Methods for Evaluating the Effect of Drug-Eluting Balloons and Other Intravascular Solid Formulation Delivery Systems on Distal Bed Perfusion

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44,000 sq. ft. facility located in the north Minneapolis metro area
Procedure Rooms
Imaging Equipment: Fluoroscopy

Siemens Axiom Artis flat detector cardiac cath suites
Histopathology

- GLP Compliant
- Paraffin and Plastic processing including SPUR
- Thin microtomy
- Over-sized sample processing and microtomy (1”x3”)
- Special Stains
- Slide photography
- Staff Pathologist and contracts with local and national Veterinary Pathologists for interpretation
Alternative Imaging Techniques

- BSCI - ILab IVUS
- OCT: New LightLab C7xr
- ICE, TTE, TEE
- Duplex Ultrasound
- Endoscopy
- MRI / CT available
Endovascular Drug Delivery in Combination With Angioplasty

– Use of DEB in treatment of Peripheral Artery Disease
  • Efficacy implications
  • Safety implications

– Significant role of Diabetes in Target Population
  • General Safety Concerns
  • Specific Diabetes Associated Safety Risks
Arterial WALL and Circulation Drug-Delivery

WHERE do they go?
And
What do they do?

Balloon Inflation

Endothelial layer (normal) or Lesion (abnormal)

Sub endothelial space

Surrounding tissue

Plasma

Extra-Vascular Space and Other Organs

Elimination

$K_{01}$ $K_{20}$ $K_{02}$ $K_e$
Conclusions

• Methods for monitoring perfusion deficits and ischemia in distal peripheral tissue were reviewed. A limited list of systemic biomarkers were compared for potential ease of use, selectivity and sensitivity in common preclinical models. Imaging modalities have also been reviewed and preliminary evaluations proposed.

• Histology of lesions distal to the delivery sites will be the primary gold standard for detection and quantification. These methods may prove key in preclinical models for documenting and predicting risks associated with particulate deployment. Additional parameters including imaging modalities and biomarkers may allow design of better preclinical studies and also help validate these methods for clinical safety evaluation of the final versions of intravascular solid formulation drug delivery systems.