A Patient with Dilated Cardiomyopathy and Portal Hypertension: Which Beta-Blocker to Use?

Rathindranath Sarkar¹, Rudrajit Paul², Debaditya Roy³, Asim Saha³, Tanmay Jyoti Sau⁴, Jayati Mondal⁵

¹Professor and HOD, ²Assistant Professor, ³Resident, ⁴Professor, Dept of Medicine, Medical College, Kolkata, West Bengal; ⁵RMO, Chittaranjan Seva Sadan, Kolkata, West Bengal

Sir,

Beta-blockers (BB) are group of drugs which are used for a variety of indications in medicine, starting from cardiac arrhythmia to chronic liver disease and glaucoma. There are various types of BB and the different diseases require different types. However, sometimes, the same patient may have two or more of these diseases simultaneously and then, the choice of a single beta blocker becomes a contentious issue. We here describe cases where the same patient had two diseases, both of which necessitated the use of beta blockers, albeit of different classes.

Recently, we had two male patients presenting with gradually progressive dyspnoea. Both of them were alcoholic for the last eight to ten years. On examination, they were found to have massive ascites with raised jugular venous pressure. Both of them had orthopnoea and bi-basal fine crepitations in both lungs. Ultrasonography of abdomen revealed shrunken liver and dilated portal vein; upper GI endoscopy revealed grade II-III varices in the esophagus. After initial stabilization, echocardiography was done for both patients. It revealed dilated cardiomyopathy with ejection fractions of 28% and 35% respectively. In absence of other aetiologies, the cardiomyopathy was assumed to be due to prolonged alcohol exposure (serum iron profiles were done to rule out hemochromatosis). Since both the patients needed beta blockers for cardiac and hepatic pathologies, the respective super-specialty departments were consulted. Finally, they were started on carvedilol orally at 3.125 mg/day with gradual increase to 12.5 mg/day over one month. At 6 months’ follow up, symptomatically the patients were better and there was no progression of the varices.

BBs have been shown to be beneficial in portal hypertension¹. The non-selective one, propranolol, has been studied extensively and has been proven to reduce hepatic venous pressure gradient.¹ Blockade of both beta-1 and beta-2 receptors are needed to have maximum benefit by reducing both splanchnic blood flow and splanchnic vasoconstriction. Other BB are also used in portal hypertension.

Beta-blockers are also an essential group of drugs for heart failure, especially heart failure with reduced ejection fraction, as in our patients. Three beta blockers are recommended by the AHA for heart failure: bisoprolol, carvedilol and extended release metoprolol succinate (class I indication).² Only these BBs have been shown to positively reduce mortality and hospitalization risk. However, the evidence for other beta-blockers is not strong. For example, propranolol has been studied in heart failure. It has been shown to improve left ventricular function significantly.³ But the effect on mortality is not documented. Similarly, a study from Brazil was done where carvedilol was replaced with propranolol in heart failure patients.⁴ This did not show any deterioration of cardiac function after the switch in the short term. However, the dose of propranolol required to maintain the adrenergic blockade level similar to carvedilol was 109±43 mg/day. At this dose, other side effects are likely.

Carvedilol, on the other hand, has been studied in portal hypertension and has been shown to be beneficial.⁵ Another advantage is that the dose of carvedilol for portal hypertension is similar to the heart failure dose.¹⁵ Different studies have shown that carvedilol reduces Hepatic venous pressure gradient to a similar degree or even greater degree than propranolol.¹ The other BB like metoprolol has not shown such benefit.

Thus, in cases with portal hypertension and severe heart failure, carvedilol is a sound option.

References