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**TITLE: HEMODYNAMIC CHANGES DURING HEMODIAFILTRATION ONSET**

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Stability of the cardiovascular system during continuous hemofiltration has been identified as an advantage when compared with conventional hemodialysis. But, this technique is insufficient to treat hyperazotemia. Continuous veno-venous hemodiafiltration (CVVHD), which associates convection and diffusion, is indicated in hyperazotemia in critical ill patients with hemodynamic instability, multiorgan failure, vasoactive drugs. The aim of our study is to report the hemodynamic consequences at the onset of CVVHD.

Height consecutive patients with a thermal dilution catheter (Swan-Ganz Catheter. American Edwards labo.) and CVVHD (BSM 22; Hosal labo.; Lyon - France) were investigated. CVVHD was indicated for acute renal failure with or without anuria and volume overload. Blood pressure was achieved with a radial catheter. Vascular access was achieved with a double lumen catheter inserted in femoral or subclavian vein. An 0,43 m<sup>2</sup> effective area polyacrylonitrile parallel plate hamodialyzer was used (Hosal). Blood flow rate was 100-120 ml/mn and dialysat rate was 1 l/h. Hemodynamic data collected were: systolic, diastolic and mean pulmonary arterial pressure; pulmonary capillar wedge pressure; right atrial pressure; cardiac output, and systolic, diastolic and mean arterial blood pressure. Cardiac index was calculated by dividing CI by body surface area. Temperature was also monitored continuously. Measurements of all parameters was achieved between five to ten minutes after the onset of haemodiafiltration to exclude abnormalities related to significant ultrafiltration. Statistics: Student t'test. Results were considered as significant when p < 0,05. The results are in table and expressed as M ± SD (range):

	PRE - CVVHD	POST - CVVHD
SYSTOLIC BP mm Hg	116,6 ± 13,4 (100-140)	98,6 ± 14,4 (80-120) p < 0,05
DIASTOLIC BP mm Hg	62,1 ± 15,2 (36-80)	56,9 ± 18,3 (31-87) NS
MEAN BP mm Hg	84,4 ± 19,6 (63-125)	72,4 ± 14,4 (56-92) p < 0,05
SYSTOLIC PAP mm Hg	34,2 ± 9,4 (18-51)	36,1 ± 11,1 (24-57) NS
DIASTOLIC PAP mm Hg	15,6 ± 8,5 (4-28)	16,9 ± 8,2 (9-30) NS
MEAN PAP mm Hg	22,6 ± 9,4 (8-38)	25,9 ± 9,4 (12-42) NS
PCWP mm Hg	11,7 ± 6,6 (4-20)	13,9 ± 6,6 (4-23) NS
RAP mm Hg	9,9 ± 6,7 (1-18)	11,7 ± 5,2 (2-17) NS
CI l / mn / m <sup>2</sup>	3,82 ± 1,67 (2,06-7,00)	3,53 ± 1,60 (1,50-6,48) NS
SVRI mm Hg / l / mn / m <sup>2</sup>	22,05 ± 10,52 (11,2-38,8)	21,22 ± 12,97 (9,87-44,0) NS
PVRI mm Hg / l / mn / m <sup>2</sup>	3,10 ± 1,86 (1,39-6,23)	4,22 ± 4,17 (1,85-14,30) NS
TEMPERATURE Celsius degres	36,3 ± 0,6 (35,0-36,9)	36,0 ± 0,8 (34,9-37,2) NS
HEART RATE (b/mn)	93,7 ± 18,4 (70-113)	89 ± 17,0 (65-103) p < 0,05

**DISCUSSION:** in opposite to litterature data, our results suggest that hemodiafiltration induce significant initial hemodynamic changes with arterial pressure fall. More, cardiac index fall, but non significantly probably because small number of patients, and can explicate arterial pressure fall. The mecanism of decreased CI is unclear: this modification are related to HR but not related with PCWP and RAP. This may be related to moderate hypothermia or to acetate utilisation (Blood Purification 1988; 6: 43-50).

Despite higher blood flow rate in CVVHD than in continuous arterio-venous hemodiafiltration (# 70 ml/mn) fluid infusion before connection is not necessary because PCWP and RAP stability.

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**TITLE: IONIZED CALCIUM LEVELS DURING FRESH FROZEN PLASMA ADMINISTRATION IN PATIENTS WITH END-STAGE LIVER DISEASE**

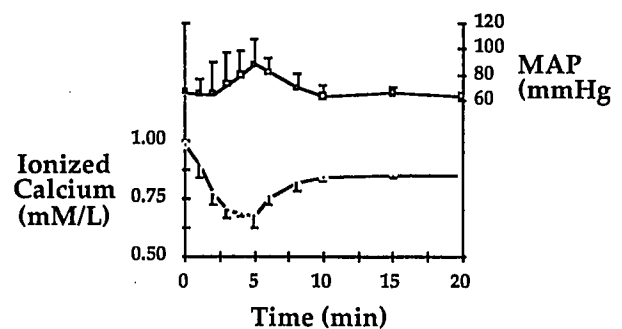
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Liver transplant (LT) patients require massive transfusions, exposing them to high doses of citrate, metabolized largely by the liver. These end-stage liver disease (ESLD) patients are at great risk for hypocalcemia due to citrate intoxication.<sup>1</sup> The purpose of this study was to quantitate the effect of bolus infusions of fresh frozen plasma (FFP) on ionized calcium (Ca<sup>++</sup>) levels in patients with ESLD.

With approval of the Committee on Human Research and after informed consent, we studied three adult patients with prolonged prothrombin times, (International Normalized Ratio > 1.5) undergoing LT. During dissection, 8 cc/kg warmed FFP was administered continuously over 5 minutes. Blood samples were drawn prior to infusion, every minute during infusion, and at 1, 3, 5, and 15 minutes after infusion. Ca<sup>++</sup> was measured using a NOVA ion-selective electrode. Ca<sup>++</sup> levels were analyzed by repeated measures ANOVA, p < 0.05 significant.

All patients showed a statistically significant progressive decline in Ca<sup>++</sup> from control at all time points, including at a FFP dose of only 1.6 cc/kg. Ca<sup>++</sup> levels increased within 1 minute of infusion completion, but remained significantly depressed at 15 minutes. Mean arterial pressure was not statistically changed. In patients with ESLD marked ionized hypocalcemia occurs rapidly after bolus FFP infusion, and recovery is prolonged.



**Legend:** Ca<sup>++</sup> and MAP during and following continuous infusion of FFP at 8 cc/kg over 5 minutes.

**Reference:** Transfusion Med Rev 2: 76, 1988