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PROGRAM and ABSTRACTS

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STUDY, IN FETUSES, OF THORACIC VAGUS NERVES: THEIR POSITION AND RELATION WITH GASTRIC ROTATION

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Introduction: Studies on vagus nerves and traditional literature associated their final position with the gastric rotation occurred between the 4th and 6th week of gestation.

The objective of this study was to observe vagus nerves in the thorax, specially, their position while passing the diaphragm, and determining the relation with the gastric rotation.

Materials and methods: We dissected vagus nerves from the inferior neck to the abdomen, in 30 fetuses with a crown-rump length of 64.4 to 186.18 (12 and 23 weeks of gestation). Most of them were male and only 4 were female. Cardiac and pulmonary branches were cut to continue dissecting the nerves around the esophagus. The diaphragm hiatus was opened and the gastric rotation determined.

Results: Vagus nerves entered the thorax laterally to the common carotid arteries and included in the same sheath. At this level it was a big nerve, nearly as wide as the carotid artery. After giving the recurrent nerve, the main branch addressed to the pulmonary pedicle and provided the cardiac and pulmonary branches. Under the tracheal division, vagus nerves remained as a thin branch (1/3 or 1/4) in relation to the neck, but its distribution and location is not as simple as usually described. The right nerve showed many variations under the pulmonary pedicle: dividing into anterior and posterior branches, lateral going backward or frontward, anterior or posterior to the esophagus while descending. The left nerve was laterally moving to the anterior wall of the esophagus (65%), or anterior, or branching into anterior and posterior. The 2 cases with unrotated stomach had a multiple divided right nerve and an anterior left nerve.

Conclusion: According to our observations, it does not seem so easy to associate vagus nerves location with the stomach rotation and it is evident that the vagus nerves anatomy in fetuses needs to be reviewed.

Key words: vagus nerves, fetus anatomy, mediastinum.

REMOTE ISCHEMIC PERCONDITIONING FOR HEPATOPROTECTION

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Introduction: Ischemic-reperfusion (IR) injury is a frequent sequel in surgery, caused by long-term liver exclusions. Perconditioning (IPer) - which means the application of brief IR cycles in a remote organ *parallel* with target organ ischemia - might be able to decrease IR injury. Hepatoprotective effects of this novel method were investigated in our experimental model.

Materials and Methods: Male Wistar rats (n=45) underwent normothermic, 60 minutes long ischemia on two-thirds of the liver. Groups: sham, IR and IPer (15 animals in each) were divided into three subgroups according to the length of reperfusion times: 1h, 6h, 24h (5 animals in each). 20 minutes after induction of liver ischemia, rats in IPer group received 5 min of lower limb ischemia and 5 min of reperfusion in 4 cycles, by infrarenal aortic clamping. Hepatic microcirculation was monitored by laser Doppler flowmeter during first hour of reperfusion. After reperfusion liver samples were taken for histologic and redox state assessment. Suzuki score was used for semi-quantitative histological analysis. Serum transaminase (ASAT, ALAT) levels were measured. We carried out further measurement for analysis of the changes in redox homeostasis.

Results: In IPer group in comparison with IR group, serum transaminase levels were significantly ($p<0.05$) lower after 1, 24 h of reperfusion, but not after 6 h of reperfusion (1h ALAT: $p=0.042$ // 24 h ASAT: $p=0.028$; ALAT: $p=0.014$). Severity of histologic damage was reduced in IPer group compared to IR group at every examined reperfusion period. Favorable effects have been observed on redox-homeostasis. Integral of the liver reperfusion curve (RA) and the plateau maximum average (PM) of flow graph showed a strongly significant ($p<0.01$) improvement (RA: IPer vs. IR; $p=0.007$ // PM: IPer vs. IR; $p=0.001$)

Conclusion: Perconditioning is a feasible method, with notable practical significance in those situations when we are forced to apply long-term liver exclusions.