Talal W. Khan, J Clin Exp Cardiology 2014, 5:3
http://dx.doi.org/10.4172/2155-9880.S1.021

OMICS Group Conferences
Accelerating Scientific Discovery

4th International Conference on
Clinical & Experimental Cardiology
April 14-16, 2014 Hilton San Antonio Airport, TX, USA

Neurostimulation for intractable angina

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Introduction: Despite major advancements in coronary revascularization therapy, including percutaneous coronary intervention and coronary artery bypass grafting, many patients are ineligible for interventional therapy or remain symptomatic despite optimal treatment. For this group of patients, pain often significantly limits physical activity and contributes to a poor quality of life. Spinal cord stimulation (SCS) has been described as a potential safe and effective treatment modality for this select group of patients.

Case Presentation: A 61-year-old female presented to the anesthesia pain clinic for management of her intractable angina. She had a known history of coronary artery disease, recently diagnosed within the last several months. After experiencing classic anginal symptoms, left heart catheterization (LHC) was performed and a drug-eluting stent was placed to the mid LAD. Just two months after her initial LHC, the patient again presented with progressively worsening angina pattern of pain. A repeat LHC revealed a patent mid LAD stent, and PCI with balloon angioplasty was performed to a 2nd diagonal of the LAD – there was no other obstructive disease. Despite PCI and aggressive medical therapy, the patient continued to experience classic anginal symptoms with minimal physical activity, often taking more than 24 sublingual nitroglycerin sprays daily. After placement of a low cervical/high thoracic spinal cord stimulator, the patient experienced significant improvement in her anginal symptoms, with a more than 75% reduction in her short-acting nitrates, and had improved exercise tolerance.

Discussion: The majority of patients suffering from ischemic heart disease can be adequately treated with revascularization procedures and anti-anginal medications. As the interventional techniques and medical management of CAD improves mortality for this group of patients, the number of people living with chest pain despite medical treatment continues to increase. According to some estimates there may be approximately 1 million people living with intractable angina in the United States with approximately 50,000 new cases diagnosed each year. Despite optimal therapy, however, this particular patient continued to remain symptomatic, experiencing daily retrosternal chest pain, jaw pain, shoulder pain, and dyspnea. Neuromodulation via SCS to the lower cervical and upper thoracic nerve roots was able to significantly improve the anginal symptoms and exercise tolerance of this patient. Moreover, several recent investigations have shown objective data suggesting improved coronary and myocardial perfusion in patients treated with spinal cord stimulation. It is thought that the anti-anginal effects of spinal cord stimulation are multifactorial and are due to reduced pain perception, decreased sympathetic tone, and improved coronary microcirculatory blood flow. Electrical SCS should be considered a safe and effective therapeutic option for the treatment of patients with refractory angina.

Biography

Talal W. Khan MD, MBA has completed residency training in Anesthesiology from the University of Miami/Jackson Memorial Hospital and a fellowship in Pain medicine from Emory University. He is the Director of Pain Management at the University of Kansas Medical Center and Interim Chairman of the Department of Anesthesiology. He has published and presented at reputed meetings nationally and internationally and also serves as an editorial board member for multiple journals in the field of pain medicine.

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