Introduction: Familial Abdominal Aortic Aneurysm (fAAA) is believed to develop earlier in life and progress faster than non-fAAAs. Consequently, current European guidelines recommend screening of first degree relatives to AAA patients from the age of 50. But this recommendation is based on only a few small sized studies. The objective of this study was to compare patient age and size of AAA at diagnosis, and progression of fAAA versus non-fAAAs in two large population-based screening trials.

Methods: Study design: Combined population-based cross-sectional and cohort study.

Materials: 1099 male participants screened positive for AAA in the VIVA- and DANCAVAS trials. Of these, follow-up data regarding growth rate, the need for aneurysmal repair and death were available in the 617 cases found through the VIVA-study. Using two nationwide registers, the national patient register registering causes of death. Ultrasound- and CT-scans were used to determine the maximum abdominal aortic diameter. Data regarding family history, traditional risk factors, prior CVD and medication were obtained by questionnaire at baseline. Difference between the two groups were tested using Wilcoxon ranksum test. Multiple linear regression and multiple cox-regression were used to adjust for potential confounding from age, comorbidities and medication.

Finally, using the National Patient Register and Cause of Death register, we investigated the number of patients nationwide diagnosed with a ruptured AAA in different age groups between 1996 and 2016.

Results: Of the 1099 AAAs, 77 (7.0%) were fAAAs. We observed no significant difference in age between the two groups, mean age being 70.2 and 69.9 years in the fAAA group and the non-fAAA group, respectively (p=0.99). We did not find any significant difference in median size of the aneurysms (fAAA=38.6 mm versus non-fAAA=36.4 mm. p=0.48). No significant difference was found in the growth rate of the aneurysms (adj. coef. -0.26 cm/y. 95% CI: -1.2 to 0.69), nor in the need for aneurysmal repair (adj. HR=1.10 95% CI: 0.67-1.78) or mortality (Adj. HR=0.43. 95 % CI: 0.16-1.19).

Using data from the national patient register and cause of death register we found that 3.9 % percent of aneurysms ruptured before the age of 60 years old and 10.5 % before the age of 65 years.

Conclusion: In two large population-based screening trials we found no evidence corroborating the hypothesis that fAAAs develop earlier in life or shows a more aggressive disease progression than non-fAAAs. This questions the current guidelines of screening relatives to AAA patients from a much earlier age than the rest of the population.

Disclosure: Nothing to disclose

O-012 Endograft Device type is a Significant Risk Factor for Limb Graft Occlusion After Endovascular Aortic Repair of Infrarenal Abdominal Aortic Aneurysm

Abdominal Aortic Diseases

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Introduction: Limb graft occlusion (LGO) is an uncommon yet serious complication after EndoVascular Aortic Repair (EVAR). It is reportedly influenced by several patient-specific anatomical variables. In a rapidly developing field of new
vascular devices and an overall tendency toward endovascular treatment of complex aortic cases, minimising complications becomes increasingly important. Albeit worldwide clinical usage, there is still a lack of long-term follow-up data for many “second generation” endograft types. Our objective was to identify factors associated with LGO after EVAR.

Methods: Between 2013-2018, all patients undergoing standard EVAR for infrarenal aortic aneurysms at two high-volume Vascular referral centers were included in this study. Cases treated with fenestrated or branched endografts were excluded. Patients were identified through a national registry for Vascular Surgery and all pertinent data was retrospectively collected from patient electronic medical records. LGO was defined as a symptomatic total limb occlusion requiring intervention.

Results: Mean age at primary intervention for the 639 patients included was 75.3 years and 85.5% were men. Three graft manufacturers were predominantly used; Medtronic Endurant (n=274), Cook Zenith (n=243) and Gore Excluder (n=122). All grafts were bifurcated and the majority were deployed in an elective setting (77.5%). Median follow-up time for respective groups was 52, 21 and 25 months. A total of 29 patients presented with LGO (4.5%); 8 patients treated with Medtronic (2.9%), 19 with Cook (7.8%) and 2 with Gore (1.6%).

Cox proportional hazard regression models were used to estimate multivariable hazard ratios (HR) with 95% confidence intervals (95% CI) of LGO during follow up. The multivariable HR of LGO was increased more than 6-fold in the Cook Zenith group, compared with Medtronic (HR 7.10; 95% CI, 2.29 - 21.64), and Gore (HR 7.10; 95% CI, 1.55 - 32.57) respectively. There was no significant difference in rate of LGO when comparing Gore with Medtronic (HR, 6.14; 95% CI, 2.29 - 16.44), and Gore (HR 7.10; 95% CI, 1.55 - 32.57) respectively. There was no significant difference in rate of LGO when comparing Medtronic (HR, 0.87; 95% CI, 0.18-4.26). The observed point estimates in univariable models did not differ from those observed after adjustment for potential confounders in multivariable models. We observed no difference in rate of all cause mortality between the three groups.

Conclusion: In this study, endograft device type was identified as an independent risk factor for LGO after EVAR. Specifically, limbs in the Cook Zenith endografts were observed to occlude at a 6 times higher rate compared with the Medtronic Endurant or Gore Excluder devices.

Disclosure: Nothing to disclose

Abstracts

O-013 Morphological and Biomechanical Evolution of Abdominal Aortic Aneurysms During Surveillance

Abdominal Aortic Diseases

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Introduction: Diameter growth of abdominal aortic aneurysms (AAAs) is described as discontinuous, erratic and non-linear. The fastest diameter growth in aneurysms does not always occur at the level of the maximal diameter, and volume may be a more sensitive marker of disease progression. Biomechanical parameters, such as peak wall stress (PWS) and peak wall rupture index (PWRI), are suggested as means to improve the estimation of rupture and growth risk in AAAs, but their change over time is largely uncharacterized.

Methods: Patients from the outpatient clinic at our hospital 2012-2013 who had performed ≥3 computed tomography angiograms (CT-As) during surveillance were included. This yielded, in total, 197 CTAs from 47 patients. Thirty-eight patients (81%) were male and 40 patients (85%) were current or former smokers. A median of 4 [IQR = 3 - 4.5] CTs were included per patient. The mean follow-up time was 5.2±2.7 years, and the mean time between CT-As was 2.7±1.5 years. CT-As were analyzed with A4Clinics (VASCOPS GmbH) with respect to semi-automatic geometry and biomechanical parameters. Linear mixed-effects models with patient-specific random intercepts and slopes were used to analyze the time-change of morphological and biomechanical parameters.

Results: At baseline Dmax was 42.3±7.7 mm and PWS was 158.3±40.8 kPa. The mean growth of Dmax was 2.74 mm/year. Both PWS and PWRI increased with time, 8.36 kPa/year and 0.03/year respectively. Qualitatively, neither Dmax nor aneurysm volume displayed significant erratic or staccato growth. Intraluminal thrombus (ILT)-volume grew faster than luminal volume for 32 patients (68.1%) (9.15 cm³/year vs 5.48 cm³/year). In a multivariate model, controlling for aneurysm volume, luminal volume growth correlated positively with increasing PWS and PWRI (0.97kPa/cm³, p < 0.001 and 0.002/cm³, p < 0.001). ILT-volume growth however, correlated negatively with both PWS and PWRI (-0.94kPa/cm³, p < 0.001, and -0.002/cm³, p < 0.001)