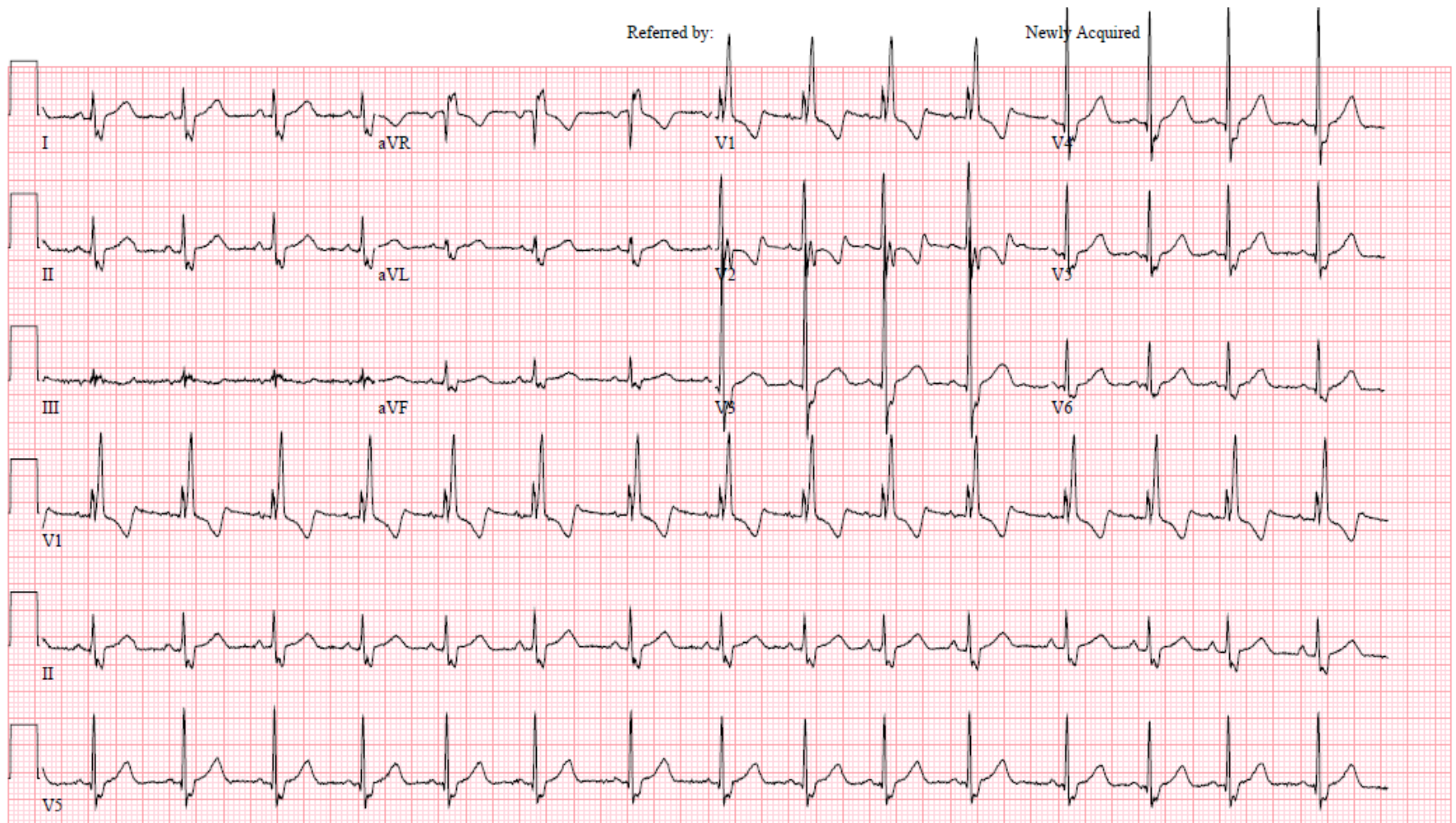


This 4 year old boy was admitted to the PICU with a carbamazepine ingestion, which required no intervention. He had a possible abnormal EKG during that time. Two weeks later, in follow-up in the cardiology clinic, the EKG was unchanged. See below.

- 1) What is the major abnormality on this ECG?
- 2) Do you think the problem is related to the ingestion, or pre-existing?
- 3) What further work-up, if any, would you perform in the pedi cardiology clinic?



EKG of the week 3/4/2011

What is the major abnormality on this ECG?

- This is a complete right bundle branch block, confirmed by the presence of normal 1:1 sinus rhythm, normal PR interval, and widened QRS with a predominantly upward deflection in V1.
- See the figures to the right for details.

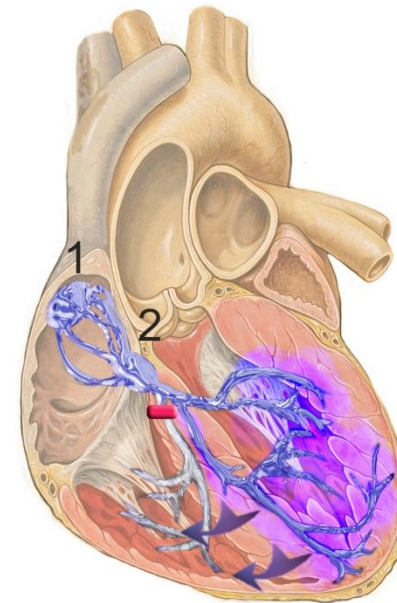
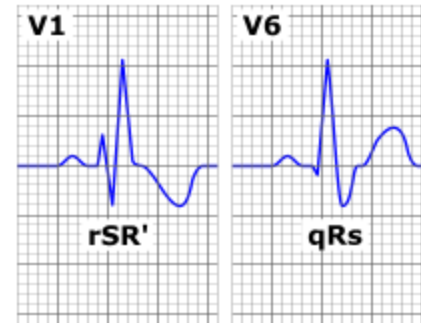
Do you think the problem is related to the ingestion, or pre-existing?

- Since this is present despite resolution of the Tegretol overdose, the possibilities are either (1) Tegretol damaged the right bundle irreversibly, or (2) the problem is congenital and only incidentally seen. Based on a review of the literature, Tegretol toxicity is not associated with CRBBB; thus, this is almost certainly a congenital issue.

What further work-up, if any, would you perform in the pediatric cardiology clinic?

- CRBBB can be seen in familial forms, as a complication of maternal lupus, as a complication of prior cardiac surgery, and in some structural cardiac defects. An echo was performed and normal, and EKGs on 1st degree family members were ordered. If an isolated finding, we would recommend a 24 hour Holter and later an exercise test to ensure there is no inducible ventricular arrhythmia and no higher grade heart block. If not, the child can participate normally in all activities.

Right bundle branch block characteristics



Conduction in RBBB (Schematic): With a blockage in the right bundle branch (red), the left ventricle is excited in time (purple), while the excitation of the right ventricle takes a detour via the left bundle branch (blue arrows).