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TITLE: CYTOKINES IN PLASMA AND ULTRAFILTRATE IN RELATION TO HEMOFILTRATION
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Continuous arteriovenous hemofiltration (CAVH) is especially applicable in critically ill patients with hemodynamic instability. Recently, it has been suggested that CAVH reverses cardiac dysfunction during sepsis by removal of circulating filtrable myocardial depressant factors like cytokines¹.

Cytokines are produced mainly by activated macrophages and have attracted attention in the pathogenesis of sepsis and septic shock. In particular, excessive release of tumor necrosis factor (TNF α), interleukin-1 α (IL-1 α), and IL-6 have been suggested as important host mediators responsible for multiple organ failure (MOF) and shock.

The present study was undertaken to investigate the effect of CAVH on plasma levels of TNF α , IL-1 α , IL-6 and lymphotoxin (LT or TNF β) in septic patients suffering from a diverse range of diseases. Simultaneously, ultrafiltrate samples were tested for cytokines. The study was approved by the Regional Ethical Committee on Human Research and informed consent was obtained from each patient.

Nine septic patients with a mean age of 48 years (range 31-69 years) were treated with CAVH for a mean period of 5 days (range 3-7 days). The septic syndrome was defined as a systemic response to infection (tachycardia, fever or hypothermia, tachypnea) and evidence of inadequate organ perfusion or dysfunction. All patients developed septic shock (systolic blood pressure <12 kPa (90 mm Hg) unresponsive to fluid therapy and seven (67%) died in spite of maximal inotropic support and treatment.

Cytokines in plasma and ultrafiltrate were measured by ELISA and samples were collected daily.

All patients had detectable TNF α and IL-6 plasma levels ranging from 10 to 750 pg/ml and 50-4575 pg/ml, respectively, with great interindividual variation, but small intraindividual day-to-day variation. TNF α was removed by the ultrafiltration with concentrations in ultrafiltrate ranging from 10 to 1000 pg/ml, whereas IL-6 was undetectable in ultrafiltrate from five of the patients in spite of very high plasma concentrations.

IL-1 was detectable in plasma of four patients (range 10-800 pg/ml) and was detectable in ultrafiltrate too. LT was demonstrated in plasma of all patients, however, only as discrete measurements and not in the ultrafiltrate.

The results demonstrated that TNF α and IL-1 α and to a smaller degree IL-6 and LT are filtrable. This difference may well be explained by differences in molecule weight of the cytokines.

In conclusion, the study suggests that CAVH can be used to remove excessive amounts of TNF α and IL-1 α in septic patients. Further investigations are needed to determine the therapeutic consequences.

Reference

1. Anesthesiology, 73: 671-685, 1990.

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TITLE: THROMBOTIC RISK OF INDWELLING VENOUS CATHETER IN FEMORAL POSITION

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The femoral vein is a convenient venous access site which has remained relatively neglected since earlier reports of major complications. However, over the last 10 years, its beneficial use for various purposes justifies a reexamination of the value of this technique. One phlebographic study has found a very low frequency of femoral thrombosis (1). However, in the lack of control group, more distal thrombosis were considered to be related to decubitus. This prospective comparative study was undertaken (with informed consent and approval by the research committee, Univ.of Marseilles) to evaluate with more accuracy the thrombotic risk of this technique.

Central venous catheterization was indicated for treatment or monitoring. Patients with pelvis or lower limbs fractures or previous thrombosis were not included. Sixty-one ICU patients were randomized in 2 groups: - in the femoral group (F), 2.3 mm external diameter polyurethane double lumen catheters were inserted in the femoral vein using Seldinger technique and subcutaneous tunnelling (Seldiflex® Plastimed). - in the non femoral group (NF) 2 mm polyurethane single lumen catheter (Hasselcath® Plastimed) were inserted in jugular or axillary vein. All catheterization were performed under sterile conditions. A strict protocol for sterile maintenance was followed during catheterization, patients were carefully followed-up for clinical signs of complication. All patients had bilateral ascending phlebograms of lower limbs before catheter removal.

No clinical manifestation of thrombosis was observed.

Some characteristics of the 2 groups are on table I and the results of phlebograms on table II. Phlebograms in NF group indicate the incidence of spontaneous thrombosis of lower limbs in ICU patients. In the F group, the same frequency of thrombosis related to decubitus is observed. The thrombosis directly related to cannulation occurred in 8 patients. There were 7 fibrin sleeves and 2 partial common femoral vein thrombus (7x40 mm; 10x40mm).

Femoral vein cannulation might therefore be considered as an effective route. It can be undertaken easily, and the thrombotic risk is low compared with other routes (2).

References: 1 - Anesthesiology 1989 ASA abstracts A 425.
 2 - JPEN 1983,7:560-562.

Table I: Characteristics of the patients:

	FEMORAL GROUP 30 patients	NON FEMORAL GROUP 31 Patients
Age	45.8 ± 20.2 years	36.5 ± 18.4 years.
Duration of cannulation	7.12 ± 4.5 days.	9.96 ± 5.5 days.
Brain injury	11	12
Polytraumatism	3	8
Neurosurgery	5	4
Medical pathology	10	7
Abdominal surgery	1	0

Table II: Phlebograms (one or more abnormalities)

	FEMORAL G. 18 (60%)	NON FEMORAL G. 26 (84%)
Normals		
Abnormalities related to decubitus	5 (16.6%)	5 (16%)
- sural	5	5
- popliteal	0	2
- superficial femoral	0	1
Abnormalities related to cannulation (in femoral group)	- Fibrin sleeves 7 (23.3%) - common femoral vein thrombosis 2 (6.6%)	