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**EMBRYONIC AND FETAL HAEMOGLOBINS
ARE NOT ONLY INDICATORS OF A HYPOXIA,
BUT ALSO POSSIBLE ADDITIONAL
MARKERS IN MONITORING PATIENTS WITH
HEMOBLASTOSIS**

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The secretion of human alpha-fetoprotein in blood serum of patients with hepatocarcinoma has been found out for the first time in Astrakhan in 1963

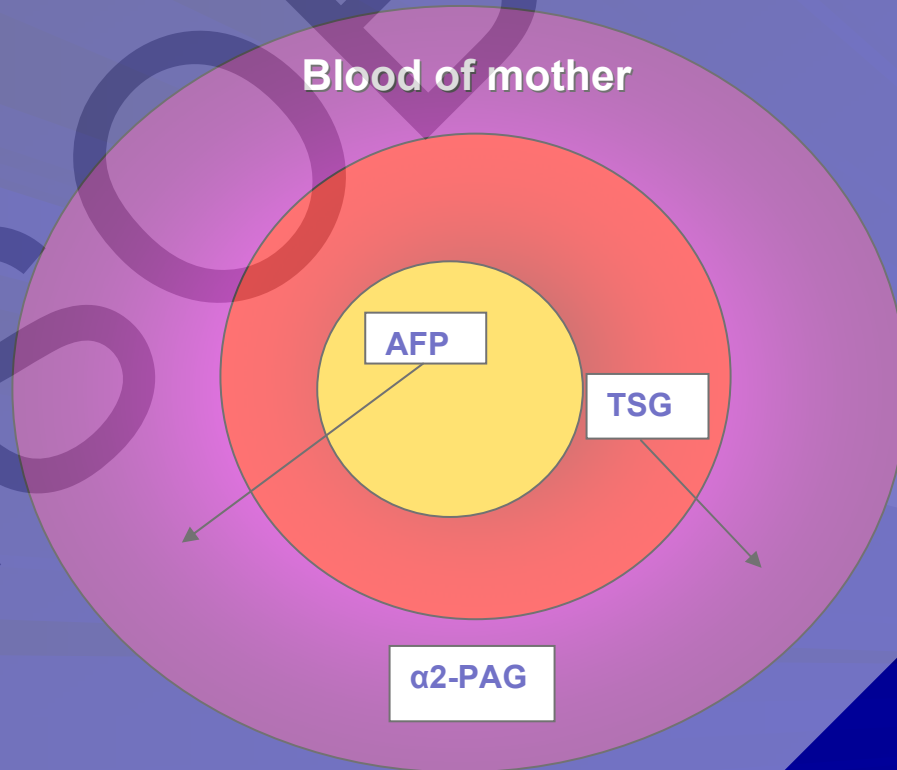
and in 1971 trophoblastspecific beta-globulin has been detected in a blood of patients with chorionepithelioma



Professor Yuri Tatarinov



AFP, TSG, α 2-PAG are investigated in detail from the moment their discovering in our laboratory. Concentration of these proteins in a blood of mother or fetus is determined by their biological role



Antenatal types of a haemoglobin /HbE and Hb F/ concern to group of embryospecific proteins also

- **But if the facts of gene expression of the some fetal and placental proteins at adult are known now**
- **antenatal haemoglobins are remained insufficiently studied**

Aims. To study use of embryonic and fetal haemoglobins (HbE and HbF) in diagnostics of tissue hypoxia in newborn and myeloproliferative marrow diseases

If studying of HbF and HbE at a hypoxia is absolutely logical, studying them at diseases associated to the pathological condition of myeloid population pluripotent cells is based on modern conceptions ascribing erythremia to marrow myeloproliferative disease group.



