

A Case of Dispermic Chimerism

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Chimeras have been defined as individuals whose cells derive from two or more zygotes. Chimerism is usually recognized because of the coexistence of two populations of cells with different genetic patterns. This phenomenon can be transient due to blood transfusions or transplacental passage of cells. Permanent chimerism is the case in twin chimeras and dispermic chimeras. In the twin type, two cell lines are only found in the blood. Dispermic chimerism is due to the fertilization by two sperms of two maternal nuclei and their growth in one body. These individuals are recognized due to hermaphroditism or other upsets in sex if XX/XY cells are involved.

The authors describe a dispermic chimera who proved to be a fertile woman, as she was delivered of a healthy infant. Mixed field agglutination was already noticed in routine ABO typing during pregnancy but was considered to be a weak A antigen.

As the proposita gave birth to an extramarital child, her blood and blood samples of the newborn infant and the putative father were examined. Two populations of red and white cells were found in the blood of the proposita. They differed in ABO and HLA antigens and several DNA-VNTR and STR systems. As the proposita had no knowledge of a twin, DNA typing was performed also on other tissues. The results of these tests confirmed our assumption of a dispermic chimera.

STR typing of different tissues has proved to be a useful tool to differentiate twin and dispermic chimeras.