N-TERMINAL PRO BRAIN NATRIURETIC PEPTIDE IN HEPATITIS C VIRUS MAINTENANCE HEMODIALYSIS PATIENTS AND ITS RELATION TO DIASTOLIC DYSFUNCTION AND CHILD PUGH SCORE

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Introduction

The prevalence and incidence of end stage renal disease worldwide is rising markedly, becoming a global challenge. HCV infection is a worldwide public health problem and is more prevalent in hemodialysis patients than the general population. Cardiovascular complications are the leading cause for excess morbidity and mortality among end stage renal disease patients. Diastolic dysfunction is common in these patients due to left ventricular hypertrophy, myocardial fibrosis. N- Terminal pro brain natriuretic peptide (NT-ProBNP) belongs to natriuretic peptides which are molecules secreted by ventricles in response to volume or pressure overload causing natriuresis, vasodilation and diuresis. NT-ProBNP was found to be elevated in heart failure, renal failure especially patients on hemodialysis (HD). Many studies showed that HCV patients have increased serum NT ProBNP compared to general population and this level is higher in Child-Pugh C patients compared to Child-Pugh B and A patients and that diastolic dysfunction is more common in those patients.

Aim of the work

The aim of this work was to study the level of NT-ProBNP in HCV patients on maintenance hemodialysis (MHD) and its correlation with diastolic dysfunction and Child-Pugh classification

Subjects

This cross-sectional study included 60 subjects on HD divided into: Group A: 30 HCV positive patients Group B: 30 HCV negative patients . They were recruited from the HD units of Alexandria University Hospitals. patients were maintained on HD for more than 3 months. They perform thrice weekly, four hours HD sessions. Patients known to have prior CV events like angina, myocardial infarction (MI), decompensated heart failure were excluded from the study.

Methods

The following investigations were performed for all patients: serum NT-ProBNP, complete blood picture (CBC), serum urea, serum creatinine, serum calcium, serum phosphorus, serum PTH, total cholesterol, triglycerides, serum total and direct bilirubin, serum albumin, prothrombin time, INR, Aspartate aminotransferase (AST), Alanine aminotransferase (ALT), HBs Ag, HCV Ab, HIV Ab and HCV PCR. Echocardiography to assess for diastolic dysfunction was done at the start of the study. Estimation of Kt/V and Calculation of Child-Pugh score for HCV patients.

Results

Table (1): Relation between NT-ProBNP and diastolic dysfunction, HCV PCR and Child Pugh score in group A (HCV positive patients on MHD) (n = 30)

	N	NT-ProBNP		Test of Sig.	p
		Mean ± SD.	Median (Min. – Max.)		
Diastolic dysfunction					
No	6	2087.3 ± 841.5	1658.0 (1289 – 3260)	H= 13.656*	0.003*
Grade 1	12	4356.0 ± 2581.3	3248.0 (1789 – 9399)		
Grade 2	10	8522.4 ± 6940.7	4938.5 (1950 – 20309)		
Grade 3	2	25993.0 ± 1042.3	25993.0 (25256 – 26730)		
HCV PCR					
Negative	8	2320.8 ± 984.6	1869.5 (1289 – 4047)	U= 26.00*	0.003*
Positive	22	8338.2 ± 7756.6	4938.5 (1678 – 26730)		
Child Pugh score					
A	21	2948.8 ± 1314.7	2598.0 (1289 – 6020)	H= 18.697*	<0.001*
B	7	12585.1 ± 5238.9	11674.0 (7012 – 20309)		
C	2	25993.0 ± 1042.3	25993.0 (25256 – 26730)		

Table (2): Relation between NT-ProBNP with diastolic dysfunction in Group B (HCV negative patients on MHD) (n = 30)

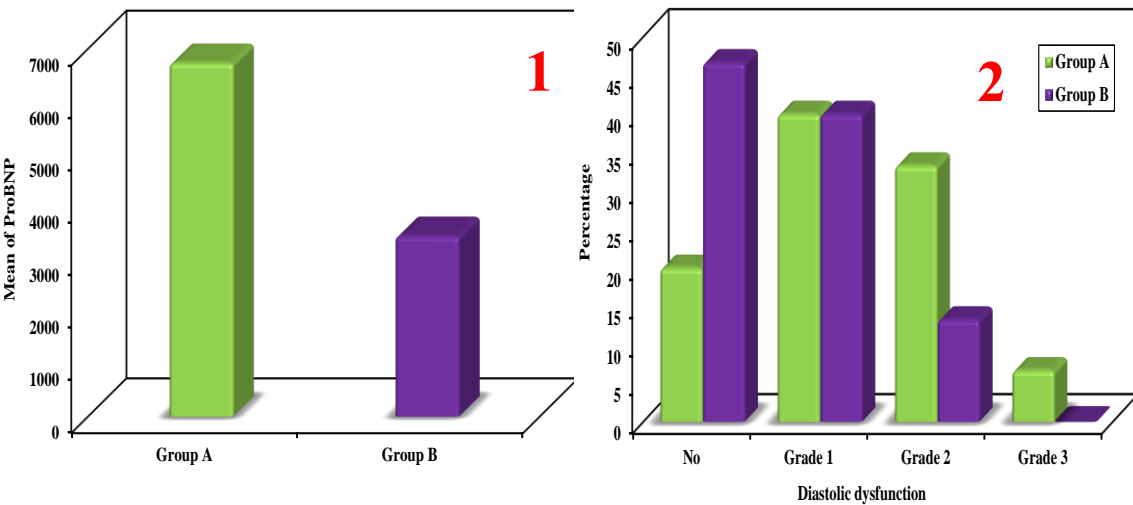|	N	NT-ProBNP		H	p
		Mean ± SD.	Median (Min. – Max.)		
Diastolic dysfunction					
No	14	2109.2 ± 1752.0	2075.5 (326 – 5891)	10.945*	0.004*
Grade 1	12	2655.7 ± 1588.9	2308.0 (460 – 5460)		
Grade 2	4	10439.8 ± 3956.6	9739.0 (6521 – 15760)		

Fig (1): Comparison between the two studied groups according to NT-ProBNP

Fig (2): Comparison between the two studied groups according to diastolic dysfunction

Conclusion

HCV positive patients on dialysis have higher level of NT-ProBNP than HCV negative patients on dialysis. NT-ProBNP level is directly proportional to the grade of diastolic dysfunction in both groups. NTProBNP level is increased in HCV PCR positive patients compared to HCV PCR negative patients and is also is increased with the increase in Child Pugh score. NT-ProBNP can be used to predict cardiovascular events in patients on dialysis specially HCV positive patients.

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