

EVALUATION OF INTERATRIAL CONDUCTION VIA ESOPHAGEAL ELEKTRODE IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION.

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Prolongation of interatrial conduction (IAC) may predispose to paroxysmal atrial fibrillation (AF). Our aim was to evaluate IAC registered during transesophageal atrial pacing (TAP) in patients with AF

Material and methods: TAP was performed in 142 pts (38F, age 38±17yrs). Sinus and a-v nodes parameters and PA interval from esophageal catheter were evaluated. As prolonged we took: PA>65ms (prolonged IAC), SACT with Strauss method >200ms, SNRT>1600ms, cSNRT>600ms. We compared 4 groups of pts: without AF (AF-) and with normal nodes parameters (nn) - 79 pts; AF- with abnormal nodes parameters (an) - 31pts; with AF (AF+) and nn - 15pts; AF+ and an - 17pts

Results: Prolonged IAC were diagnosed in 12 pts. Statistically significant differences were before: AF+ and AF- (p=0.0003), nn and an (p<0.0001), AF+ with an vs AF- with nn (p<0.0001). Precise data were presented in the table below (in brackets - % of pts with PA>65ms).

| | nn | an | all |
|------|-----------------|-----------------|-----------------|
| AF - | 38±12ms (6.4%) | 54±18ms (6.6%) | 42±15ms (6.4%) |
| AF+ | 46±19ms (53.3%) | 63±26ms (17.7%) | 55±25ms (33%) |
| all | 39±14ms (13.8%) | 57±22ms (10.4%) | 45±19ms (12.7%) |

Conclusion:

- 1 Prolongation of IAC predispose to atrial fibrillation.
- 2 IAC disturbances were more severe in patients with sinus or a-v node abnormalities

Dependence of risk atrial fibrillation development in early postoperative period upon technique of coronary artery bypass grafting surgery.

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In the cardiac surgery department at the Institute of Cardiology of Tomsk Scientific center, Siberian branch of Russian academy of sciences, 53 coronary artery bypass grafting (CABG) surgeries without cardiopulmonary shunting (the 1st group) and 53 CABG operations on pump under cold cardioplegia (the 2nd group) have been performed. The analysis of paroxysms of atrial flutter and/or atrial fibrillation developing before, during and early after surgery (first 7 days) was performed on the basis of anamnesis, intraoperative and chronic electrophysiological study data, carried out with the help of device-program complex "Elkart" ("Electropulse" firm, Tomsk, Russia). The same level of arrhythmia was revealed before CABG (5% atrial fibrillation (AF) in the off-pump group and 6% in the on-pump group). Increase of AF percentage was noted on the first day after surgery in both groups (20 % in the 1st group and 22% in the 2nd one) and decrease of percentage of AF paroxysms occurrence was noted by the 7th day after surgery (10% in the 1st group and 9% in the 2nd group respectively).

The obtained results make possible to suppose that risk of AF occurrence does not depend on CABG performing technique and AF increase in early postoperative period is related to intraoperative myocardial injury and reperfusion syndrome developing.

Atrial Conduction Delay as a Possible Arrhythmogenic Mechanism in Paroxysmal Idiopathic Atrial Fibrillation

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The aim of this study is to evaluate atrial conduction in pts with paroxysmal idiopathic atrial fibrillation (AF) showing: 1) no heart disease; 2) age 35-70 yrs; 3) no fast spontaneous focal atrial activity nor supraventricular reentrant tachycardias triggering AF; 4) >4 long-lasting AF episodes/month; 5) refractoriness to antiarrhythmic drugs. In this study, 25 pts (22 M, 3 F; mean age 53±11 yrs) were considered. They underwent electrophysiologic testing while off drugs: multipolar catheters were placed along the crista terminalis, His bundle area (HBE) and coronary sinus (CS) and electrical stimulation from the high right atrium (HRA) and CS was performed at baseline and during isoprenaline infusion. The results were as follows: 1) during HRA stimulation, S2 (21 pts) or S2S3 (4 pts) induced AF; 2) in all pts before inducing AF, by shortening the coupling interval a progressive prolongation in the premature beat of the interval between the atrial deflection (a) in HRA and the one in HBE was observed, with no relevant change of the aHBE-aCS interval; 3) AF was induced when the aHRA-aHBE interval in the premature beat critically prolonged by 91±36% as compared to S1; 4) S2 stimulation from the CS never induced AF and only in 5 pts a minimal prolongation (36±14% longer in S2 as compared to S1) of the aCS-aHBE interval was observed; 5) during isoprenaline infusion (tested in 15 pts), AF inducibility was totally prevented by preventing the critical prolongation of the aHRA-aHBE interval in 80% of the case, whereas in 20% the critical prolongation with AF induction was observed at a shorter coupling interval.

In conclusion: in this subset of pts, paroxysmal idiopathic AF is associated with atrial conduction delay, evidenced much more by right atrial than CS stimulation. Isoprenaline is able to partially or totally prevent AF induction by preventing the conduction delay.

PREDICTION OF ATRIAL FIBRILLATION ONSET AFTER CARDIAC SURGERY USING MONOPHASIC ACTION POTENTIAL (MAP).

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After routine cardiac surgery, disturbances in heart rhythm, mainly supraventricular in origin, represent one of the major costs in terms of patient morbidity and hospitalization. Their incidence averages around 26.7%.

Aim of this study was to assess if monophasic action potential (MAP), continuously recorded from atrial epicardium, may be used as predictor of the onset of supraventricular arrhythmias during the days after surgery. Bipolar epicardial MAP leads mod. MAPOX 50/02 BP (Biotronik, Germany) were attached to right atrium, using prolene sutures, in 15 informed patients (pts), 8 M and 7 F with mean age of 63 ± 11 years, that underwent to myocardial revascularization. Access to leads was transcatheter, as with conventional temporary pacing wires. For the duration of the in-patient stay, MAP were recorded continuously using a DC isolation amplifier and stored in a laptop PC. MAP leads were removed at patient discharge and MAP records were analyzed using a dedicated software. The average observation period was of 4±1 days/pt (cumulative 63.3 days).

Six episodes of atrial fibrillation (AF) were observed in 5 pts. One to three hours prior to AF onset, specific alterations of the MAP morphology were reproducibly detected. The MAP signal developed a triangular shape, the MAPd90 shortened (-25±4%) and the plateau amplitude decreased from 5±1 mV to 2±0.2 mV. The administration of drugs as sotalol and a combination of verapamil, digoxin and quinidine successfully treated AF. After treatment, the MAP morphology reverted to normal.

In conclusion, this preliminary study shows that atrial MAP is a valid predictor of AF onset after cardiac surgery. Some improvements in lead size and the development of a dedicated analyzer device for routinely, continuous in-patient MAP monitoring will allow to give to the pt a prophylactic, dosage-optimized treatment to prevent AF occurrence.