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Disturbances of electrodynamic activity affect abortion in human

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Abstract. Biochemical research of biological systems is highly developed, and it has disclosed a spectrum of chemical reactions, genetic processes, and the pathological development of various diseases. The fundamental hypothesis of physical processes in biological systems, in particular of coherent electrically polar vibrations and electromagnetic activity, was formulated by H. Fröhlich; he assumed connection of cancer process with degradation of coherent electromagnetic activity. But the questions of cellular structures capable of the coherent electrical polar oscillation, mechanisms of energy supply, and the specific role of the endogenous electromagnetic fields in transport, organisation, interactions, and information transfer remained open. The nature of physical disturbances caused by some diseases (including the recurrent abortion in humans and the cancer) was unknown. We have studied the reasons of recurrent abortions in humans by means of the cell mediated immunity (using immunologic active RNA prepared from blood of inbred laboratory mice strain C3H/H2K, infected with the lactate dehydrogenase elevating virus–LDV) and the cytogenetic examination from karyotype pictures. The recurrent abortion group contained women with dg. spontaneous abortion (n = 24) and the control group was composed of 30 healthy pregnant women. Our hypothesis was related to quality of endometrium in relation to nidation of the blastocyst. The energetic insufficiency (ATP) inhibits normal development of fetus and placenta. We hope that these ideas might have impact on further research, which could provide background for effective interdisciplinary cooperation of malignant and non-malignant diseases.

1. Introduction

The hypothesis of potential risk of multiplication of associations of acrocentric chromosomes for gravidity and, further, of a potential relationship of this phenomenon with the LDH-elevating virus infection was derived on the basis of the following findings: An enhanced associability of chromosomes and, at the same time, an increased susceptibility of leukocytes to the LDH-elevating virus antigen were recorded in women with disordered fertility of an unknown etiology as compared with control groups. Through a statistic evaluation of results obtained via sectional as well as experimental investigation, a relationship was demonstrated by us between the presence of a LDH-elevating virus agent and an altered behavior of chromosomes on mitosis.

A cohort studied consisted of 24 women aged 25-40 years with a load of a spontaneous abortion in 1st trimester in their anamneses. The women became pregnant over 6 to 40 months after the latest abortion. The mean number of spontaneous abortions, parturitions of healthy infants and

interruptions made for social reasons are as follows: 1,5 (1 to 3), 0,3 (0 to 1), and 0,3 (0 to 1), respectively. Neither targeted clinical nor laboratory examinations revealed a potential cause of their infertility.

Information as regards the clinical state of women patients and newborns were obtained from case histories and parturition records in the 2nd Clinic of Gynaecology and Obstetrics, 1st Faculty of Medicine, Charles University, Prague.

2. Materials and Methods

2.1. Leukocyte adherence inhibition test

The leukocyte adherence inhibition test was used. The leukocyte adherence inhibition (LAI) assay is an in vitro quantitative technique to study and monitor the cell-mediated immunity based on observation of adherence of T lymphocytes to substrate in the presence or absence of antigens [1].

LDH virus antigen is an immunologically functional fraction prepared from the serum of inbred laboratory mouse strain C3H/H2K infected with the virus (LDH virus) enhancing the lactate dehydrogenase isoenzyme [2].

The T lymphocytes were prepared from venous blood of women with recurrent abortions and of healthy women.

The number of T cells in suspension was counted before and after 60 min sedimentation period and the difference – the number of nonadherent cells – was determined.

2.2. Cytogenetic examination from karyotype pictures

Complete sterile sets for one examination using quasi micro methods were used. The sets contained all technological components (i.e. solutions and tools for taking of blood samples, cultivation) prepared for manufacturing. The leukocytes were taken from periphery blood at the beginning of pregnancy. The method of chromosome deviations, specially acrocentric associations was used. Number of mitoses (30) with acrocentric associated chromosomes examined and evaluated. Karyotype picture were prepared in the cytogenetic lab of the 2nd Gynecological and Obstetrics Clinic in Prague [3]. The significance of differences between mean values was being determined using the t-test.

