Introduction: Incidence of atrial fibrillation is known to increase at teen age. Its rapid conduction by an accessory pathway with a short anterograde refractory period can be dramatic. If symptomatic accessory pathway are usually followed and managed either by medication at younger age or by catheter ablation, many asymptomatic ventricular pre-excitation are under the radar and first symptom can be life-threatening. Hopefully, with the electrocardiogram (EKG) generalization, many accessory pathway are now diagnosed at teen age. The aim of this study was to assess the electrophysiological characteristics of ventricular pre-excitation in young patient to determine if there is a difference between symptomatic and asymptomatic accessory pathway and to compare management in regards of EP finding and symptoms.

Methods: We retrospectively investigate data of every patients with ventricular pre-excitation with or without symptom who underwent endocardial electrophysiology testing. Procedure was done under general anesthesia for every patient under 12 years old. Accessory pathway anterograde effective refractory period was determined with an extrastimuli protocol at baseline and after isoproterenol infusion. Accessory pathway was said to be malignant if anterograde effective refractory period was equal or under 240 ms at baseline and 200 ms after Isoproterenol infusion or if the shorted pre excited RR interval was less than 250 ms.

Results: From october 2009 to october 2016, 253 consecutive electrophysiology testing (EP) were realized for 229 patients under the age of 18 years who had an electrophysiology testing for ventricular pre-excitation on baseline EKG. Mean age at procedure was 12.1 years old (range 5 weeks to 17.9 years). If the great majority of patients with accessory pathway were symptomatic (187 – 81%), for 42 (19%) children ventricular pre-excitation was discovered on an electrocardiogram done incidentally. Among asymptomatic ventricular pre-excitation patients, 19/42 (45.2%) had malignancy criteria on electrophysiology testing (no missing data), while there were only 37/172 (21.5%) on the symptomatic group (15 missing data), with a significative p-value (=0.00171).

Conclusion: Children and adolescents with ventricular pre-excitation seems to have greater risk of sudden death if asymptomatic. Endocardial electrophysiological study is mandatory for every patients with ventricular pre-excitation before teen age.