Two year Optical Coherence Tomography (OCT) follow up of Bioresorbable scaffolds

Kawa Haji 1,2, Ronald Dick 1, Naylin Bissessor 1,3, Leonie Baker 1
1. Epworth Hospital Richmond
2. Monash Medical Centre
3. Albury Hospital

Introduction

Optical Coherence Tomography (OCT) is a new light based coronary artery imaging technology that emits light in the near infrared range. Compared to other coronary imaging modalities such as intravascular ultrasound (IVUS), OCT has extraordinarily higher resolution with an axial resolution of 12-15 μm and a lateral resolution of 20-40 μm (1). It gives a detailed information of the coronary artery wall and plaque morphology, and it also provides vessel information post PCI (percutaneous coronary intervention), including dissection, tissue prolapse, incomplete stent apposition, neo-endothelialisation and neo-atherosclerosis. (2). Moreover in the case of bio-resorbable scaffolds it shows the number of OCT-discernible scaffold struts and vessel remodeling (3).

Methodology

Imaging follow-up of three patients post PCI and insertion of a bio-resorbable scaffold for coronary artery disease.

Case 1:
A 53 year old male with a past medical history of HTN, NIDDM and hyperlipidemia presented with unstable angina. Coronary angiogram showed significant stenosis in the proximal LAD and mid RCA which were both treated with Bio-resorbable scaffolds with no residual stenosis.

Case 2:
An 83 year old male with a past medical history of NIDDM and a cobalt, chromium allergy presented with stable angina. Coronary angiogram showed significant stenosis in the proximal and mid RCA; both lesions were treated with bio-resorbable scaffolds with no residual stenosis.

Case 3:
A 77 year old male with a past medical history of HTN, AMI, hyperlipidemia and gout presented with unstable angina. Coronary angiogram showed chronic total occlusion of the RCA which was treated with bio-resorbable scaffolds with no residual stenosis.

Conclusions

This new technology can provide detailed information of the vessel wall, coronary artery plaque and stents which can potentially be used for making decisions in the choice of treatment and also for follow up. However it demands a great deal of effort and research to make full use of all the potential.

References:

2) Clinical and Research Applications of Optical Coherence Tomography Imaging in Coronary Artery Disease Takao Hasegawa and Kenei Shimada.
3) Long-Term Favorable Coronary Healing After Bioresorbable Scaffold Implantation Insights From OCT. Nieves Gonzalo, MD, PhD; George Dangas, MD, PhD; Borja Ibanez, MD, PhDy