Successful treatment of hyperlipidemia with plasmapheresis - case report

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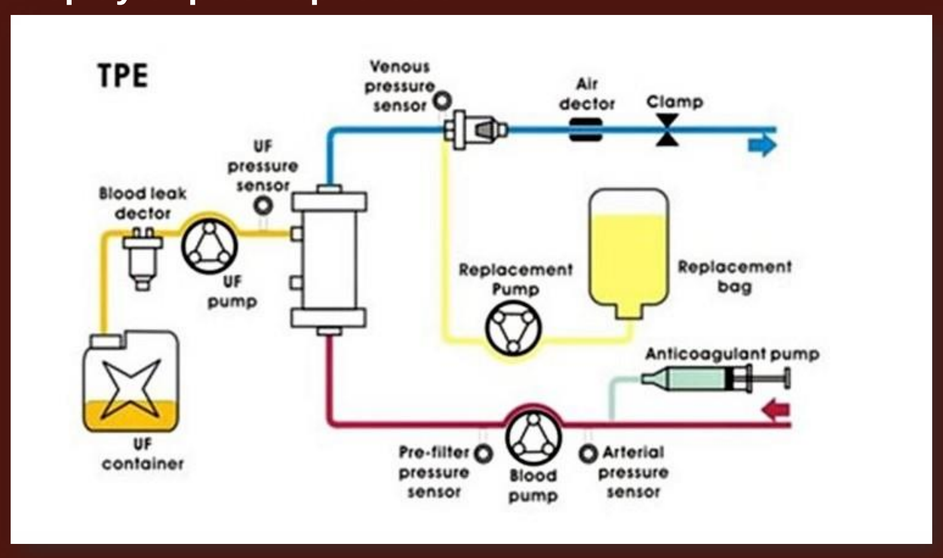
Background

Plasmapheresis is a primary or substitute therapy in patients in which plasma circulatory factors contribute to disease. Therefore, plasmapheresis is a valuable support method in such diseases.

If timely administered plasmapheresis offers better results and recovery of the patient.

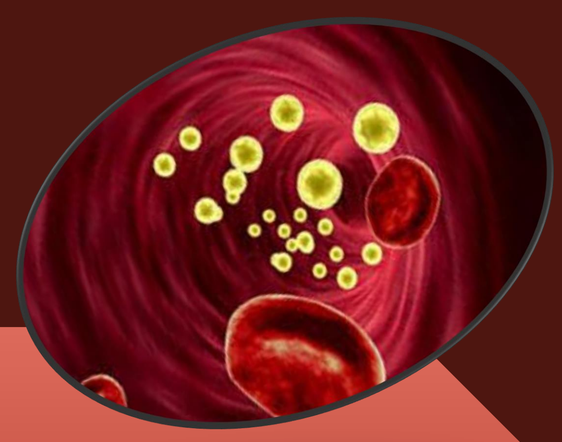
Display of plasmapheresis



Graphic 1. Plasmapheresis indications

Plasmapheresis indications

- Neurologic diseases
- Hematologic diseases
- Intoxications
- Autoimmune diseases
- Metabolick diseases

