

Pacemaker Surgery and Methods **Dr. Abhishek Reddy***

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Abstract

Antibiotic resistance is now become a major concern for many organizations and scientists. The resistance is developed in most of the pathogens we cannot undo that but what we can is use the strategies to combat and prevent further resistance which includes stewardship programs, proper prescriptions, dosages and antibiotics use. Also developing new agents for fighting the pathogens are now been developing and some are already approved by various organizations i.e., CDC. Here different management techniques are discussed and what are new antibiotic agents available in the market.

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Introduction

Antibiotics are medicines used to kill the bacteria or ant pathogen that cause disease in human or other organisms. It had played a major role in treating various and diverse types of infections but now it's on the edge of existence as the resistance against antibiotics is increasing day by day. The rate is so high that if it is not considered now, we will be like living in the old ages [1]. Mortality rate will increase eventually. There are various reasons for developing the resistance which includes the over usage, improper prescription. Our environment is also contributing in resistance as continues exposure to radiation leading to mutations and sometime this change contributes in resistances among the pathogen. Here in this article, we are discussing the ways that can be used to prevent or overcome the current threat of resistance against medicine. Some of the organizations involved are CDC The antibiotic resistance crisis the main article is divided into two parts, and the is its second part where different strategies are being discussed and new methods to overcome the antibiotic resistance. If you are interested to know what the reasons are and threats due to antibiotic crisis then you might have a view of the first part, where the causes and threat of antibiotic resistance are discussed [2].

CDC And various other communities and organizations have following suggestions to control the crisis of antibiotic resistance crisis. One percent of the cardiomyocytes in the myocardium possess the ability to generate electrical impulses (or action potentials) spontaneously. A specialized portion of the heart, called the sinoatrial node (SA node), is responsible for atrial propagation of this potential.

The sinoatrial node (SA node) is a group of cells positioned on

the wall of the right atrium, near the entrance of the superior vena cava [3]. These cells are modified cardiomyocytes. They possess rudimentary contractile filaments, but contract relatively weakly compared to the cardiac contractile cells. The pacemaker cells are connected to neighboring contractile cells via gap junctions, which enable them to locally depolarize adjacent cells. Gap junctions allow the passage of positive cations from the depolarization of the pacemaker cell to adjacent contractile cells. This starts the depolarization and eventual action potential in contractile cells. Having cardiomyocytes connected via gap junctions allow all contractile cells of the heart to act in a coordinated fashion and contract as a unit. All the while being in sync with the pacemaker cells; this is the property that allows the pacemaker cells to control contraction in all other cardiomyocytes. Cells in the SA node spontaneously depolarize, ultimately resulting in contraction, approximately 100 times per minute. This native rate is constantly modified by the activity of sympathetic and parasympathetic nerve fibers via the autonomic nervous system, so that the average resting cardiac rate in adult humans is about 70 beats per minute [4]. Because the sinoatrial node is responsible for the rest of the heart's electrical activity, it is sometimes called the primary pacemaker.

Method

Chest radiographs of cardiac resynchronization therapy with defibrillator (CRT-D) in an individual with dilated cardiomyopathy after mitral valve replacement (MVR).

CRT requires the placement of an electrical device for biventricular pacing, along with placement of (at least) two pacing leads, to facilitate stable left ventricular and right ventricular pacing. For all elements, the first stage of the process is local anaesthetic

followed by incision to allow for approach from the appropriate vein. From here, the leads and device can be inserted [5].

Pacemaker

An artificial cardiac pacemaker (or artificial pacemaker, so as not to be confused with the natural cardiac pacemaker) or just pacemaker is a medical device that generates electrical impulses delivered by electrodes to the chambers of the heart either the upper atria, or lower ventricles to cause the targeted chambers to contract and pump blood. By doing so, the pacemaker regulates the function of the electrical conduction system of the heart. The primary purpose of a pacemaker is to maintain an adequate heart rate, either because the heart's natural pacemaker is not fast enough, or because there is a block in the heart's electrical conduction system. Modern pacemakers are externally programmable and allow a cardiologist, particularly a cardiac electro physiologist, to select the optimal pacing modes for individual patients. Most pacemakers are on demand, in which the stimulation of the heart is based on the dynamic demand of the circulatory system. Others send out a fixed rate of impulses [6].

A specific type of pacemaker called an implantable cardioverter-defibrillator combines pacemaker and defibrillator functions in a single implantable device. Others, called biventricular pacemakers, have multiple electrodes stimulating different positions within the ventricles (the lower heart chambers) to improve their synchronization [7, 8].

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Conclusion

Many abnormal heart rhythms can be treated with a pacemaker. A pacemaker generates electric pulses that regulate heartbeats. Thanks to advances in technology, pacemakers are very light and can adapt to your body needs, moment by moment, beating faster during exercise and slowing down at rest. The procedure to insert a pacemaker is fairly simple and safe. Complications are rare, but knowing about them may help you to detect them early if they happen [9]. After the procedure, you can go back to your regular activities after a short period of healing time. Permanent pacemaker implantation was required in 9.7% of patients undergoing repeat cardiac surgery. This represented approximately a fourfold increase compared with similar primary operations reported in other series. Factors strongly related to this need included valve replacement, preoperative endocarditis, number of reoperations, advanced age, and degree of hypothermia during cardiopulmonary bypass. The need for a permanent pacemaker after reoperations did not result in significant long-term impairment of functional status or longevity compared with those who did not require a permanent pacemaker [10].

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Conflict of Interest

None