3. Results

A cytogenetic examination as carried on the basis of the culture of leukocytes from the peripheral blood taken at the beginning of pregnancy provided a possibility to define a count of mitoses with associated chromosomes, such a count serving as a rate of their associability. The associations were evaluated always in 30 mitoses according to criteria developed by [4].

The susceptibility of leukocytes to the LDH-elevating virus was being ascertained using the leukocyte adherence inhibition test, and the antigen was obtained based on the above mentioned methods.

The control group for cytogenetic and immunologic examination consisted of 30 women bearing a healthy child at term after a physiological gravidity and having neither gynaecologic nor other serious organ diseases in their histories.

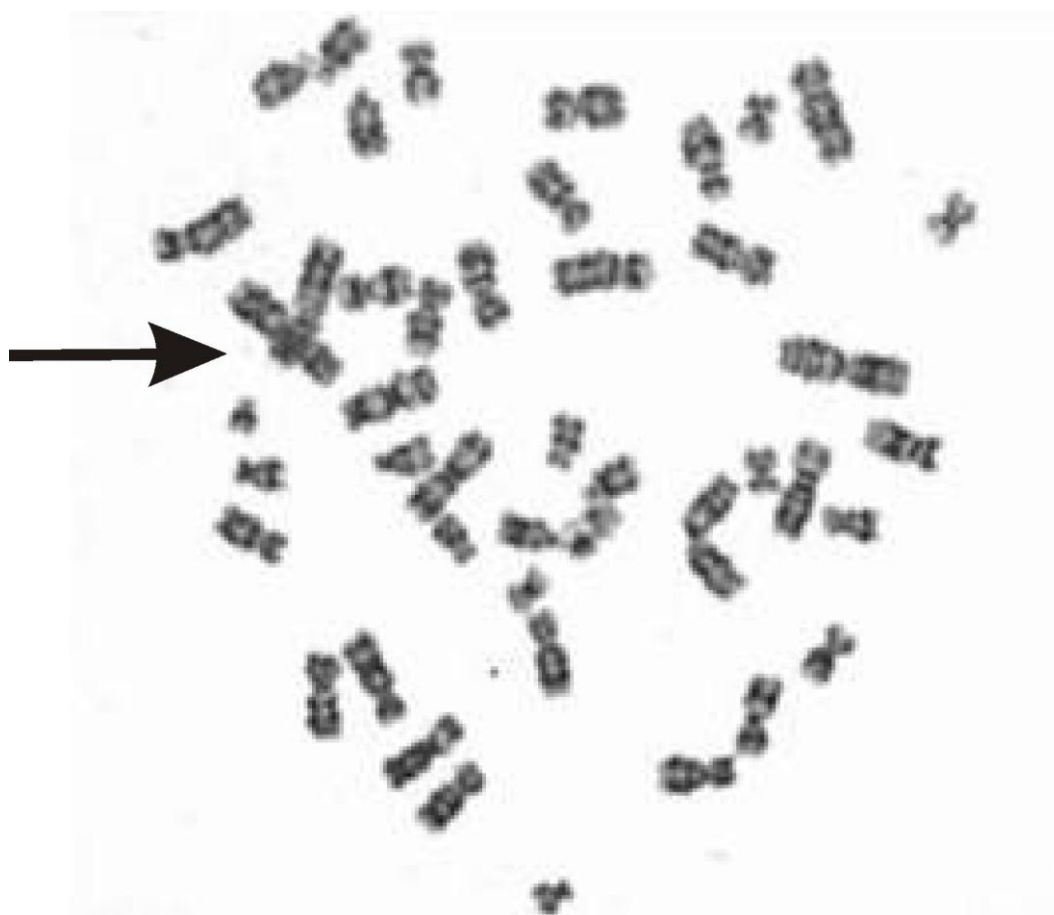


Figure 1. Karyotype containing an acrocentric cluster of chromosomes prepared from T lymphocyte of periphery blood (the arrow points to an acrocentric cluster).

Table 1. Results of evaluation of the associability of acrocentric chromosomes.

