Introduction. Cerebral stroke in children is very rare and can be caused by huge number of diseases. Congenital heart malformations and thrombophilia are described to be the most frequent reasons for stroke’s debut in infants. But interaction between them is not investigated thoroughly.

Methods. Type of study: case series. Inclusion criteria: boys or girls between the age of 0 and 12 months with congenital heart disease; acute ischemic stroke, which has developed immediately after cardiac surgery and confirmed by brain CT scan; slavic origin; informed consent form. We identified single nucleotide polymorphisms (SNPs) of thrombophilia (8 SNPs), folic acid cycle’s enzymes (4 SNPs) and arterial hypertension (9 SNPs) in 10 children’s (6 girls, 4 boys) blood samples by polymerase chain reaction.

Results. All children had more than three SNPs of thrombophilic genes in the homozygous or heterozygous state: F2: G20210A (n=1), F5: G1691A (n=0), F7: G 10976A (n=7), F13: G103T (n=3), PAI-1: -675 5G/4G (n=10), FGB: G-455A (n=8), ITGA2: С807Т (n=9) and ITGB3: Т1565С (n=4). All patients had combinations including SNPs platelets receptors (ITGA or ITGB) and fibrinolytic system (PAI); 8 children had combinations with coagulation factors, platelets receptors and fibrinolytic system. Each patient carried two and more mutations of folic acid cycle: MTHFR: С677Т (n=7), MTHFR: А1298С (n=4), MTRR: А66G (n=8), MTR: А2756G (n=4). Homocysteine’s level exceeded the norm in two-five times; average level was 13,3±2,1 umol/l.

All children had more than 4 SNPs of arterial hypertension: ADD1: G1378T (n=1), AGT: T704C (n=7), AGT: C521T (n=2), AGTR1: A1166C (n=4), AGTR2: G1675A (n=9), CYP11B2: C344T (n=9), GNB3: С825Т (n=4), NOS3: T786C (n=8), NOS3: G894T (n=3). Combination AGTR2: G1675A and CYP11B2: C344T was identified in 9 children.

Conclusion. We assume prothrombotic and procoagulant genes’ polymorphisms to be the main reason of early life stroke’s debut: eight and more candidate genes were identified and have been realized as stroke and hyperhomocysteinemia. The operation technique can be considered to be an essential risk factor for stroke in children with congenital heart disease. Combination of “sticky platelets” syndrome with defective fibrinolytic system and vessels’ tonus regulators, have the most diagnostic value in these patients.