
Original Article

CONTRIBUTIONS TO THE BIOPATHOLOGIC STUDY OF MYOCARDIUM BY REPEATED INTRAOPERATIVE MYOCARDIAL BIOPSY

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Abstract

The paper synthesizes a whole, long experience of the collective of authors of morphological evolution during open heart surgery, as in the literature have also reported data and methodology of the study. In 269 cases of acquired heart disease, especially cardiac malformations and various valvular heart disease. V. Candea performed myocardial biopsies, both before installing extra-body circulation (E.B.C), as a focal point of previous injuries and at every 5-6-10-15-17-20-30-35 sometimes 54 minutes after clipping the aorta to the involutive influence of E.B.C. and to the cardioplegic perfusions. Different morphological examinations were performed, especially using electron microscopy at Victor Babes Institute by the team led of dr. D. Laky. Under the influence of situation of "shock-controlled" ultrastructural changes – type stunning occur in the first minutes predominantly in the mitochondria, sarcoplasmic reticulum, followed progressively by hypoxic injury at the vascular and cellular membranes. Evolution of mentioned lesions at the level of organites determines advance of the transition from limited reversibility of lesion, those 15-20 minutes, to the alterations appearance with irreversible evolution, from 30 minutes, with disorganization and lysis at sarcomers by lysosomal enzymes, edema peri and intrasaroplasmatic, to apoptosis and necrosis. The beneficial aspect of treatment with phosphocreatin over. In cases of cardiac ischemia are given morphological aspects of myocardial hibernation as adaptive differentiate embryofetal, viable but with evolutionary potential in the absence of lesion of revascularization surgery. The paper pleads for the benefits of scientific and practical application of these methods by cardio surgeons as intraoperative investigation.

Keywords: *open heart interventions, intraoperative myocardial biopsy, biopathology*

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Rezumat

Lucrarea sintetizează în ansamblu, îndelungata experiență a colectivelor autorilor privind evoluția morfologică în cursul intervențiilor chirurgicale pe cord deschis, întrucât în literatură nu s-au semnalat asemenea date și metodologii de studiu. Pe 269 cazuri de cardiopatii dobândite, îndeosebi valvulopatii și variate malformații cardiace, V. Cânda a efectuat biopsii miocardice, atât înaintea instalării circulației extracorporeale (C.E.C.), ca punct de referință al leziunilor anterioare și la interval de 5-6-10-15-17-20-30-35 uneori 54 minute după clamparea aortei pentru a decela involutiv influența CEC și a perfuziilor cardioplegice. Variatele examene morfologice, îndeosebi cele electronomicroscopice, au fost efectuate la Institutul "Victor Babeș" de colectivul condus de dr. D. Laky. Sub influența stării de "șoc controlat", modificări ultrastructurale de tipul siderării apar în primele minute predominând la nivelul mitocondriilor, reticulului sarcoplasmatic, urmate progresiv de leziuni hipoxice interesând sistemele de membrane vasculare și celulare. Evoluția leziunilor organelor menționate a activării leziunilor determină progresiv trecerea de la limita reversibilității lezionale, respectiv 15-20 minute, la apariția alterărilor cu evoluție ireversibilă, de la 30 min. cu dezorganizări și lize ale sarcomerelor prin enzimele litice lizozomale, a edemului peri și intrasarcoplasmatic, până la apoptoze și necroze. Este redat aspectul benefic al terapiei cu fosfocreatină asupra structurilor cardiomiocitelor. În cazurile cu ischemii cardiace sunt redată aspecte morfologice ale hibernării miocardice ca diferențieri embriofetale adaptative, viabile dar și cu potențial evolutiv lezional în absența revascularizării chirurgicale. Lucrarea pledează pentru beneficiile științifice și practice ale aplicării de către cardiochirurghi ale acestor metodologii de investigare intraoperatorii.

Cuvinte-cheie: Intervenții pe cord deschis, biopsii miocardice intraoperatorii, biopatologie

Introduction

Wide range of laboratory investigations of the myocardium subjected to open heart surgery under extracorporeal circulation (E. B.C.) missing sequential biopsy studies on changes and evolution of intraoperative myocardial injury in the adoption of appropriate protective measures. Description of morphological cardiac lesions were performed only on single intraoperative myocardial biopsy by various authors.

This is done on open-heart surgery, clipping off the aortic bulb in terms of shock control (6) of stunning, named by various authors mentioned especially by Braunwald and Carp, defining contractile disturbances duration variable (in our case by clipping the aorta) and restore circulation (after declipping) persisting contractile disorders. During this period a number of series of metabolic injuries occur due to the changes at the level of organites, cytosol and extracellular matrix. These biochemical changes are necessary to know, considering the fact that due to high degree of congestive heart failure (CHF) in many patients, the prolonged duration of the operation, in some cases, and cardioprotective effect