Cohort	Number	% of mitoses with associations of acrocentric chromosomes
Control group	30	39.6
Infertile women	24	60.7**

Legend. **..... $P < 0,01$

Table 2. Immune response to LDH-elevating virus by women with disordered fertility of an unknown etiology.

Cohort	Number	% of non-adhered cells
Control group	30	36.8
Infertile women	24	70.7**

Legend. **..... $P < 0,01$

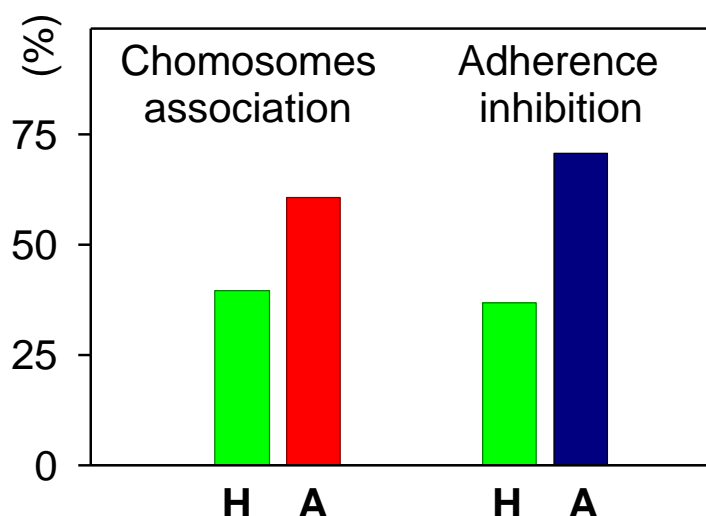


Figure 2. Comparison of associated acrocentric chromosomes and immune response to LDH virus
 H – women with normal delivery (healthy group), N = 30
 A – women with recurrent abortions (abortion group), N = 24

Twenty women of the abortion group studied (83.3%) bore a live foetus, one woman (4.2%) bore a dead child and three women (12.5%) aborted spontaneously again. 13 women (65%) were hospitalized in the course of their gravidity (8x for bleeding, 2x for EPH gestosis, respectively 3x for signs of a premature parturition).

4. Discussion

The immune response to the LDH-elevating virus decreases with time which has elapsed from the latest abortion, which indicates that the reaction of the nucleus apparatus on the noxa seems to be slower.

It is evident from the above mentioned that in 24 infertile women an increased associability of acrocentric chromosomes and an enhanced susceptibility to the LDH-elevating virus antigen were ascertained in the subsequent gravidity by means of the cytogenetic examination. Pathologic deviations were exhibited both by the course of pregnancies and the health status of newborns [5].

Results of this clinical study, which could not encompass a higher number of women patients due to financial reasons, support the hypothesis that the increased associability is a risk factor for pregnancy and the state of the newborn as well. Its determination along with determination of an immune response of the organism to the LDH-elevating virus in women with a disorder of fertility of an unknown origin is considered suitable in order to optimize determination of the best time for a new conception.

It seems that mutual attraction of chromosomes by a small particle with specific properties as a consequence of defective distribution of electrodynamic activity in chromosomes—generation of a strong field in a preferential direction (may be a result of conformation or structural changes, changed energy supply) are a good hypothesis for future physical research: decreased electrodynamic cellular attraction forces—decreased power and coherence of cellular oscillations [6,7,8,9,10].

In the presented work we like to focus on the cell metabolism and its dependence on the electrodynamic field under the influence of exogenous RNA.

It turns out, that the electrodynamic field is proportional to the rate of ATP production and uptake, the alteration of which affects the cytoplasm, the cell membrane and finally the nearby extracellular space, where it can interfere with the electrodynamic field of the surrounding tissue

[11,12]. We are discussing whether the outlined interaction might play some role in the intercellular signaling and intercellular information exchange.

5. Conclusion

Investigation of abortions from unknown reason revealed that:

Chromosomes from mother's T lymphocytes display acrocentric associations,

Mother's T lymphocytes are sensitive to RNA of LDH virus.

Abortions from unknown reason may belong to a general group of diseases containing pathological consequences of LDH-elevating virus infection.

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