Methods

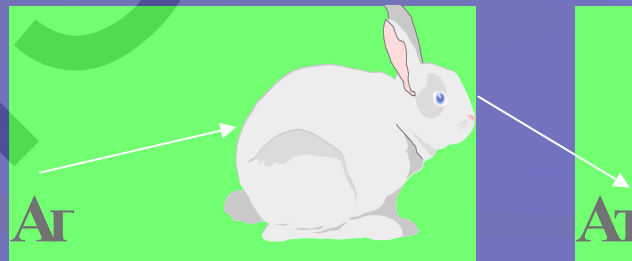
In work used prepared by us
Immunodiffusional tests–systems on
embryonic and fetal hemoglobins

1 Stages

Purification
of an
antigen

2 Stages

Immunization of laboratory animals



3 Stages

Modelling of
test-system

The analysis of the purified HbE and HbF with PAAG electrophoresis

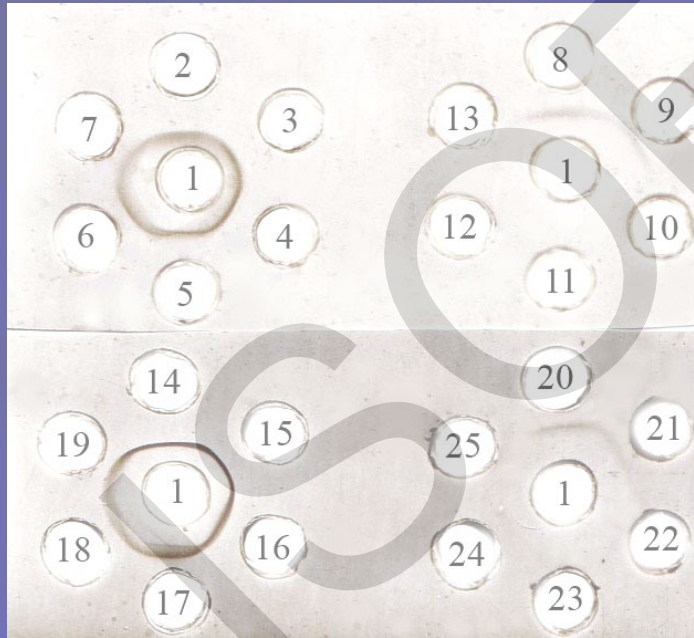


- 1 - HbE
- 2 - Hemolyzed erythrocytes of the donors blood
- 3 - incompletely purified HbF



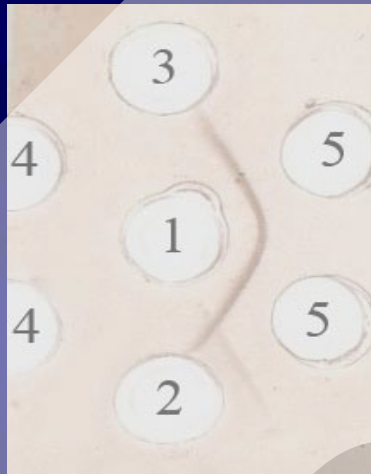
- 1 – Hemolyzed umbilical blood
- 2 – albumin
- 3 – HbF
- 4 – incompletely purified HbF

Immunodiffusional analysis of the antiserum on HbE

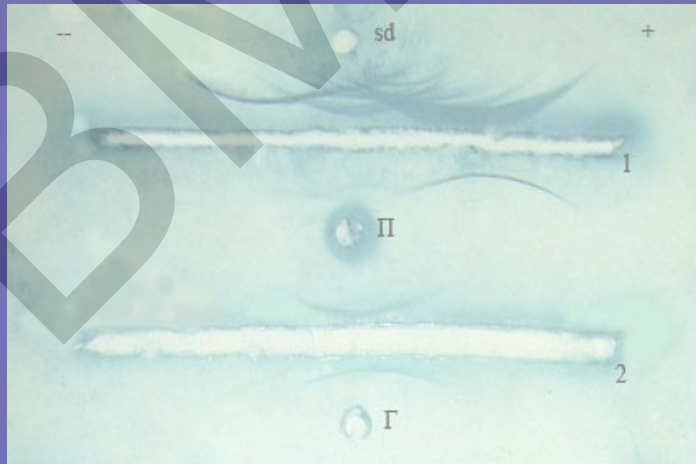


- 1 –the antiserum on HbE
- 2-13 – Samples of embrionic tissue extracts in titer (1 - 1/2048)

