## **Bio-impedance analysis in phlebolymphology**

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**Introduction** Bioimpedance analysis(BIA) may provide reliable data on the fluid content in a specific body segment; lymphedema (LYM), post-thrombotic syndrome, angiodysplasia, advanced varicose veins, vein compression syndromes etc. are characterised by phlebo-lympho-stasis and edema of the lower or upper limbs; BIA may play a diagnostic and a prognostic role in these pathologic conditions, but especially BIA may be part of scientific studies to assess fluid retention changes in phlebolymphology.

**Rationale and Methods** BIA measurements may be expressed through an index (L-DEX) and, with proper limitations, through raw data. LYM is characterised by an increased L-DEX, due to a reduced impedance in the tissues, but fibrotic tissues may represent a bias for this technology. BIA has proven to detect upper limb LYM several months before any clinical sign occurs. Unilateral edema is more properly assessed to get a reliable comparative L-DEX, but the use of raw data may equally provide information on both limbs, especially when applying the newest devices. When using compression (bandages or stockings) early and/or late edema reduction has been documented through BIA at different CEAP stages; similarly our data support use of BIA to detect fluid changes after varicose vein (VV) treatments, LYM holistic therapy, or in phlebo/lympho-tropic drugs studies

**Conclusions** BIA is a relatively new technology which may complement other diagnostic and prognostic tools in venous and lymphatic disease, and it may play an interesting role in scientific studies on segmental edemas of the lower or upper limbs.