ESAO 2007

XXXIV. Conference
European Society
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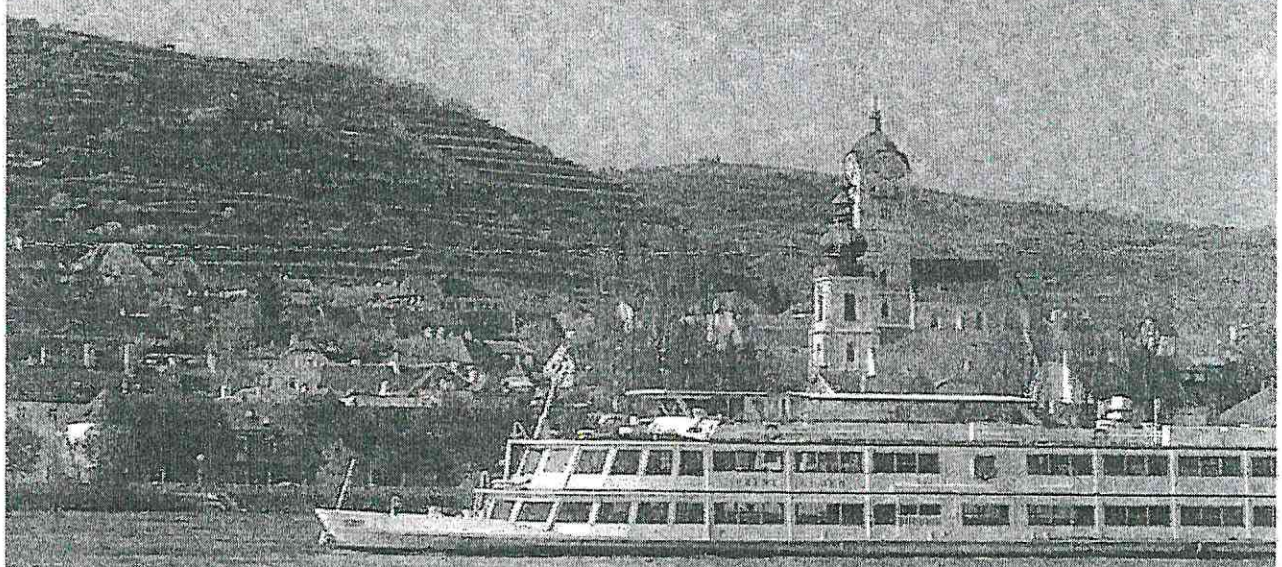
FINAL PROGRAM



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APHERESIS

1 (O-1)

SUDDEN HEARING LOSS AND HELP APHERESIS – A SINGLE CENTER EXPERIENCE

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Background: Sudden hearing loss is an acute reduction of hearing capability of mostly one ear. Various reasons like viruses, arteriosclerosis, thrombi, stress or trauma can count for the damage that morphologically constitutes quite uniformly of stasis, edema and hypoxia. With approximately 250.000 cases a year in Germany sudden hearing loss is the most common disease of the inner ear. Spontaneous remission is frequent (50-70%). However the disease is a considerable impairment if it does not resolve. Usual therapy comprises infusions and steroids, the latter with a certain evidence and the former with none. Because of the presumed rheological disturbances an extracorporeal rheopheresis procedure should help to restore a more physiological perfusion of the inner ear and thereby improve hearing. That could be proven by the group of Suckfüll in Munich.
Methods: Encouraged by that study we treated 17 patients with acute hearing loss and 1 patient with tinnitus during the last 5 years in a preclinical ambulant setting. The mean age was 56.6 years and the mean interval between occurrence of symptoms and treatment was 17.5 days. We performed up to 3 HELP procedures. Clinical evaluations were performed by Otolaryngologists.
Results: For 17 patients with 18 impaired ears we could state a mean overall improvement per ear of 23 percent in the pure tone audiogram. Four ears improved significantly with a restoration of the acoustical sense of at least 50% or more with up to almost normal levels. 9 ears improved partially up to 50 percent. Five ears did not respond to HELP. The tinnitus patient experienced no benefit. Despite the small number of patients and the uncontrolled single center setting sufficient clinical effects seemed to have been achieved only within the first 3 weeks after onset of symptoms, after that period HELP apheresis had no great impact on disease course. Serum components could be reduced on average as follows: cholesterol by 47.7%, LDL by 51.8% and fibrinogen by 60.5%.
Discussion: In a single center setting on a routine basis HELP apheresis appeared to be an effective therapeutic option in patients with sudden hearing loss that had been refractory to conventional therapeutic measures including infusion therapy, steroids and tympanotomy. This holds true even after the recommended time interval of 48 hours for beginning of apheresis up to approximately 3 weeks. In conclusion HELP apheresis may be helpfull even in cases with longer existing hearing loss after the standard therapy has failed. This has to be proven in further controlled trials.

