World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:14, No:05, 2020

A Cost-Benefit Analysis of Routinely Performed Transthoracic Echocardiography in the Setting of Acute Ischemic Stroke

Authors : John Rothrock

Abstract : Background: The role of transthoracic echocardiography (TTE) in the diagnosis and management of patients with acute ischemic stroke remains controversial. While many stroke subspecialist reserve TTE for selected patients, others consider the procedure obligatory for most or all acute stroke patients. This study was undertaken to assess the cost vs. benefit of 'routine' TTE. Methods: We examined a consecutive series of patients who were admitted to a single institution in 2019 for acute ischemic stroke and underwent TTE. We sought to determine the frequency with which the results of TTE led to a new diagnosis of cardioembolism, redirected therapeutic cerebrovascular management, and at least potentially influenced the short or long-term clinical outcome. We recorded the direct cost associated with TTE. Results: There were 1076 patients in the study group, all of whom underwent TTE. TTE identified an unsuspected source of possible/probable cardioembolism in 62 patients (6%), confirmed an initially suspected source (primarily endocarditis) in an additional 13 (1%) and produced findings that stimulated subsequent testing diagnostic of possible/probable cardioembolism in 7 patients (< 1%). TTE results potentially influenced the clinical outcome in a total of 48 patients (4%). With a total direct cost of $1.51 million, the mean cost per case wherein TTE results potentially influenced the clinical outcome in a positive manner was $31,375. Diagnostically and therapeutically, TTE was most beneficial in 67 patients under the age of 55 who presented with 'cryptogenic' stroke, identifying patent foramen ovale in 21 (31%); closure was performed in 19. Conclusions: The utility of TTE in the setting of acute ischemic stroke is modest, with its yield greatest in younger patients with cryptogenic stroke. Given the greater sensitivity of transesophageal echocardiography in detecting PFO and evaluating the aortic arch, TTE’s role in stroke diagnosis would appear to be limited.

Keywords : cardioembolic, cost-benefit, stroke, TTE
Conference Title : ICDND 2020 : International Conference on Diagnosis of Neurological Disorders
Conference Location : Berlin, Germany
Conference Dates : May 21-22, 2020