MODIFIABLE CARDIOVASCULAR RISK FACTORS IN YOUNG TRANSGENDER PEOPLE: A QUALITY IMPROVEMENT PROJECT

1Matthew WS Lim*, 1Pete Wallach, 1Angela K Lucas-Herald, 1Paul J Connelly, 1Christian Dilles, 4Avril Mason. 1School of Cardiovascular and Metabolic Health, University of Glasgow, Glasgow, UK; 2Department of Paediatric Endocrinology, Royal Hospital for Children, Glasgow, UK

10.1136/heartjnl-SCF-2023.1

Introduction There is some evidence of increased cardiovascular morbidity and mortality in transgender people. In clinical services, early intervention should be offered to address modifiable cardiovascular risk factors and provide suitable lifestyle advice. We aimed to determine the status of cardiovascular risk assessment among young transgender people and whether any improvements may be made.

Methods The medical records of young people who attended the Gender Development Clinic at the Royal Hospital for Children (Glasgow, UK) from October 2021 until October 2022 were retrospectively reviewed. Data relating to the assessment of cardiovascular risk factors were entered into Microsoft Excel spreadsheets. All descriptive analysis was performed using R Software (version 4.2).

Results A total of 84 consultations were conducted involving 45 patients (33.3% natal male) with ages ranging from 12.2 to 21.6 years. Anthropometric data were routinely obtained except in five remote consultations. In contrast, blood pressure was recorded only in approximately a third of all consultations. Five out of the 27 readings (18.5%) met the criteria for hypertension, two of which were consecutive readings from the same patient. Participation in physical activity was regularly assessed (51.1%), while smoking status was not. 28 patients were referred to the lifestyle advisor, of which 23 accepted the referral and attended at least one clinic.

Conclusions Important cardiovascular risk factors have been routinely assessed in the Gender Development Clinic. There is room for improvement regarding assessment of smoking status, blood pressure and participation in physical activity.

TSPO PET IMAGING OF INFLAMMATION WITH [18F] LW223 PREDICTS FUNCTIONAL OUTCOME FOLLOWING MYOCARDIAL INFARCTION

1Mac Askill**, 1Victoria Reid, 1Carlos Alcain-En Ser, 1Timo D Morgan, 1Ana Clara Juan De Albuquerque, 1Adrian Thomson, 1Takeshi Fujisawa, 1Nicholas Mills, 1Agné Knille, 1Viktoria Balogh, 1Cathiona Wimberley, 1Marc Dewick, 1Gillian Gray, 1David Newby, 1Christophe Lucatelli, 2Sally Primett, 2Andrew Sutherland, 1Agne Knyzeliene, 1Viktoria Balogh, 1Catriona Wimberley, 1Marc Dweck, 1Gillian Gray, 1Martin McBride

1University of Edinburgh, Edinburgh, UK; 2University of Glasgow, Glasgow, UK; 3NHS Greater Glasgow and Clyde, Glasgow, UK

10.1136/heartjnl-SCF-2023.2

Inflammation is a key process influencing left ventricular remodelling following myocardial infarction (MI) and can be imaged using Positron Emission Tomography (PET) targeting the 18Da translocator protein (TSPO). We have developed the TSPO radiotracer [18F]LW223, that overcomes several barriers holding back wide adoption of TSPO imaging. This study utilised a rat MI-model to assess whether [18F]LW223 could accurately detect inflammation, and if this was predictive of cardiac function.

Male Sprague-Dawley rats underwent coronary artery ligation (30 min), followed by reperfusion to induce MI. [18F] LW223 PET was performed on d2, 7, 14 and 28. On d28, cardiac function was assessed by ultrasound. Naive (n=10) and sham (n=6) rats were used as controls for comparison to the MI (n=5). A separate cohort of naïve (n=8), sham (n=18) and MI (n=17) rats were produced for histological validation.

Troponin I measurements suggested a range of infarct severities (2583-10970ng/L). [18F]LW223 signal was highest within the MI cohort, and localised to the infarct. [18F] LW223 binding peaked at d2, with a smaller secondary peak within the infarct at d28. Manual counting by histology validated this pattern, and revealed that the majority of TSPO expressing cells within the infarct also expressed the monocyte/macrophage marker CD68 (55.2%). Finally, infarct [18F] LW223 signal at d2 correlated with infarct severity, and systolic dysfunction at d28.

[18F]LW223 was able to map macrophage-driven inflammation in this model, with expression peaking on day 2, the extent of which was predictive of reduced cardiac function at day 28.

FUNCTIONAL CHARACTERISATION OF ALTERNATIVE OSTEOPONTIN TRANSCRIPTS FROM THE STROKE PRONE SPONTANEOUSLY HYPERTENSIVE RAT HEART USING H9C2 CELLS

Cara Triwett*, Nicola Gilroy, Delphy Graham, Martin McBride. University of Glasgow, Glasgow, UK

10.1136/heartjnl-SCF-2023.3

Introduction Previous work identified osteopontin, (secreted phosphoprotein (Spp1)) as a positional and functional candidate gene for left ventricle mass index (LVMI) in the Spontaneously Hypertensive Stroke Prone (SHRSP) rat. A CRISPR/Cas9 Spp1 knockout (5bp deletion in exon 4) in the SHRSP was generated, however extensive phenotyping suggested there was no rescue of cardiac phenotypes. We hypothesise that alternate splicing of the Spp1 gene is responsible for the lack of improvement in cardiac phenotypes in the SHRSP Spp1 KO.

Methods Alternate Spp1long and short transcripts (Spp1-L and Spp1-S) were identified, cloned and transformed into eukaryotic expression vectors. Successful capture of transcripts was confirmed by sequencing. Spp1-L and Spp1-S plasmids were transfected in H9c2 cells for 48 hours. Cells were either fixed and sized using ImageJ, or mRNA and protein were extracted using miRNAeasy kits and RIPA buffer respectively.

Results Spp1-S transcripts do not contain exon 4, which harbours CRISPR/Cas9 induced mutation. Both osteopontin Spp1-L (full length) and Spp1-S (minus exon 4) transcripts significantly increase H9c2 cells. RT-qPCR showed Spp1 expression was significantly increased in WT and KO cells versus controls. In contrast, osteopontin protein showed no difference between transfection conditions despite functional effects on cell size.

Conclusions Increasing osteopontin mRNA expression contributes to functional changes in H9c2 cell size, without increasing protein levels. Complex transcriptional and translational relationships involving translational efficiency, protein turnover, and secretion and uptake of extracellular vesicles may underlie the role of osteopontin in cardiac disease.