**MicroRNA-574-5p: A Circulating Marker of Thoracic Aortic Aneurysm**

Adeline Bolette, MSc¹, Christian L. Lino Cardenas, PharmD MSc PhD², Audrey Coutouls, PhD², Lu Zhang, MSc³, Rodosthenis S. Rodosthenous, ScD⁴, Saumya Das MD, PhD², Natati Sakalihasan MD, PhD³, Jean-Baptiste Michel, MD, PhD°, Mark E. Lindsay MD, PhD², Yvan Devaux, PhD²

¹ Surgical Research Center, Department of Cardiovascular and Thoracic Surgery, University Hospital of Liege, Liege, Belgium, ²Cardiovascular Research Center, Massachusetts General Hospital and Harvard Medical School, MA, USA, ³Surgical Research Center, Department of Cardiovascular and Thoracic Surgery, University Hospital of Liege, Liege, Belgium, ⁴UMR1148 INSERM and University Paris Diderot Paris, France.

On behalf of the Cardiolinc™ network (www.cardiolinc.org).

**BACKGROUND & AIM**

- Ascending thoracic aortic aneurysm (TAA) is an asymptomatic enlargement of the aorta above the heart. It can be associated with fatal complications such as aortic dissection. However, aneurysm dimension only poorly predicts dissection risk.
- MicroRNAs (miRNAs) are small non-coding RNAs which may be useful for diagnosis or risk prediction in cardiovascular disease.

**Aim** → Identify miRNAs associated with TAA pathogenesis and with the potential to improve TAA diagnosis

**RESULTS**

1. **DISCOVERY AXIS - Human samples**

- **Tissue samples**: miRNAs were analyzed using miRCURY LNA™ miRNA microarrays. Interactions between TAA-associated genes and differentially expressed miRNAs were predicted using targetScan, miRDB and DIANA microT-CDS databases.
- **Gene identification**: TAA-associated genes were identified using NCBI Gene database and literature search. 232 miRNAs were differentially expressed between aneurysmal and non-aneurysmal aortic tissue in samples. Log2-transformed fold change > 0.5 or < -0.5, q-value <5% and relative expression level > 5 were used as cut-offs.

**2. CHARACTERIZATION AXIS - Mice samples**

- **Expression analysis**: Expression of miR-574-5p was measured in the plasma of Fbn1C1039G/+ and wild-type (Wt) mice. * p<0.05.
- **Association with aneurysm**: Expression of miR-574-5p according to aortic diameter and weight.

**CONCLUSION & PERSPECTIVES**

- miR-574-5p is associated with TAA pathogenesis and may help in diagnosing this life-threatening disease.
- miR-574-5p may act as a paracrine mediator in TAA pathogenesis.
- Further studies and investigations are needed to confirm the role of miR-574-5p in TAA pathogenesis.