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TARGU MURES

**CHANGES IN RENAL PERMEABILITY STUDY FOR PROTEIN BY  
GEOMETRIC ELECTROFOCUSATION AFTER GENERAL  
ANESTHESIA AND OF MANAGEMENT**

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## **Introduction**

Determination of urine protein values over the normal considered values after anesthesia with Sevoflurane, determined us to trace and study the nature and significance of postanesthetic kidney eliminated proteins. Proteinuria after anesthesia with Sevoflurane is due to degradation by carbon dioxide absorbents of Sevoflurane and increasing the amount of FI ions in the kidney. Compound A resulting from the degradation of Sevoflurane by sinks of CO<sub>2</sub> causes renal toxicity in animals leading to tubular necrosis, clinically evidenced by proteinuria and glycosuria. Through the determination of proteins in urine by geometric Electrofocusation, method patented in 1997 by Prof Dr. Alexander Schiopu we can provide additional information about the type of protein that crosses the postanesthetic glomerular barrier. My hope on this subject is that I would sow doubt to those who believe that there is a perfect anesthetic.

### **Main objectives of the study are:**

- A. Urine protein separation by geometric Electrofocusation
- B. Assessment of the relationship between anesthesia and proteinuria by analyzing data from the two studies

### **II. The second objectives are:**

- A. Comparison of data from the 2 studied groups.
- B. Comparing the results with data from literature.
- C. There is association with different pathologies.

#### **IA. The principle of geometric Electrofocusation**

Geometric Electrofocusation is a process developed in 1994 and patented in 1998 (Schiopu A Schiopu A jr.) allowing analysis of liquids with low concentrations of protein, without being compulsory the prior concentration of samples required, which removes all the inconveniences related to the concentration technological processes. The method improves electrophoresis in flat gels and is based on protein concentration from the analyzed fluids during electrophoresis, to the focus areas of electric power lines crossing gel migration.

## **IIA. Assessment of the relationship between anesthesia and proteinuria by analyzing data from the 2 studies**

### **Material and method**

We studied a total of 110 patients who were anesthetized in the Department of Anesthesiology of the County Hospital for various medium and long term surgeries. We collected 110 spontaneous preoperatively urine samples, 110 urine samples at 24 hours postoperatively and 110 urine samples at 72 hours postoperatively, the samples were analyzed without the previously preserved in order to avoid conservation errors. Quantitative determination of serum proteins was performed by spectrophotometer at 600 nm, with Konelab 30i introspection within the specialized Laboratory in the County Hospital. Of the same samples we performed electrophoretic separation of proteins in urine by geometric Electrofocustion (A.Şchiopu, 1995) in the Department of Pathophysiology Laboratory. Photometric evaluation of electrophoresis was done by scanning and computerized interpretation. Were also collected 330 blood samples from which we analyzed serum urea, serum creatinine and serum glucose preoperatively, 24 hours postoperatively and 72 hours postoperatively in the County Hospital laboratory.

### **Results**

By applying statistical analysis for total protein values at the 3 time studied intervals we obtained a value of  $P < 0.0001$  by One-Way ANOVA and the multiple comparison test, which supports the existence of significant proteinuria to the Sevoflurane group.

After applying statistical analysis we obtained a  $P$  value = 0.0100, with statistical significance. This value is confirmed by the Tukey test, and to compare preoperative averages 24 hours postoperatively. There is proteinuria and after the exposure to Desfluran

### **Conclusions**

The results of the study demonstrate the existence of significant proteinuria after anesthesia with Sevoflurane and after Desfluran with a tendency to decrease, but not to return to preoperative values after 72 hours of anesthesia.

After anesthesia with Sevoflurane were observed alpha and beta globulins at 24 and 72 hours postanesthesia and after the anesthesia with Desfluran they had a maximum at 24 hours and only few patients were evident at 72h in causal relationship with the associated pathology.

**Key words:** electrophoresis, proteinuria, Sevoflurane, Desfluran, anesthesia