An interesting ECG: A simple error during temporary transvenous pacing

Dr Sabin P¹, Dr PrabhaNini Gupta², Dr Preetham Kumar Francis³, Dr Abdul Salam¹, Dr Bigesh Nair¹, Dr Sandeep G Nair¹

A 60 year old patient was admitted with acute inferior wall myocardial infarction and cardiogenic shock. On admission his heart rate was 30/mt, Blood pressure 70 systolic, JVP was not elevated, there was no cardiomegaly, heart sound were normal and no adventitious sounds in the lungs.

His ECG showed(Figures 2a and 2b) ST elevation in 2,3 aVF and complete heart block at a rate of 30/mt. He was taken up for primary angioplasty. Coronary angiogram showed total occlusion of the RCA, proximally with grade 5 thrombus that cleared almost immediately on wiring. He was put on a temporary pacemaker after which his blood pressure increased to 90 systolic. The PCI was completed and with a BP of 80 systolic he was shifted to the ICCU. Once there he was put on dopamine 5 microgame per kg per minute and his BP became 90 systolic. His heart rate was 100/mt in spite of that he had both paced beats and sensed beats, (Figure 1). The pace maker was kept at 70/min and the output at 4 mv and the sensitivity at .5mV. The temporary pacemaker was kept on asynchronous mode. We changed it to demand mode and so the sensing returned.

Discussion:

Asynchronous mode in the pacemaker is used to deliver pacing energy at a fixed rate, especially during cardiac arrest when there is no spontaneous activity to be sensed. This can be used in ventricular, atrial or DDO modes. In the VOO mode because there is no sensing, there are no refractory periods. This mode is rarely used except during procedures using constant electrocautery to avoid inhibition of pacing caused by sensing of the high frequency impulses of the electrocautery. The obvious disadvantage of this pacing mode is the possibility of asynchronous pacing during the T wave that can cause VT or VF or even AF.

In this case simply turning the temporary pacemaker

1. Resident in Cardiology., 2. Professor in Cardiology, 3. Assistant Professor in Cardiology., Department of Cardiology, Medical College, Trivandrum.
Altered electrocardiograms secondary to myocardial ischemia or infarction or inflammatory changes or fibrosis at the lead tissue interface can all cause loss of sensing in permanent pacemakers. But in our patient we had put only a temporary pacemaker and we found the switch on asynchronous mode so we just switched it to demand mode. The patient was paced for 12 hours more then the lead could be removed. At times asynchronous pacing can be dangerous, Izquierdo R et al describe a case of the intranodal tachycardia related to intermittent failure of atrial capture in a patient with an implanted DDD pacemaker. Here occasionally the floating lead in the atrium had loss of sensing.

Figures 2 a and b also show ST elevation in 2, 3, aVF with more ST elevation in 3 than 2 suggestive of right ventricular myocardial infarction and right coronary involvement. V1 lead is also suggestive of right coronary involvement. ST elevation with upright T in V4R has a 90% specificity for RCA involvement but many a time V4R is not taken in an emergency. We have found very often that V1 can be taken as a surrogate of V4R and we often use this to localize the infarct related artery before starting the primary angioplasty. The angiogram of the patient is also shown below. (Figures 3, 4, 5, 6.)

Figure 6: The final picture after stenting the patient, during primary angioplasty.

References: