Factors That Influence Growth Rates Of Abdominal Aortic Aneurysms: Analysis Of A Mexican Cohort

Luis O. Bobadilla-Rosado, [MD1], Javier E. Anaya-Ayala, [MD, MSc1,] Eros Santos-Chavez, [MD1], Manuel Garcia-Toca, [MD2], Ignacio Martinez-Quezada, [MD1], Ezequiel Solano-Mendivil, [MD1], Hugo Laparra-Escareno, [MD, MSc, PhD1], Nina Mendez-Dominguez, [MD, MSc, DHSc3], Carlos A. Hinojosa, [MD, MSc1].

OBJECTIVES

To analyze risk factors associated with changes in Abdominal Aortic Aneurysms (AAA) diameter in a Mexican cohort.

METHODS

We analyzed the patients in which an AAA was reported in a CT scan study from 2014 to 2021 comparing pre and post-follow-up AAA diameters using paired t-tests.

Groups were divided depending on the diagnosis of type 2 diabetic mellitus (DM2) and pharmacological history.

AAA maximum diameter (Dmax) was taken from the radiology official report (the maximal external cross-sectional measurement in any plane but perpendicular to any curvature in the aorta).

A **Poisson regression** was developed considering age, Body Mass Index (BMI), DM2, and the AAA Dmax at diagnosis in order to test if monthly growth rate could be predicted. Statistical analysis was performed on Stata 17.

RESULTS

A **total of 72** (39.77%) **patients** were found with AAA and had a follow-up CT at least a year apart. Mean age was 75 years (±9.05) and 52 (72.22%) were men, the mean follow-up period was 18 months. DM2 diagnosis was reported in 23 (13.7%) patients, 21 (12.5%) reported metformin intake and 101 (60.8%) reported statin intake.

Median follow-up interval was 30 months (IQR 16-55 months). AAA diameters median Dmax was 39.8 mm (IQR 33.6-55.7 mm) in the pre-follow up scan whilst median Dmax was 41.2 mm (IQR 34.4-51.02 mm) in the follow-up scan.

In the **diabetic group**, the mean Dmax was 35.12 mm (±35.24 mm) whilst mean follow-up diameter was 36.32 mm (± 5.93) p=0.01. A statistically significant difference was found in the **non-metformin intake group** (42.05 ±12.54 vs. 45.34 ±12.06; p=0.02), in contrast no difference was found when comparing mean AAA Dmax through time (36.12 mm ±7.04 vs. 37.00 mm ±4.51, p=0.57) in the **metformin intake group**.

Mayor infra-renal diameter at diagnosis: p = 0.05
Diabetes: p = 0.04
BMI and Age: p > 0.05
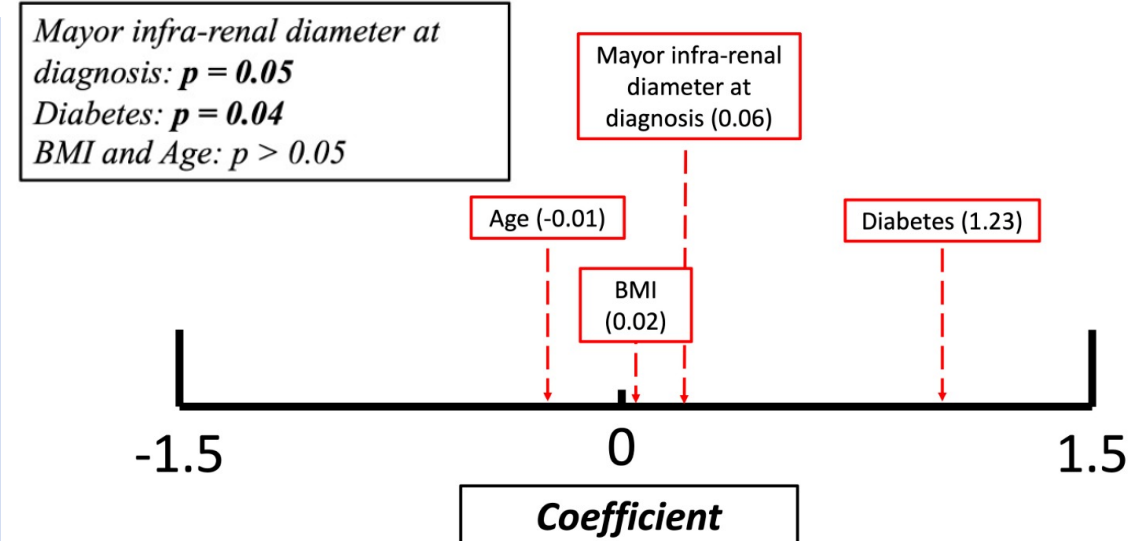
Model Log likelihood =-28.58; *Pseudo R2*=0.25; *Post hoc after Poisson* = 0.38.

AAA Dmax at diagnosis correlated with significantly increased growth rate (**coeff=0.06, p<0.05**); diabetes was associated with an increased monthly growth rate and as model, studied factors explained a variance of 0.38.

CONCLUSIONS

Initial Dmax appears to be an **accurate predictor of an increased growth rate**. Growth rates seem to behave in a non-linear matter, as **growth velocity may increase in proportion to the AAA Dmax**. **No statistically significant difference in AAA Dmax was reported in the metformin intake group.**

Conflict of interests: The authors declare no conflict of interests