TITLE: Effects of Clonidine, Labetalol and Esmolol on Hemodynamics and Seizure Duration During ECT

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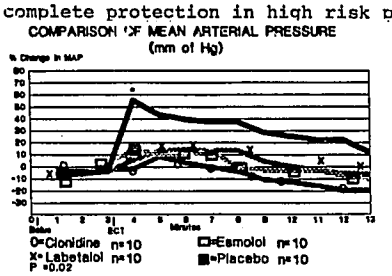
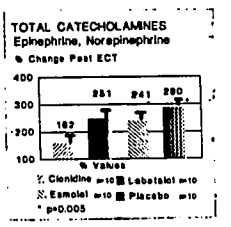
This study was designed to compare the effects of clonidine (C), labetalol (L) and esmolol (E) in attenuating the cardiovascular response to ECT and also determine their effect on seizure duration.
METHODS: Twelve ASA 1 and 2 patients undergoing a total of 40 ECT treatments were studied after informed consent and institutional approval. Patients were not on antihypertensive drugs pre-ECT. No premedication was given. Baseline values for heart rate (HR) and mean arterial blood pressure (MAP) were obtained. Blood samples for pre-ECT catecholamine levels were obtained from all patients. All patients received either p.o. (C) 0.3mg 90 minutes pre ECT, I.V. (L) 0.25mg/kg or (E) 1.5mg/kg 3 minutes pre-ECT in a prospective randomized order on separate ocassions. Placebo group served as the control. Induction was standard in all and consisted of methohexital 1mg/kg and succinylcholine 1mg/kg. ECT was then performed. The duration of the seizure and post-ECT hemodynamic changes were noted. Blood samples for post-ECT catecholamine values were obtained upon cessation of seizure activity. EKG was compared pre and post ECT for arrhythmias and ischemic changes. Data were evaluated as percent of greatest change from pre-ECT baseline values. Analysis of variance was used to analyze data. A p=0.05 level was set for statistical significance.
RESULTS: Mean age of all study patients was 71 years with no statistical difference between groups. When compared with baseline values, only the placebo group showed a statistically significant increase in HR (p=0.04) and MAP (P=0.02), while these remained unchanged in the (C), (L) & (E) groups. Intergroup differences were not significant. Post-ECT total cathecholamine values, when compared to baseline were significantly increased only in the placebo (p=0.005) and esmolol (p=0.005) groups. The mean duration of seizure remained unaltered in all four groups (>30 sec).
CONCLUSION: All 3 study drugs provided hemodynamic stability without altering seizure duration during ECT. Maintenance of normal hemodynamics is especially important in patients with coronary artery disease. However, (C) & (L) are more effective in ablating the increase in catecholamine surge during ECT and may therefore provide more complete protection in high risk patients.





A1202

Title: EVIDENCE FOR IMMUNOLOGICAL EFFECTS OF CATECHOLAMINES AFTER CARDIAC SURGERY

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Introduction : The mechanism of the immune dysfunction after cardiac surgery [1] is still unknown. Indirect evidence suggests that adrenergic agents modulate cellular immune function [2]. This study was designed to determine if preop ß-adrenergic blockade and postop catecholamines plasma levels or ß-adrenergic agonist infusion influenced the changes in T cells subsets after cardiac surgery.
Patients and Methods : With institutional approval and informed consent, 21 patients (mean age 52.8±12.0 yrs) undergoing coronary artery bypass graft (n=12) and valve replacement (n=9) with CPB were studied. Anaesthesia was standardized to a flunitrazepam/fentanyl/pancuronium/oxygen technique. Five patients received preoperatively ß-adrenergic blocking agents and 12 needed a dopamine and/or epinephrine infusion for postop inotropic therapy. Skin test reactivity was assessed using Mérieux ® Multitest. Blood samples were collected 2 hours prior to anaesthesia, and 24 and 72 hours after the completion of surgery. Epinephrine (E.) plasma levels were analyzed by HPLC. Absolute numbers of lymphocytes (L), T cells CD2, and the following T cell subsets: mature T cells CD3, helper cells CD4, suppressor/cytotoxic cells CD8, inducer of helper cells 4B4 (CD29), inducer of suppressor cells 2H4 (CD45R), cells bearing IL2 receptors CD25, activated T cells CD26 were measured with a flow cytometric immunofluorescence method using monoclonal antibodies. Results were given as mean±SEM. Statistical analysis was by Chi-square and Student's t tests ($p<0.05$ significant).
Results : In the 9 patients with normal postop E. plasma levels (<300 pg/ml), T cell subsets remained within normal values. In the 13 patients with high postop E. plasma levels (>300 pg/ml), T cell subsets were homogeneously lower (L, CD2, CD3, CD4:$p<0.001$; CD8:$p<0.01$; 2H4:$p<0.05$) than in the patients with normal E. levels.
Preop ß-adrenergic blockade was associated with higher L, CD2, CD3, CD4 ($p<0.05$) and 4B4 cells ($p<0.01$) at 24 hours.
Patients who received dopamine and/or epinephrine in the postop period showed a significant fall in L ($p<0.05$), CD2 ($p<0.01$), CD4 and CD8 ($p<0.05$), 4B4 ($p<0.001$), CD25 and CD26 ($p<0.05$) cells at 72 hours.
Negative responses to skin testing were more frequent in patients with high postop E. plasma levels ($p<0.05$).
Discussion : This study provided arguments for deleterious effects of catecholamines on immune function after cardiac surgery. T cell subsets and skin test reactivity were impaired only in patients with high postop E. plasma levels. Catecholamine infusion had significant immunosuppressant effects. Opposite changes were observed in patients receiving ß-adrenergic blocking agents preoperatively, providing further evidence for the involvement of ß-adrenergic lymphocyte receptors in the immune response [3]. However, the clinical implications of such findings are yet to be determined.
References : 1. SALO M. et al., J.Clin.Lab.Immunol., 1981;5:159-63; 2. CRARY B. et al., J.Immunol., 1983;3:1178-81; 3. FARRAR W.L. et al., Immunol.Rev., 1986;92:49-65