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Letter to Editor

My Way of Becoming a Good ECG Reader

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Abstract: My first days of learning about ECG was during the summer of second year at the medical school. I went through the graduation test with very little knowledge about ECG. I started learning ECG by comparing the ECG tracings with the echocardiographic results. However, the echo could not help in case of arrhythmia. So I spent my time reading the "Marriott's Practical Electrocardiography" – kind of textbook of ECG. It was so boring and I quickly gave up the goal of finishing the book. Then I changed to another strategy. Every time I saw an arrhythmic case, I went back home reading a whole chapter about some entity. This strategy proved to be effective. Gradually my skill of interpreting an ECG was built up. From the point of reading an ECG superficially and making a quick diagnosis (which is erroneous most of the time), I became very tedious in finding subtle abnormal signs. When you work really hard, life always has some rewards. I had been selected to study abroad about cardiac electrophysiology. Nowadays, being the Head of Cardiac Electrophysiology department in my hospital, my daily work is to deal with challenging arrhythmic cases. Interpreting elusive ECG tracings is always a passion for me.

"Practice makes perfect" (Proverb)

I still remember my first days of learning about electrocardiography (ECG). That was an extra class during the summer of our second year. The class was crowded. The teacher showed lots of criteria for chambers enlargement and intracardiac conduction disturbances. I was lost in that maze of tracings. At my graduation test, the case I got had a normal ECG, and all I have to do is saying that everything is within normal limit! By that way, I got my doctor certificate with very little knowledge of ECG.

Then I got a job at the Heart Institute of Ho Chi Minh City. That was the era of echocardiography. The diagnosis was made pretty easily. We just needed to take a look at the echocardiography and figured out immediately what kind of heart disease patient had. Unlike in the old days, our teachers used to auscultate the patient very carefully, read the ECG with full attention then make a probable diagnosis. What I did was contrast; I read the echocardiography result then took a look back the ECG – they were very correlative. A case with severe mitral stenosis would have a sign of left atrial enlargement, whereas patients with severe aortic regurgitation would definitely have left ventricular enlargement manifestations on ECG. However, the echocardiography could not help in case of arrhythmia. The arrhythmic diagnosis was made by ECG itself. At first, I spent my time reading the "Marriott's Practical Electrocardiography" – a textbook specific for ECG. It was so boring and I quickly gave up the goal of finishing the book. Then, I changed to another strategy. Every time I saw an arrhythmic case, I went back home and read a whole chapter about some entity. This strategy proved to be effective for several reasons. First, it helps to remember the specific criteria when you are understanding mechanisms. Second, every type of arrhythmia has different variations which you could find only in a textbook of ECG. Finally, the knowledge you get from the book could be applied to your practice instantly, which was interesting when you were a young doctor. For example, one day I had a case of a young girl who had bradycardia with the heart rate about 40 beats per minute. The initial diagnosis was sinus bradycardia, which was considerably benign. I questioned myself "How may she have such slow heart rate?". When consulting the ECG book, I found an important differential diagnosis of sinus bradycardia is 2:1 atrioventricular block. A careful look at the ECG revealed a subtle P wave buried inside the T

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wave, which turned the diagnosis of sinus bradycardia into 2:1 atrioventricular block. Consequently, that girl required a permanent pacemaker.

Gradually, I fell in love with reading ECG. Whenever I heard my colleague talking about some "difficult" ECGs, I always tried to interpret and discuss with them. By doing so, I had much exposure to many different ECGs and thus accumulated my ECG knowledge. Step by step I honed my skill of interpreting an ECG. From the point of reading an ECG superficially and making a quick diagnosis (which is erroneous most of the time), I became very tedious in finding subtle abnormal signs. For instance, just a tiny change of P wave morphology could turn a diagnosis of sinus tachycardia (which is physiologic) into atrial tachycardia (which is pathologic). When you work really hard, life always has some rewards. I had been selected to study abroad for cardiac electrophysiology. Under the light of cardiac electrophysiology, the vagueness of ECG interpretation almost disappears. What we have not understood with only ECG, the electrophysiology study will have the answer for.

Nowadays, being the Head of Cardiac Electrophysiology department in my hospital, my daily work is to deal with challenging arrhythmic cases. Interpreting elusive ECG tracings is always fascinating for me. I think I will keep this passion for a very long time. If somebody asks "How to become a good ECG reader?", my answer would be "Practice makes perfect".