Can Bidirectional Spiral Intermittent Pneumatic Compression be useful to patients with cardiac failure and CLI?

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NOTHING TO DECLARE

CLI AND CHF

Background: Considering that CLI AND CHF are chronic progressive diseases, characterized by low ejection force, low perfusion pressure and hemodynamic responses that lead to fluid retention and elevated peripheral resistance, then ….

Phylogenetic types:

Then an external force applied in bidirectional, spiral fashion as exemplified by the most primitive valved tube of the grasshopper and the hydraulic system naturally occurring in the medusa, in a tube without valves… we have replicated this model.

Material and methods

• Patients: From 2012 to 2015 we studied 17 patients
• with CLI Rutherford IV –V (m: 10, f:7) and 6 (4 male) patients with CHF NYHA IV, Mean age 56 y.
• Methods: We designed and constructed a bidirectional spiral intermittent pneumatic compression system, the primitive peripheral heart.

Primitive peripheral heart

• Objective: To propel large amount of blood upward and downward, to provoke vasodilation which decreases peripheral and pulmonary resistance to stimulate ventricular output.
Method: Hemodynamic assessment
Cardiac output, pulmonary and peripheral resistance, proximal/distal arterial and venous flow were measured before and after bilateral and bidirectional compression.

Results: Upward Flow increased from 136 to 647 cc/min

Downward compression
Peak velocity from 12 to 37 cm/sec.
Arterial blood flow increased from 20 to 30 cc/min.

Cardiac hemodynamic response
PVR,12, PVR 79 Dyne, CO .69 L/min.
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Univentricular end stage heart failure; ejection fraction <20%
BNP 4000 pg/ml
BNP 700 pg/ml

Cardiomegaly Improvement
NYHA class V to I - II
BNP 4220.7 /EF <20%

Compassionate Treatment
Hemodynamic and clinical improvement

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<tr>
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<th>21 Patients</th>
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<td>Heart Failure NYCA IV and V CLI Total healed</td>
<td>06 patients</td>
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<tr>
<td>Cardiac Failure Transient Improvement Two die within 06 months</td>
<td>6 (100%)</td>
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<td>Follow-up time :</td>
<td>2 years</td>
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Side Effect: Improved pelvic hemodynamics allowed a better sexual performance which ended up in a non-planned pregnancy.

Conclusion

Answer: Yes, definitely the Primitive Peripheral Heart is a portable, non-invasive device that is able to compensate for that lost cardiac energy once collateral circulation develops. It reduces peripheral resistance in the lower half of the body.