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POSTER SESSION X

A213

TITLE: THE DIRECT INOTROPIC EFFECTS OF PHENTOLAMINE AND NITROPRUSSIDE IN ISOLATED RABBIT MYOCARDIUM

AUTHORS: T.S. Lee, M.D., L. Virtusio, M.D.
AFFILIATION: Anes. Dept., Harbor-UCLA Medical Center Torr., CA 90509

Both phentolamine (PTL) and nitroprusside (NP) cause peripheral vasodilation and decrease systemic vascular resistance, primarily by direct relaxation of vascular smooth muscle, though PTL also is an alpha-adrenergic blocking agent. They are commonly used in perioperative management of pheochromocytoma as well as control hypertensive crisis and afterload reduction in heart failure. It has been shown that PTL has greater arteriolar dilation while NP is a balanced arteriolovenous relaxant. However, their direct effects of myocardial contractility have not been clearly characterized. This study is to investigate and compare the direct inotropic effects of PTL and NP on isolated rabbit mycardium.

Nine New Zealand white rabbits, weighing 2-3kg were anesthetized with 45 mg/kg IV pentobarbital. The heart was immediately removed. The first septal perforator of the left coronary artery was cannulated with a small polyethylene tube (PE-50) and perfused with warmed (37°C) oxygenated modified Kreb-Ringer bicarbonate buffer (KRB) solution at 1 mg/gm/min. The septum was then dissected out and suspended from a Grass FT03 tension transducer. The other two corners were fixed with tension by opposing clamps through which a 5-voltz/5 msec electrical stimulation was given from a Grass stimulator at 1.6Hz. The peak developed tension (PDT) and the maximal acceleration (dT/dt) were recorded. After reaching fully stabilized contractions for at least 30 min., perfusions with PTL and NP, diluted in KRB were then started alternately at doses of 1, 25, 50, 100 and 200 mcg/ml respectively, each for 10 min. The plain oxygenated KRB solution was perfused in between as the control values. The results were analyzed with non-paired t-test and summarized in Fig. 1 and 2.

It has been described that PTL may stimulate beta-adrenergic receptors and produce a positive inotropic and chronotropic effect on the heart and increase cardiac output. On the other hand, NP infusion, with its potential cyanide toxicity, may deteriorate myocardial metabolism. However, in isolated rabbit myocardial preparation, our study showed that PTL had no positive but dose-related negative inotropic effect with severe myocardial depression in high concentration infusion. In contrast, NP did not change myocardial contractility. Central line administration of PTL should be discouraged.

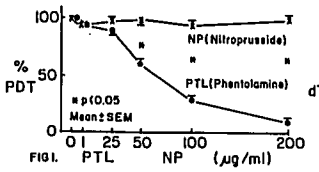

FIG1.

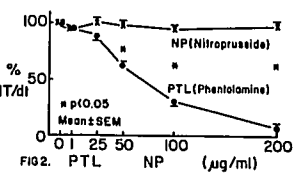

FIG2.

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A214

TITLE: DEEP VENOUS THROMBOSIS PROPHYLAXIS BY LOW MOLECULAR WEIGHT HEPARIN IN NEUROSURGICAL PATIENTS

AUTHORS: E. Melon*, M.D., Y. Keravel**, M.D., A. Gaston***,M.D., Y. Huet°, M.D., S. Combes°, M.D. and the "NEURONOX" group (Bicêtre, Bordeaux, Grenoble, Lyon, Paris, Reims, Rouen, St Etienne, Tours)
AFFILIATION: * Anes. Dept., **Neurosurg. Dept., ***Neuroradio. Dept., Henri Mondor Hospital - 94010 Créteil - France
° Lab. Pharmuka, Paris - France

Postoperative deep venous thrombosis (DVT) ranges between 29 and 43 % in neurosurgical patients (1) and might lead to deleterious complications by itself or due to the anticoagulant treatment. Thromboprophylaxis with low molecular weight heparin (LMWH) has been documented to be safe and efficient after various surgical procedures (2). We therefore conducted a study to assess the effects of LMWH in neurosurgical patients.

A multicenter (N=9) prospective double blind randomized study has been conducted on 130 patients after informed consent and ethical committee approval. Adult patients weighting 45-90 kg were included in the study on day one after intracranial surgery if no or minimal hemorrhagic lesions without majoration of the preoperative shift was documented on the postoperative CT scan and if postoperative hemostasis was normal. Patients were allocated randomly in two groups to receive one subcutaneous injection of either 20 mg LMWH (lovenox®) (N=67) or a placebo (N=63) every day during the first ten postoperative days. On D1, D3 and D10, platelets counts, white and red cells counts, prothrombine time, activated coagulation time and fibrinogen levels were measured and CT scan were repeated. A lower limb phlebography was performed systematically on D10 or earlier if clinical symptoms of DVT occured. CT scan and phlebography were analysed by independent observers. Statistical analysis used Chi-2 with the Yates's correction or Fisher exact test when appropriate and unpaired t-test.

Demographics, duration, type of surgery and Glasgow scores were comparable in the two groups. No hemorrhagic lesion was documented on the postoperative CT scan in the 2 groups. No bleeding complication occured. Blood hemostasis remained in the normal range in all the patients during the study. Analysis of 122 phlebographies documented 10 DVT over 64 investigations in the LMWH group and 14 over 58 in the placebo group (NS).

This study demonstrated the safety of LMWH but not its efficacy. The population studied was calculated for a significant decrease in the incidence of DVT group from 25% to 5 % which was not demonstrated. Further studies are required to assess if a less important difference in DVT might be significant after LMWH treatment.

References :

1/ Powers SK, Neurosurgery 10 : 509-513, 1982
2/ Turpie AG. N. Engl. J. Med. 315 : 929-935, 1986