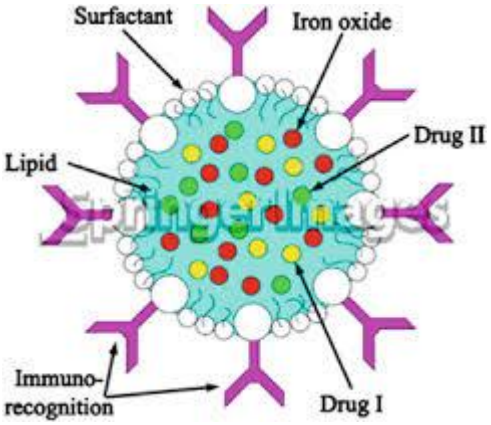
Pharmacology of drug-eluting coronary stents

Ramachandran Muthiah

Morning star hospital, Marthandam, kanyalumari district, India

CAD (coronary artery disease) mainly results from occlusion due to excessive build-up of plaque around the artery wall. Removal of atherosclerotic plaque is currently performed by invasive techniques, such as percutaneous transluminal coronary angioplasty (PTCA), atherectomy, and stenting. However, all of these techniques can trigger a process known as restenosis whereby the vessel closes upon itself again via different mechanism than the original injury.Efforts have been directed toward achieving local drug delivery to the injured blood vessel at the time of intervention using drug-eluting stents (DESs) in which a drug is released from a polymer coating or loaded directly onto the stent. The safety of first-generation DESs has been limited by suboptimal polymer biocompatibility, delayed stent endothelialization leading to late and very late thrombosis, and local drug toxicity due to nonselective inhibition of both endothelial cell (EC) and SMC proliferation by the antiproliferative drugs eluted from DES. Therefore, there is an urgent need to develop novel and efficacious methods of circumventing the problems seen with BMSs and DESs, and nanoparticle drug- and gene-eluting stents hold much promise.The nanotechnology applications can be divided into two groups based on their therapeutic strategies: an anti-restenosis strategy to prevent SMC proliferation and a pro-healing strategy to restore functional endothelium. A liposomal nanoparticle loaded with bisphophonate is a potent inhibitor of monocytes and macrophages and dose-dependent reduction in stent restenosis occurs after infusion of albumin-based, paclitaxel-loaded nanoparticles (Nab-Paclitaxel). Use of magnetically responsive cells to facilitate stent re-endothelialization provide useful alternative for vascular healing after stent placement.Imatinib-nanoparticle-eluting stents markedly attenuated in-stent neointima formation and stenosis by approximately 50%, but did not affect inflammation and re-endothelialization. Nanoparticle gene-eluting stents can mitigate problems of restenosis and late stent thrombosis by accelerating regenerative capacity of re-endothelialization. and preference for balloon-expandable GESs over catheters as a platform for gene delivery.



Nanopharnaceuticals

Publications

1. Muthiah, R. (2021) Isolated Acute Rheumatic Pancreatitis—A Case Report. *Case Reports in Clinical Medicine*, **10**, 52-77
2. Muthiah, R. (2019) Infective Endocarditis in Tetralogy of Fallot Complicating Brain Abscess—A Case Report. *Case Reports in Clinical Medicine*, **8**, 105-126
3. Muthiah, R. (2018) Native Aortic Valve Endocarditis—A Case Report. *Case Reports in Clinical Medicine*, **7**, 483-504.
4. Muthiah, R. (2018) Tropical Coronary Artery Disease and Arrhythmogenic Potentials—The Changing Pattern towards Endomyocardial Fibrosis—An Analysis. *Case Reports in Clinical Medicine*, **7**, 397-429
5. Muthiah, R. (2018) Isolated Patent Ductus Arteriosus in an Elderly Female, Aged 65 Years—A Case Report. *Case Reports in Clinical Medicine*, **7**, 352-379.



Biography

Ramachandran Muthiah, Consultant Physician & Cardiologist, Zion hospital, Azhagiamandapam and Morning star hospital, Marthandam, Kanyakumari District, India. Born on 10/5/1966.. Mother Swornam belongs to keezhkulam village and Father Muthiah belongs to Enayam thoppu and both were farmers. School education at Aanaan vilai Govt high school, keezhkulam and Concordia higher secondary school, Pootteti. MBBS (1989- Madurai Kamaraj), MD (1996), DM (2003) - MGR medical university, chennai). Rural health services for 5 years in Govt primary health centres keelachekkarakudi, Arruappapuram and teaching faculty in Madras, Coimbatore, Kanyakumari and Thoothukudi Govt medical colleges. Got married with an agricultural scientist Rajula shanthy and having one son R.Jeremy. but marrital status and job position get troubled in tamil nadu state. Published many papers in Cardiosource, American College of Cardiology Foundation, Case Reports in Clinical Medicine (SCIRP) and Journal of saudi heart assocoation. Special research interests on Rheumatic heart diseases, Infective endocarditis, myxomas, Endomyocardial fibrosis. .

Name/Address: Ramachandran Muthiah

Palaninta vilai, keezhkulam-629193, kanyakumari district, Tamil nadu state, India

(landline-+914651 203014,

mobile +91 7598755201)

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Passport No:P8925619