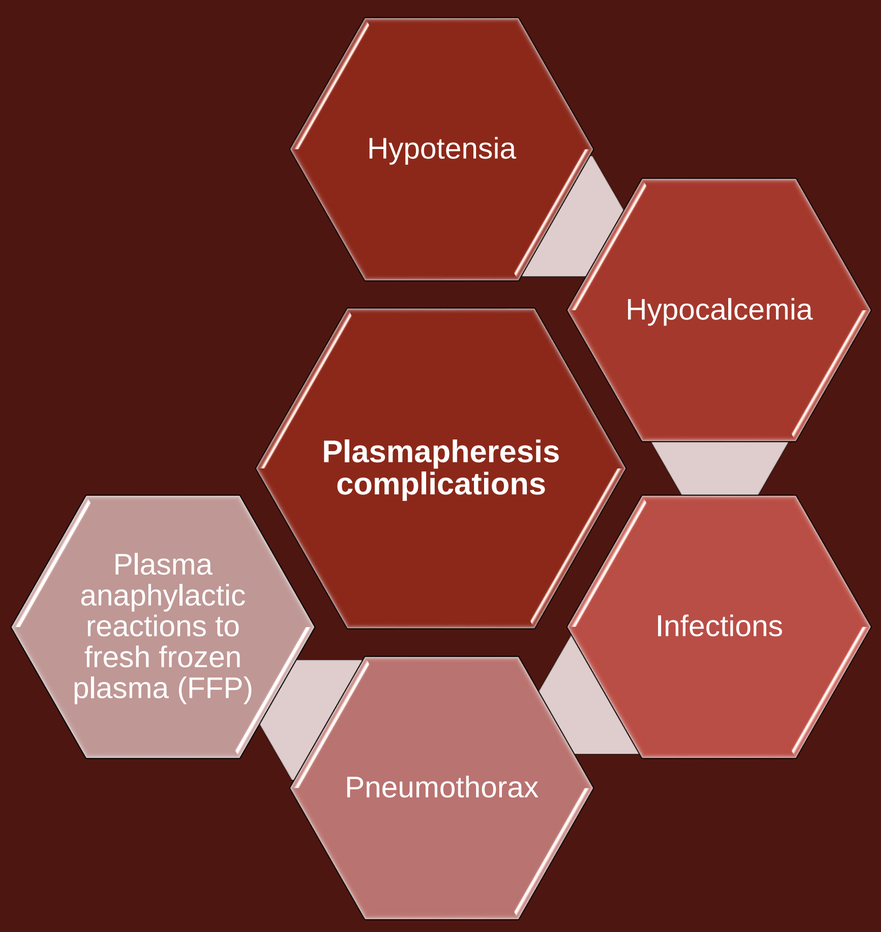


Graphic 2. Plasmapheresis effect

Plasmapheresis effect

- Lowering of circulating autoantibodies or immume complexes
- Removal of circulated immunoglobulines and its components (trombolytic factors, lipoproteins)
- Removal of toxic and imflammatory mediators, cytokines
- Plasmapheresis improves reticuloentotelial system functions

Graphic 3. Plasmapheresis complications



Case report:

A girl (age 5 yr, 5 mo.,body weight 19 kg) with the diagnosis of diabetes mellitus type I and ketoacidosis with acute pancratitis caused by hyperlipidemia was admitted to our hospital. In addition she has autimmune thyreoiditis and celiac disease (HLA DQ2 and Marsh 1 positive).

Second day after her admittance to hospital, plasmapheresis was started (in total she received 3 course of plasmapheresis consecutively). At first course a 1000 ml of plasma was removed and substituted with 1000 ml of FFP. After removal of the same amount of plasma, the other two courses were substituted with FFP (750 ml) + Ringer solution (250 ml). Blood flow was scheduled on 60 ml/min, plasma flow exchange at 20 ml/min. Anticoagulant therapy was administered via Heparin bolus (500 ij). Prior and after the procedure a serum calcium and potassium were controlled. A strict control of all serum electrolytes during procedure were maintained. The colour of blood was reddish with milky appearance. As expected that thick plasma flow caused very high transmembraneous pressure (TMP) in a plasmatic filter that jeopardized the procedure.

Graphic 4. Complications during plasmapheresis

Complications during plasmapheresis

- Very high TMP. At the beginning of the therapy TMP values were 70-98 mmHg, at the end up to 200-300 mmHg. Because of high blood lipide concentrations a plasma flow through plasmaflter membrane was jeopardized. Plasmapheresis device was often alarmed: asTMP was too high it disrupts therapy procedure. During the procedure plasmafilter washout with 0.9% NaCl was performed.

Graphic 5. Control findings before and after plasmapheresis

Control findings before plasmapheresis

- Total cholesterol 40.9 mmol/L
- Triglycerides 241.97 mmol/L

Control findings after last plasmapheresis

- Total cholesterol 11.3...8.3 mmol/L
- Triglycerides 4.1...2.26 mmol/L

Physical exam stabilization

- Parenteral rehydration
- Insulin
- Plasmapheresis
- Diet

Conclusion:

A sussessful treatment of hyperlipidemia with therapeutic plasmapheresis was achieved. A combination of plasmapheresis with insulin treatment in adition with strict diet regime was performed with utmost benefit for the child.