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Zero-balance ultrafiltration is effective clinical method for hiperkaliemia during extracorporeal circulation in infants with congenital heart diseases correction.

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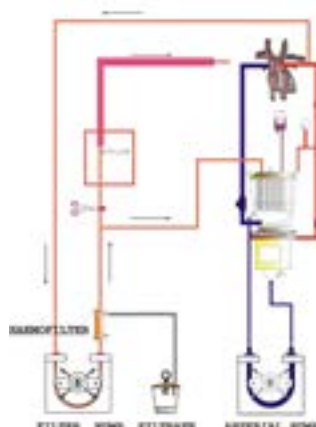
Background: Ultrafiltration, which is currently considered as a standard method to remove excess water administered during infant cardiopulmonary bypass (CPB), aims to minimize the adverse effects of hemodilution, such as tissue edema and blood transfusion. Three ultrafiltration techniques can be used before, during and after CPB procedures, including conventional ultrafiltration (CUF), modified ultrafiltration (MUF) and zero-balance ultrafiltration (Z-BUF). The aim of study: The present abstract attempts to revise efficiency of ZBUF ultrafiltration method, laboratory results, and clinical impacts.

Material and methods: 55 infants (30 boys and 25 girls) with congenital heart diseases weighting less than 10 kg with undergoing a single, open-heart procedure were randomized to either control (no ultrafiltration) -25 children or to the zero-balance ultrafiltration (ZBUF) group- 30 children. ZBUF was performed by removing 3 l/m² blood using a hemoconcentrator with priming volume 34 ml. The antegrade perfusion with pump potassium 50 -150 ml /hour, blood cardioplegia (20 mL/kg) was performed. Patient data was taken before CPB (T1), immediately following CPB (T2), and 12 h following the procedure (T3). There were no significant differences in diagnoses, clinical status, CEC time, aortic cross-clamp time between groups.

Results: The average volume of filtrate removed during ZBUF was 640 ml, which was analyzed for the presence of hiperkaliemia, the amounts of levels (6-9 mmol/l) in dependence of time of extracorporeal circulation. Minimal level of hematocrite was 25%. The length of stay in ICU was statistically lower in ZBUF group (3,2 +- 1,5 days) versus (4,5+-1,3 days) control group P = 0.03

Conclusions: This study demonstrates that ZBUF ultrafiltration is a efficient method that can be used during CPB in the infant to remove significant amounts of potassium what seriously impact clinical results and last but not least is cost efficient method.

FILTRATION ON BYPASS



Biography

Eugen Varlan was advised as a stager reseacher in scientific laboratory of cardiosurgery of Cardiology Institute in 1995 and in few months (noiembrie1995) sucessfully performed extracorporeal circulation in cardiac surgery operations. Till his age of 22 he was able to perform above 3500 extracorporeal circulations in majority cases of pediatric cardiac surgery (radical correction of Tetralogy Fallot, radical correction of Atrioventricular Canal, mitral and tricuspidal annuloplastic, Glenn and Fontan operations with extracorporeal circulation assistance, switch correction of Transposition of Grand vessels, Mustard operation, Norwood corection) and off course assistance at all adult operations and ECMO. By his insistence was introduced in practice in Republic of Moldova the method of modified ultrafiltration (can see his publications in" Art of surgery"- journal of Moldavian surgery society).

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