Identification of the antisera to HbF

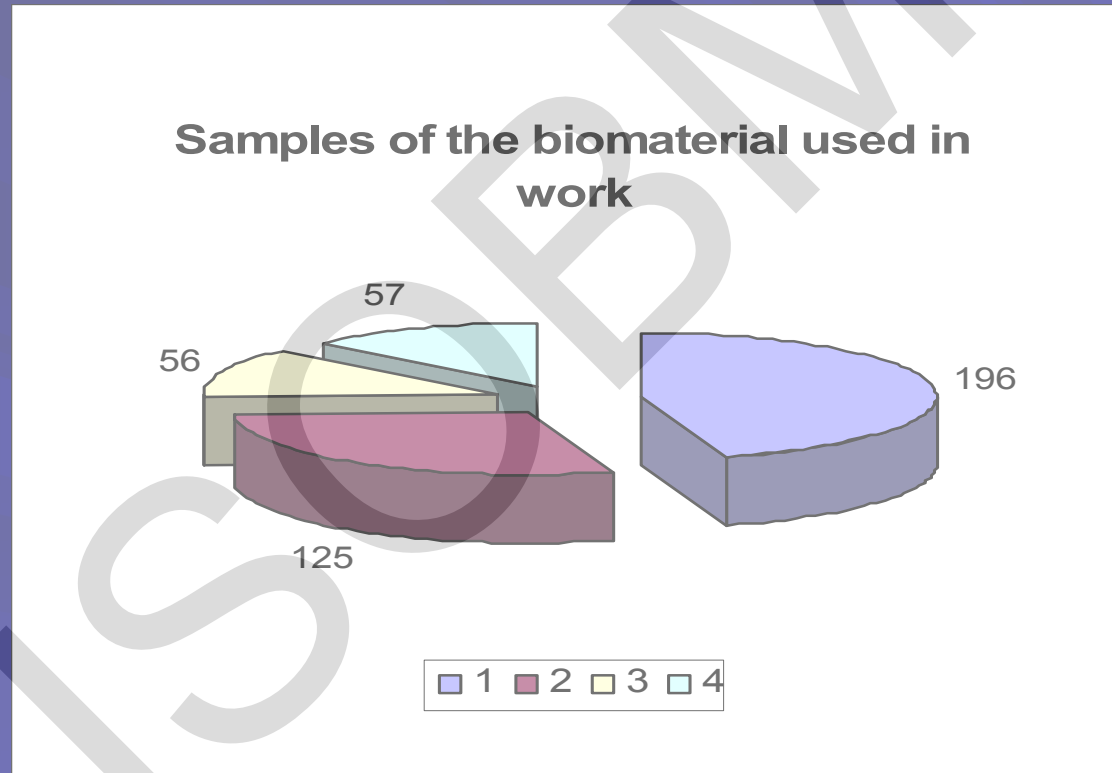


- 1 –the antiserum to HbF
- 2 - the antiserum to HbE
- 3 – albumin
- 4 – purified HbA1
- 5 –emrionic tissue extracts (10-12 weeks)



- Sd – blood serum of donors
- Π – hemolyzed umbilical blood
- Γ – hemolyzed blood of donors
- 1 –antiserum to donor blood serum proteins
- 2 – the antiserum to HbF

We represent your attention the preliminary results on clinical studying HbF and HbE



