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REMOVAL OF METHOTREXATE (MTX) IN ANURIC PATIENT: A CASE REPORT

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Introduction: Methotrexate (MTX) is a nephrotoxic drug with a prevalent renal excretion. It is avoided in patients with renal failure. In literature there are few data about its dialysis removal. We describe a case of a 21-year-old female with anuria for ARF, affected by Burkitt lymphoma, treated with MTX.
Materials and Methods: To prevent the tumor lysis syndrome and to eliminate MTX, the patient underwent High Volumes Continuous Venous-Venous Hemofiltration (HVCVVH), starting three hours after the administration of the established dose (5gr) of MTX. Using a Central Venous Catheter (24cm, 12Fr), we applied 350ml/min as Qb, 4800ml/h as predilution-Qs, 4000ml/h as postdilution-Qs, an ultrafiltration rate on bases of fluid balance. The arterial blood pressure, the heart rate, the peripheral O_2 saturation of blood were constantly monitored. To evaluate the removal of MTX, we dosed methotrexatemia every hour for consecutive eighteen hours, until the end of the first session of therapy. After eight hours, because of a rebound of MTX blood level, we performed an adominocentesis revealing a concentration of 58.5mol/L of MTX in the ascitic liquid. Therefore a second HVCVVH started and lasted ten hours later. The third day the patient died for hemorrhagic complications.
Results: The HVCVVH was able to prevent the tumor lysis syndrome. The drug's plasmatic concentration decreased from 548mol/L to 1.36mol/L, with a mean rate of removal of 28.8% every hour. Because of the rebound caused by ascites, a second therapy session is needed.
Conclusions: On the basis of this experience, the HVCVVH is a safe and effective therapy to prevent tumor lysis syndrome and to remove large amounts of MTX. The use of MTX is possible also in anuric patients, when it is the only possible therapy.

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ARTERIAL DISEASE IN ASYMPTOMATIC HEMODIALYSIS PATIENTS

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Aim: The aims of this study were to establish the presence of arterial disease in our asymptomatic hemodialysis (HD) patients and to compare various atherosclerotic findings between the patients with different ankle brachial systolic pressure index (ABI) levels.
Methods: In a cross-sectional study we examined 90 HD patients (53 men; mean age 54.74±12.54 years; HD duration 91.68±58.98 months) free of symptoms in last 6 months for cardiovascular disease. First we evaluated the presence of low (<0.9) ABI (peripheral arterial disease) and high (>1.3) ABI (mediosclerosis) using ABI measurement, and the presence of atherosclerotic lesions using high resolution B-mode ultrasonography of the common carotid arteries (CCA). Then we compared various atherosclerotic findings on CCA among the groups of patients with different ABI levels.
Results: The results showed frequent presence of low ABI (n=27; 30%) and high ABI (n=31; 34.4%) levels in our asymptomatic HD patients. The patients with low ABI levels had significantly ($p<0.05$) increased CCA intima media thickness (1.58±0.33 vs 1.45±0.29, 1.42±0.24mm), more carotid atherosclerotic (85.2 vs 58.1, 50%) and CCA calcified plaques (59.3 vs 29.1, 21.8%). Patients with normal and high ABI levels had high frequency of atherosclerotic changed CCA.
Conclusion(s): Our data confirm that arterial disease in asymptomatic HD patients is frequent and that HD patients represent a high risk population for arterial damage. Screening for arterial disese in HD patients could be recommended even if they have no symptoms. Aggressive clinical atherosclerosis and mediosclerosis prevention in HD population is necessary.

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GLUCOSE INFLUENCE ON SMALL AND LARGE MOLECULES PERITONEAL TRANSPORT: COMPARATIVE STUDIES *IN VITRO*

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The continuous contact of peritoneum with the bioincompatible conventional fluid, especially with high glucose concentration, may be one of the main causes of membrane functional modifications during peritoneal dialysis. The presented study's objective was to analyse the effect of osmotic factor on creatinine (CR), uric acid (UA), insulin (IN) and albumin (AL) transport across the isolated rabbit peritoneum. Membrane from the animal abdominal wall fixed in the modified Ussing chamber and filled with the Hanks' solution was applied during 2 experimental series: 1. control conditions (120min); 2. before (15-60min) and after (75-120min) glucose (1.8g/dL) introduction at the mesothelial side of membrane, separately for each examined solutes. Mathematical model of the mass transport was used to calculate the transfer rate of solutes from the interstitial to the mesothelial side of membrane (I->M) and in opposite direction (M->I). Dynamics of bi-directional solutes transfer was stable for 120min in the control condition and diffusive permeability coefficient (P) amounted at mean (P±SEM): 3.027±0.322; 2.007±0.809 0.158±0.027 and 0.293±0.056 [10^{-4}; cm/s] for CR (10mg/dL; 113 Da) UA (20mg/dL; 168Da), IN (100mg/dL; 5.8kDa) and AL (1000mg/dL; 69kDa), respectively. GL augmented both bi-directional CR diffusion by at mean 35% ($p<0.02$) and M->I AL transfer (by 191%, $p<0.001$). Albumin M->I transport predominates transfer in the opposite direction ($p<0.03$). In conclusion, *in vitro* GL evokes intensifications of some small and large solutes (CR, AL) transfer, especially M->I transport. These modifications may be related to the structural and functional disturbances of peritoneal membrane induced by osmotic agent and examined molecules. Observed changes, mainly the dominance of albumin M->I vs I->M transport may be important from the clinical point of view, especially in the case of malnutrition and hyperpermeability of peritoneum.

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HEMODIAFILTRATION AND HIGH-FLUX HEMODIALYSIS SIGNIFICANTLY REDUCE SERUM VALPROATE LEVELS INDUCING EPILEPTIC SEIZURES: CASE REPORT

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Background: Literature reports that dialysis removes only 20% of administered valproate dose and dose adjustment is not necessary. We report a case of dialysis patient taking valproic acid for epilepsy, who frequently had partial complex seizures after hemodialysis and had a significant reduction in serum valproate levels after dialysis.
Methods: 23-year-old (57kg) female was taking valproic acid 1500-1800 mg daily, with additional 150-300mg on dialysis day. As postdilutional hemodiafiltration (HDF) (20L infusate per 4.5 hour session, FX80 dialyzer (helixone, 1.8sqm)) was introduced, she began to experience short partial complex seizures typically appearing after HDF. Procedure was changed to high-flux hemodialysis (HD) (4 hours, FX60 dialyzer (helixone, 1.4 sqm)). Serum valproate before and after dialysis and (in the HD period) ammonium levels before dialysis were measured approximately every 2 weeks for several months.
Results: Serum valproat was 666±53 (range 567-750, therapeutic levels 345-690) mol/L before and 341±63 (261-462) mol/L after HDF, a 49±9% decrease during HDF (N=9). In the HD period: 631±80 (574-773) mol/L before and 362±53 (295-440) mol/L after HD, a 42±6% decrease, pre-dialysis ammonium was 66±18 (49-92, normal levels 9-33) mol/L (N = 5). Since valproate before dialysis was around upper therapeutic border inspite reduced dialysis dose and hyperammonemia was present, antiepileptic therapy was changed to levetiracetam 2000mg daily, after which her condition improved significantly.
Conclusions: Contrary to current knowledge HDF and high-flux HD significantly reduced serum valproate levels by 36-59% inducing epileptic seizures and requiring conversion of antiepileptic therapy.