into Karrel's flasks.

If the specimens of fetus or trophoblastic tissue were very small they were divided into small explants approximately 2—3 mm and placed on the surface of the glass in a small amount of nutrient medium.

In some cases entire embryos were minced and suspended in the above-mentioned medium without trypsinization.

The cells with chromosome aberrations were exposed to continuous cultivation according to Heyflick's method (Hayflick and Moorhead, 1961).
Results

The Table contains cases with chromosome anomalies discovered by the cytogenetic investigation of 88 spontaneous abortuses (some abnormal karyotypes shown on Fig. 1 and 2).

In order to examine the development of cells having chromosomal aberrations they were exposed to continuous cultivation. When the cells were of amniotic