clinical material

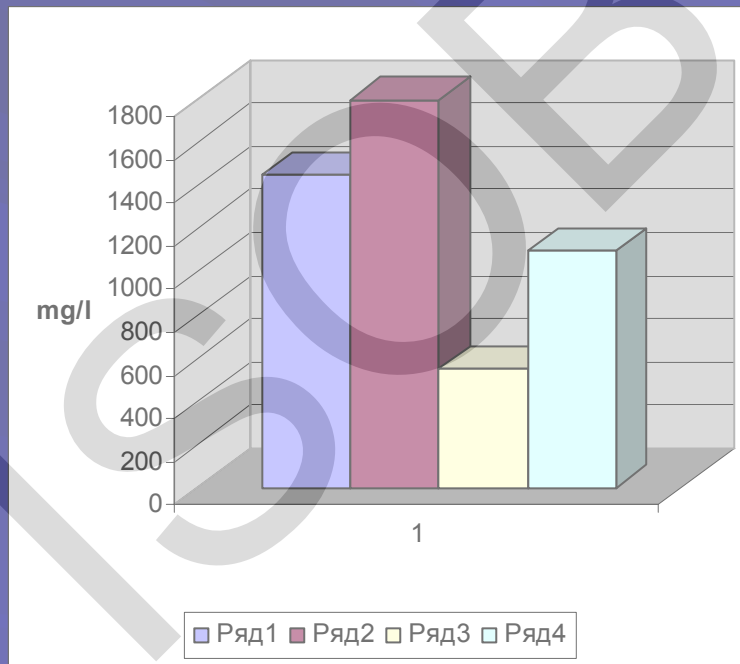
1 - umbilical blood; 2- blood of patients with hemoblastoses

3 - blood of donors; 4 - blood of pregnant women

HbF level in a blood newborns with the expressed intrauterine hypoxia was in 1.3-1.7 times is higher in comparison with healthy newborns

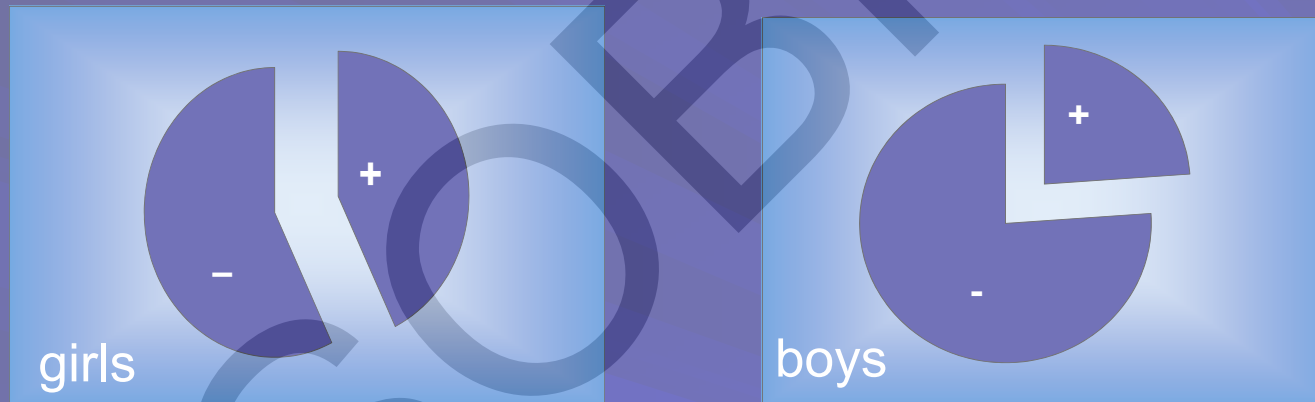
- **. HbF level in healthy newborns is: 1077.1±49.2 9 mg/l (boys) and 1211.4±75.0 mg/l (girls).**
- **In intrauterine hypoxia it was 1422.6±51.3 (boys) and 2306.9±92.3 (girls)**

Level HbF at newborns with intrauterine hypoxia



1. intrauterine hypoxia without other complications
2. intrauterine hypoxia + delay of intrauterine development
3. intrauterine hypoxia + high degree of a prematurity
4. healthy newborns

**For the first time HbE was registered
in the blood of newborn with strong
intrauterine hypoxia (30.23%)**



- in this case embryonic haemoglobin has been found out in 2 times more in girls often than in boys (39.13% and 20.0% respectively)

