CYCLE LENGTH ALTERNANS DURING SUPRAVENTRICULAR TACHYCARDIA: EVIDENCE FOR MULTIPLE ATRIOVENTRICULAR CONNECTIONS

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The mechanism of electrical alternans (EA), which may occur during SVT, is unknown. Cycle length alternans (CLA) may also occur during SVT, and is invariably associated with EA. To investigate the mechanism of CLA, detailed electrophysiologic study was undertaken in the 8 of 57 pts with SVT in whom CLA occurred, during 9 episodes of SVT.

The mechanism of SVT was orthodromic AV reciprocating SVT (AVRT) in 4 pts, AV node reentry (AVNRT) in 3 pts (4 episodes) and atrial tachycardia (AT) in 1 pt. Of the 4 pts with AVRT, 1 had retrograde longitudinal dissociation of the accessory pathway and 3 had dual AV nodal pathways. All 3 with AVNRT had >2 jumps during AV nodal conduction curves, implying >3 AV nodal pathways. The pt with AT had dual AV nodal pathways.

Thus, 7 pts had multiple AV connections, involving the AV node and/or accessory pathways, allowing 2 or more potential SVT circuits. The pt with AT had only 2 pathways, independent of the SVT circuit. CLA is therefore explained by differing conduction times and ventricular activation times. This explanation may add to the understanding of EA during SVT.

PREDICTIVE VALUE OF INDUCIBLE ATRIOVENTRICULAR NODAL REENTRY AFTER SURGERY FOR WOLFF-PARKINSON-WHITE SYNDROME

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The incidence of atrioventricular nodal reentry (AVNR) in Wolff-Parkinson-White (WPW) patients (pts) is unknown. Electrophysiology studies were performed 1-13 days (mean 6) after successful surgical ablation of atrioventricular accessory pathways (AP) in 113 pts. Typical AVNR echoes were defined as those that conducted antegradely over the slow AVN pathway and retrogradely over the fast pathway; atypical AVNR echoes were defined as those that proceeded retrogradely over the slow and antegradely over the fast pathway. Seventeen pts (15%) had inducible AVNR; 13 of these had single AVNR echoes (11 atypical, 2 typical), and 4 had sustained (>10 complexes) AVNR (2 atypical, 2 typical). Pre-excited tachycardia was induced pre-operatively in 2 of the 4 pts having inducible sustained AVNR post-operatively (the other 2 pts had concealed APs pre-operatively), compared to 1 of 13 pts (7.7%) with single AVNR echoes and only 6 of 96 pts (6%) without inducible AVNR echoes. No patient with either inducible AVNR echoes or sustained AVNR had spontaneous AVNR tachycardia during follow-up (mean 24 months, range 2-43). Conclusion: 1) AVNR is a common finding in WPW pts after AP ablative surgery, mostly atypical AVNR echoes. 2) Inducible AVNR in this setting does not predict subsequent occurrence of symptomatic clinical AVNR tachycardia. 3) AVNR with a bystander AP may be a common mechanism for pre-excited tachycardia.

ELECTROPHYSIOLOGIC DISCRIMINATION BETWEEN ANTIDROMIC TACHYCARDIA AND ATRIOVENTRICULAR NODAL TACHYCARDIA WITH PRE-EXCITATION

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Distinguishing atrioventricular nodal reentry (AVNR) with bystander ventricular pre-excitation from antidromic tachycardia (AT) is problematic in WPW pts with pre-excited tachycardias (T). We postulated that physiologic differences in the antegrade limbs of these reentrant pathways could discriminate between them. Trains (1-5) of ventricular premature beats (VPB) were delivered in pts (N=5) with AVNRT during narrow QRS T and during AVNRT with pacing simulated ventricular pre-excitation (sensed A - paced V) as well as during simulated AT. Entrainment of AVNRT by simulated AT can be clearly demonstrated. The response of atrial cycle length (CL) to advancement of activation by VPBs was evaluated. In AVNRT, atrial resetting response had an increasing pattern while in AT, the response was flat. In two pts with tone AT, the same pattern of resetting as during simulated AT was observed. These differences could distinguish the two mechanisms except when CL of both reentrant circuits were similar and competed as "driver" of the T. In such cases, some increases in sympathetic tone, either spontaneously during tachycardia or with isoproterenol infusion facilitated differentiation by accelerating AVNRT more than AT and altering the degree of pre-excitation in AVNRT. Thus, these properties of AVNRT and AT can be exploited to identify mechanism of wide QRS T in WPW pts.

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Author Present: 9:00AM–10:00AM
Hall C, New Orleans Convention Center
Postoperative Status After Surgery for Congenital Heart Disease

THE INCIDENCE OF CORONARY ARTERY DISEASE AFTER PEDIATRIC HEART TRANSPLANTATION

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Coronary artery (CA) disease is of major concern after orthotopic heart transplantation (OHT). To assess the the incidence of coronary artery disease after pediatric OHT, we studied 20 patients 1.37 ± 0.94 years post transplantation. Mean age at transplantation was 2.0 ± 3.6 years with a median of 0.2 years. The coronary arteries were studied by selective coronary angiography and/or aortic angiography in 17 patients (20 studies), and by autopsy dissection in 3 children who died late postoperatively. All patients were asymptomatic and receiving maintenance immunosuppression with cyclosporine with or without azathioprine at the time of angiography. Pulse steroid therapy was added only during treatment of rejection episodes. Two patients (10%) had evidence of coronary artery disease, consisting of 20-30% narrowing of the distal left main CA in 1 and minimal irregularity of the mid left anterior descending CA in 1 (follow-up period of 3.7 and 2.0 years respectively). Three patients died at 3, 8, 9 months post transplant. Autopsy studies of their transplanted hearts showed no evidence of occlusive coronary artery disease.

In conclusion, coronary artery disease in our patient population is less frequent than previously reported. This may be partially related to our modified immunosuppression protocol, where chronic steroid therapy is not used.