Assessing the Relationship between Heart Disease and Related Comorbidities with Dementia and Alzheimer's Disease

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Introduction

- The past few decades have seen unprecedented and historic rise in life expectancy and decreases in mortality rates
- Consequently, this development was paralleled by an alarming increase in the rates of dementia, a general term for a variety of cognitive ailments characterized by the impairment of thinking ability, memory, decision making, and performing activities of daily living[1]
- Dementia is an irreversible and progressive condition most commonly developing in the elderly, the most prevalent form of which is Alzheimer's disease; other forms include Vascular dementia, Parkinson's dementia, and Lewy body dementia
- The development of dementia is associated with the presence of other health conditions; chief among them are cardiovascular disease and depression[2,3]
- Given the increasing prevalence of both cardiovascular disease and depression, research into their relationship with dementia it vital for determining health policy

Objective

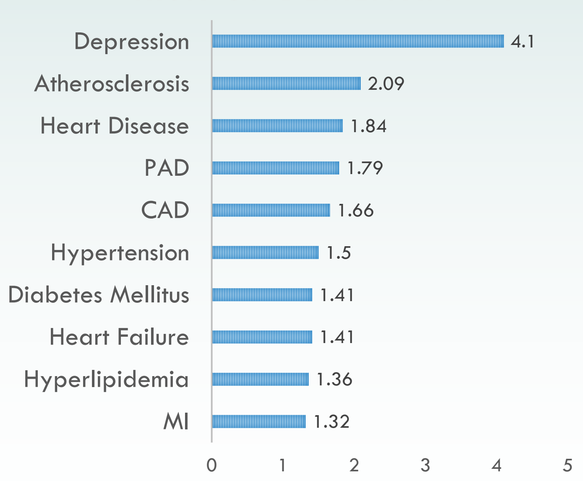
The primary objective of this study was to explore the association between having cardiovascular disease and depression with dementia or Alzheimer's disease.

Methods

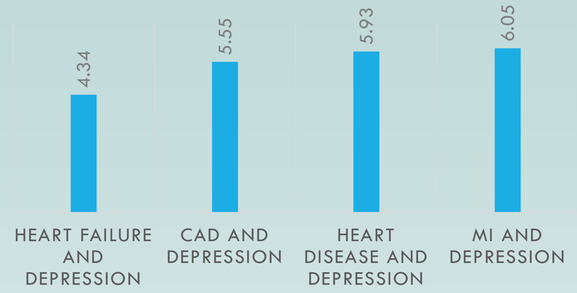
- This retrospective study analyzed electronic medical records database (Private Source 42) provided by HealthVerity Marketplace
- Patients were required to have a diagnosis in an inpatient/outpatient setting anytime between the study period; January 1, 2014 and June 30, 2019. Patients had at least 3 years of continuous enrollment post-index
- The baseline characteristics of these patients was documented and the likelihood of developing depression or AD was analyzed using the logistic regression
- There were 49,735 patients included in the analysis (age: 69.4±11.1 years; 52.7% male). Of these patients, 13,294 (26.7%) had heart disease; 2978 (6.7%) had depression; 1277 (2.6%) had both heart disease and depression during the baseline period
- The p value for statistical significance was set at $p = < 0.005$
- Comorbidities that were analyzed in this study include: Heart Disease, Heart Failure, Myocardial Infarction, Atherosclerosis, CAD and PAD, Hyperlipidemia, Hypertension, Diabetes Mellitus, and Depression
- The dementia variable included all causes of dementia and was further subdivided into Alzheimer's and vascular dementia for more in depth analysis

Results

- Analysis revealed that patients with heart disease or depression had a greater risk of developing dementia including Alzheimer's disease and vascular dementia
- Patients with both heart disease and depression were more likely to develop Dementia (OR 5.99, 95% CI 4.81 – 7.39) and Alzheimer's Dementia (5.93, 3.55-9.43) compared to patients with only heart disease (1.84, 1.63-2.09)
- Patients with depression are four (OR 4.1, CI 3.51-4.80) times more likely to have dementia. This risk increases substantially in patients with concomitant cardiovascular disorders including heart failure, myocardial infarction, and coronary artery disease



Odds ratios for dementia risk in patients with the selected diseases



Odds ratios for dementia risk in patients with both cardiovascular disease and depression

Conclusions

Our study showed that having both heart disease and depression was associated with higher odds of having dementia and AD. These findings are important because number of cases with both these diseases continue to rise and there is no cure for dementia or AD. Therefore, early diagnosis and treatment of these comorbidities is vital for reducing the burden of dementia and AD on society

References

Acknowledgments

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