

## MP3-7

### Liver stiffness: a useful tool in the longitudinal follow-up of patients with Fontan circulation

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**Introduction:** Congestive hepatopathy usually appears and develops after a Fontan operation (FO), often without obvious clinical features, but it may lead to life-threatening complications.

**Objective:** We aim to assess the potential usefulness of the liver stiffness (LS), assessed by elastography, in the longitudinal follow up of Fontan patients.

**Methods:** In our center, patients with a Fontan circulation were prospectively evaluated since 2012 through an annual work up including physical examination, laboratory tests, trans-thoracic echocardiography and LS using transient elastography (TE). This work up was also performed in case of clinical complications, which were classified as follows: cardiac complications (including arrhythmias or catheter interventions) and subdiaphragmatic complications (including clinical sign of portal hypertension or protein losing enteropathy (PLE)).

**Results:** Forty eight patients ( $21.7 \pm 8.2$  years of age and  $9.7 \pm 6.5$  years post-Fontan) were included, 28 of them (58%) had least two LS measurement. Mean time between first and last LS measurements was  $3.27 \pm 1.9$  years. Mean LS at baseline was  $15.3 \pm 6.9$  kPa (4.3-47.2 kPa). No significant correlation was found between LS and age ( $r=0.8$ ,  $p=0.73$ ), time since Fontan surgery ( $r=0.3$ ,  $p=0.64$ ). LS did not vary regarding the presence of a fenestration ( $15 \pm 6.8$  vs  $15.1 \pm 6.7$  kPa,  $p=0.82$ ).

During the follow-up, a clinical complication occurred in 19 patients (39.6%) including 8 cardiac complications and 11 subdiaphragmatic. Among the cardiac complications group, 6 had atrial flutter and 2 had catheter-based intervention (occlusion of vein-venous collateral). Among the subdiaphragmatic complications group, 3 had PLE and were referred for heart transplant and 8 developed portal hypertension. LS was significantly higher in patient with liver complication ( $17.2 \pm 7.7$  vs  $13.8 \pm 5.9$ ,  $p<0.01$ ). Patient with an increasing LS value during the follow up had a higher complications rate than patients with a decreasing or unchanged LS (4/11 (36%) vs n=5/17 (29%);  $p<0.04$ ).

**Conclusion:** LS measurement using TE is a good tool for the non-invasive follow-up of patient palliated with FO. Indeed, a significant elevation of the LS is associated with the occurrence of liver and/or cardiac complications.