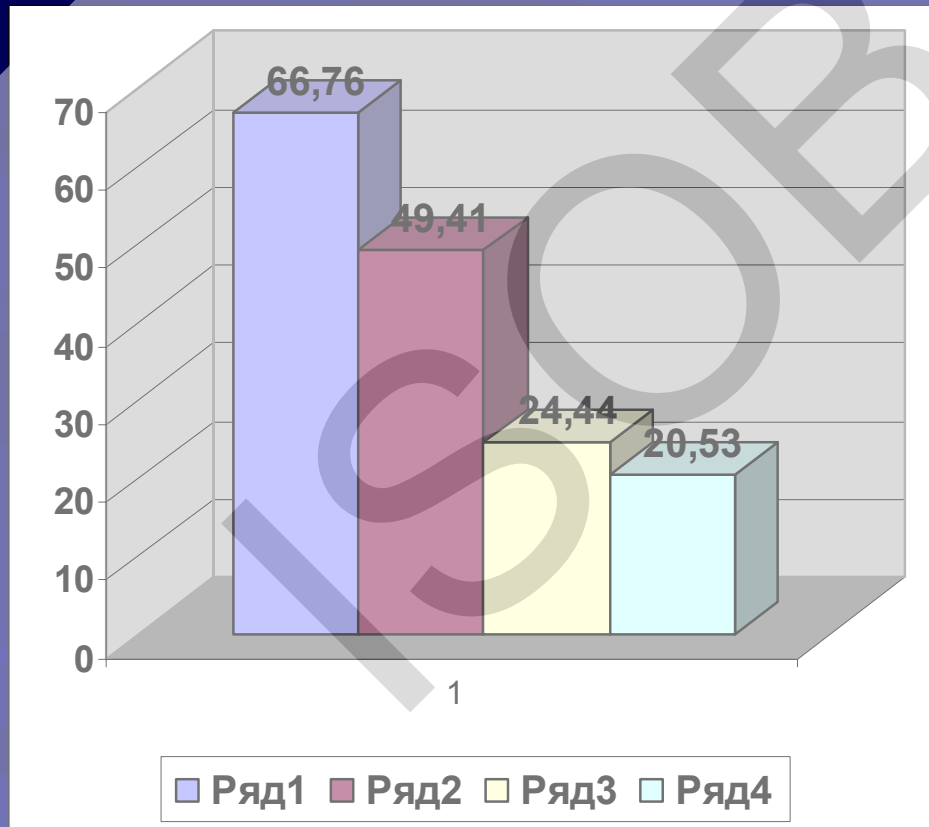
The level of HbF, stable blood component, was significantly higher at myeloproliferative diseases

- (erythremia - 1164 ± 41.2 mg/l
- myeloleukemia different forms - 929 ± 33.7 - 1029 ± 34.9 mg/l
- at patients without of blood diseases - 651 ± 29.3
- in subacute and chronic lympholeukemia was not revealed

Also for the first time HbE is revealed in patients with

- erythremia (66.67%)
- myeloleukemia (in 49.41% of subacute form, in 24.44% of acute form, in 20.53% of chronic form)
- HbE, also as HbF, in acute and chronic lymphoid leukemia was not revealed

