ABSTRACT

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Reduction of Brain Natriuretic Peptide Following a Disease Management Program in Patients with Heart Failure

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Introduction: Numerous investigations have demonstrated improved clinical outcomes in patients with heart failure (HF) participating in disease management programs. Brain natriuretic peptide (BNP) has been shown to reflect HF severity and predict adverse events. The purpose of the present investigation is to examine the impact of a disease management program on BNP levels in elderly patients with HF.

Methods: Eighty five subjects participated in this analysis. Thirty four subjects (18 male/16 female) were enrolled in a HF disease management program. This program included HF education as well as an outpatient clinic and a tele-management system. The HealthCall tele-management system monitored weight and other self reported signs and symptoms. When weight and/or symptoms were outside of pre-set limits, the HF treatment plan was readjusted. The cost of the disease management program was $30.00 per month, per patient. The remaining 51 subject (32 male/19 female) received usual care consisting of management by their personal physician. Brain natriuretic peptide was recorded at baseline and seven months post intervention in both groups.

Results: Brain natriuretic peptide, in pg/ml, was logarithmically transformed to normalize the distribution and justify the use of parametric statistics. The following unpaired t-test results at baseline are reported disease management vs. standard care. Age (79.3 ±10.4 years vs. 74.0±13.1 years), left ventricular ejection fraction (34.3 ±15.4% vs. 31.4±13.2%) and logBNP (3.0 ±0.3 vs. 3.1 ±0.3) were not significantly different at baseline ($p>0.05$). At seven months, paired t-testing revealed logBNP was not significantly different from baseline in the usual care group (3.1 ±0.3 vs. 3.0 ±0.4, $p=0.31$). In the disease management group, however, logBNP was significantly lower at the seven month follow-up compared to baseline (3.0 ±0.3 vs. 2.7 ±0.4, $p=0.002$). The difference in logBNP at the seven month follow-up was also significantly different between the disease management and usual care group by unpaired t-testing ($p=0.004$).

Conclusions: The results of the present study demonstrate a HF disease management program significantly lowers BNP in elderly patients with HF, indicating a positive physiologic adaptation. The positive results obtained with this low cost, tele-management disease management program make these findings particularly promising. Additional research examining disease management programs in the HF population is warranted.