2 (O-3)

WORLD APHERESIS REGISTRY 2005 DATA

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Vilnius - Lithuania[1]; Livorno - Italy[2]; Ostrava - Czcch Republic[3]; Umea[4], Uppsala[5], Linkoping[6], Orebro - Sweden[7]; Rostock - Germany[10]; Hradec Kralove - Czech Republic[8]; Vienna - Austria[9]

WAA decided to initiate an electronic registry to extend experiences around the world to improve therapy.
Twenty-eight centres from 10 countries until now have applied for a login code to the WAA apheresis registry. Fourteen centres from 6 countries have been actively entering data at the internet site (www.iml.umu.se/medicin) until 2006.
Results: More than 1400 patients (8860 procedures) have been included. Mean age 53 y (51% women). Main indications: neurological diseases (22%), haematological (10%) and lipid apheresis (8%). The reason for apheresis was therapeutic (TA) in 82% and in 18% retrieval of blood components. 62% of the patients had acute indications. Blood access: peripheral vessels (76%), central dialysis catheter through jugular route (11%) or subclavia (5%), femoral vein and AV fistula in 4 and 2%, respectively. Anticoagulation was by ACD (76%), CPD citrate (4%), ACD and heparin (6%) and only heparin (14%). Replacement fluids for TA was mainly by albumin and less plasma and cryoprecipitate poor plasma.
Adverse events (AE) were registered in 5.6% of procedures: mild (2.2%), moderate (3.0%) or severe (0.5%) and no death due to treatment. Treatment was interrupted in 2.8%. Most frequent AEs were hypotension (24%), tingling around the mouth (18%), new punction (11%), bronchospasm (8%). There were significant differences between the centres regarding mild and moderate AEs. AEs varied between 2.7-17.5% between the centers. Data indicated that centres using continuous infusion of Calcium had fewer AEs. The incidence of hypotension varied (0.36- 3.23%) between centres.
Conclusion: Centres have various approaches to apheresis. By learning from the experience of each others the treatments will improve further, especially when many centers enter data into the WAA registry.

3 (O-4)

RHEOPHERESIS: SAFETY AND EFFICACY OF A SEMISELECTIVE PLASMATHERAPY

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Background: Rheopheresis is an application of membrane differential filtration using a special second plasmafilter, named Rheofilter, to eliminate an exactly defined spectrum of high molecular weight proteins from human plasma. It is well known in literature that the more specific the plasma protein elimination profile, the less rheologically effective the apheresis modality.
Aim: To evaluate if the loss of a large amount of high molecular proteins represents a substantial disadvantage.
Methods: We performed 141 rheopheresis treatments on eight patients, three suffer from Age-related Macular Degeneration, five from Peripheral Arterial Occlusive Disease, using an ethinylvinylalcohol copolymer hollow fibres filter (RHEOFILTER ER 4000 ASAHI® 2 mq surface) as plasmafiltrator, with a molecular weight cut-off of 600 kD. We treated 1.5 plasma volumes per session. Fibrinogen, LDL cholesterol, lipoprotein A, total cholesterol, HDL cholesterol, alpha 2 macroglobulin, reactive C protein (RCP), total protein, albumin, immunoglobulin G, A, M were carried out before and after each treatment.
Results: All patients had sustained clinical improvements. There were no appreciable side effects neither infection nor malnutrition status. In 141 treatments fibrinogen was decreased by 57.8%, total cholesterol by 51,7%, LDL cholesterol by 58.5%, LpA by 46.5%, HDL by 38%, IgG by 28.9%, IgA by 42%, IgM by 53.1%, RCP by 42%, alpha 2 macroglobulin by 49.5%, total protein by 18.4% and albumin by 14.8%.
Conclusion: Rheopheresis is a safe and effective therapy. Although this technique is characterized by a semiselective loss of some plasmatic proteins, there were no clinical neither laboratoristic adverse effects.

4 (O-6)

REDUCTION OF MYELOID/PLASMACYTOID DENDRITIC CELLS AND γ/δ T CELLS IN AN *EX VIVO* MINIMODULE CIRCULATION MODEL

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Aim: Recently, in a number of clinical studies granulocyte and monocyte adsorptive apheresis (GMCAP) has been shown to exert an anti-inflammatory effect in patients with active ulcerative colitis (UC), even though its precise mode of action still remains unclear. Here, we examined the effect of GMCAP on cell populations participating in mechanisms of tolerance or innate immunity, e.g. dendritic cells (DCs) and γ/δ T cells, using an *ex vivo* minimodule circulation model.
Methods: 100 mL of whole blood from 7 healthy persons were each collected in a blood bag. A minimodule consisting of G-1 beads from Adacolumn® placed in a syringe with a volume of 10 mL was designed. The blood flow through the minimodule was established at a steady flow rate (2.6 ml/min) in a closed circuit for a test period of 60 min at 37°C. Collection of blood samples for FACS-analysis was performed at the beginning and after 15 min, 30 min and 60 min of circulation.
Results: Using FACS-analysis a significant reduction of lymphocytes (88%), monocytes (35%) and granulocytes (52%) in comparison to the basic values was observed after 60 min of circulation. Moreover, eosinophils (53%), basophils (42%), myeloid (44%) and plasmacytoid DCs (57%), $CD3^+$ T cells (91%) and γ/δ T cells (89%) were significantly decreased within the efflux samples. Furthermore, a significant decline of CD80 expression in plasmacytoid DCs and CD86 expression in plasmacytoid and myeloid DCs was shown.
Conclusion(s): While intestinal DCs are known to be key initiators of the inflammatory response in UC, the role of peripheral and γ/δ T cells for the pathogenesis of UC is discussed controversially. We conclude that the reduction or potential redistribution of the analyzed cells may be involved in the mode of action of GMCAP.

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