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Use of Drug Eluting Stent (DES) Therapy in Coronary Artery Disease: A Better Safety

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Letter to Editor

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Abbreviations: CAD: Coronary Artery Disease; PTCA: Percutaneous Trans-luminal Coronary Artery Angioplasty; CAS: Coronary Artery Stenting; BMS: Bare-Metal Stents; DES: Drug-Eluting Stents; BRS: Bio-Resorb able Stent.

Introduction

Coronary artery disease (CAD) is the build-up of plaque in the arteries that supply oxygen-rich blood to your heart. Plaque causes a narrowing or blockage that could result in a heart attack. Coronary artery disease is responsible for 1 out of 5 deaths in United States were approximately 13 million people are suffering this disease and over 4.5 million deaths in Europe [1,2].

The treatment for CAD has been changed significantly since the introduction of many treatments through percutaneous trans-luminal coronary artery angioplasty (PTCA) and coronary artery stenting (CAS). There are two basic kinds of stents:

1. Bare-metal stents (BMS)
2. Drug-eluting stents (DES)

Bare-metal stent is a stent a mesh-like tube of thin wire. 316L stainless steel was the first stents which got license for use in cardiac arteries. The second generation stents use cobalt chromium alloy. Bare-metal stents act as simple scaffolding to prop open blood vessels after they are widened with angioplasty. Tissue grows around the stent in order to hold it in place. However, sometimes due to overgrowth of scar tissue in the arterial lining develops the risk of re-blocking.

DES is coated with medications that are slowly released (eluted) to help prevent the growth of scar tissue in the artery lining. Drug-eluting stents reduce this risk to less than 10 percent, and less than 5 percent of people need repeat procedures. Millions of people with heart problems have been successfully treated with drug-eluting stents, preventing the need for more-invasive procedures such as coronary artery bypass surgery.

The development of stent has been a major advance in the treatment of coronary artery disease since the introduction of balloon angioplasty. The recent introduction of DES contributes a major breakthrough to interventional cardiology which had the added advantage of releasing an anti-proliferative drug from the stent to reduce the proliferation and reduction of restenosis [3]. Although, the first-generation DES had significantly improved outcomes, the second-generation DES has been significantly improved over their first-generation regard to efficacy and safety, i.e., improved long-term outcomes and significant reductions in stent thrombosis [4]. A newer generation of stents, including those with bio-resorb able (also called biodegradable or bio-absorbable) polymers and polymer-free is still in the early stages of development. Bio-resorb able stent (BRS) are the coronary stents that itself can dissolve in the body. Lastly, the ongoing heated comparison in multiple trails regarding the use of coronary stents vs. coronary artery bypass surgery for the treatment of complex or multi-vessel coronary disease continues to evolve.

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