Frequency of detection HbE at hemoblastoses / % /

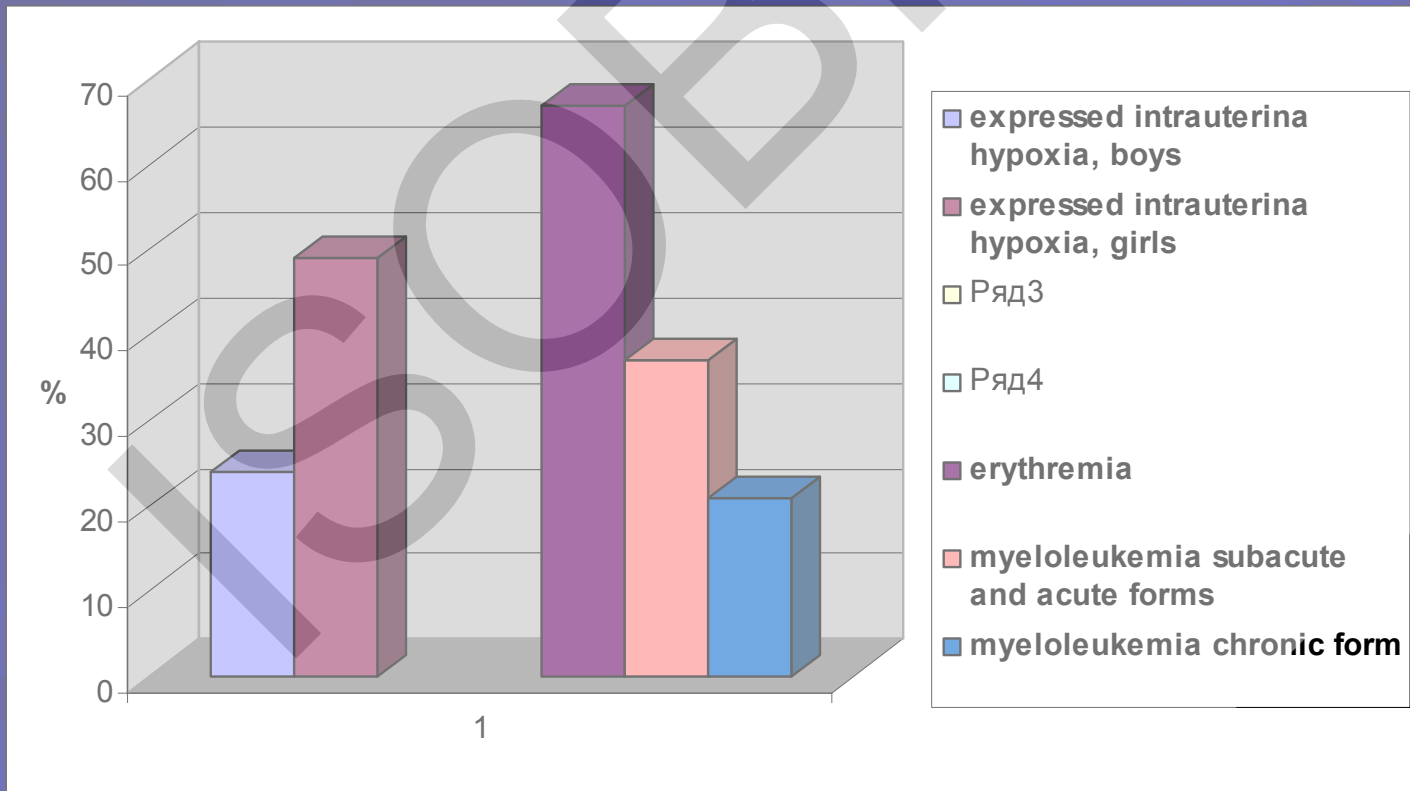


1.

Erythremia
Myeloleukemia
(subacute form)
Myeloleukemia
(acute form)
Myeloleukemia
(chronic form)

Concentrations
from 3.71 ± 0.20
to 4.07 ± 0.23 mg/l

Frequency of detection HbE in blood of newborns and patients with diseases of blood



Conclusions

- The findings are indicative of possible diagnostic role of haemoglobin early antenatal types in estimation of strong intrauterine hypoxia and hemoblastoses differential diagnosis.
- The question remains open: is the renewal of antenatal haemoglobin type synthesis in hemoblastoses a consequence of corresponding gene derepression under the influence of extracellular factors or cell structure change?

Thank For Your Attention



The River Volga





С 1999 г. систематически проводятся международные научные конференции и школы-семинары для молодых ученых с международным участием «БЕЛКИ-МАРКЕРЫ ПАТОЛОГИЧЕСКИХ СОСТОЯНИЙ» и «СОВРЕМЕННЫЕ ДОСТИЖЕНИЯ ФУНДАМЕНТАЛЬНЫХ НАУК В РЕШЕНИИ АКТУАЛЬНЫХ ПРОБЛЕМ МЕДИЦИНЫ»



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