Natural history of the enlarged ascending thoracic aorta

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age (1.9 [1.85—1.94], $P < 0.001$) and dyslipidemia (3.3 [1.22—8.22], $P < 0.001$) were the independent factors associated with AS (Fig. 1).
Conclusions Commissural fusion of aortic cusps is associated with BAV dysfunction. By altering aortic blood flow and stiffening fused leaflet, the raphe could accelerate valve degeneration. These results suggested the emerging role of mechanobiology in BAV degeneration.

Sievers classification	0		1			2
	lat	ap	R/L	R/NC	L/NC	L/R and R/N
Embryological classification	II	I	I	II	III	-
No dysfunction n=24	-	6 (25)	12 (58.4)	1(4.1)	-	1(2)
Isolated AR n=91	2(2.2)	11(12)	66(72.5)	8(3.5)	1(1.1)	1(1.1)
Isolated AS n=68	1(1.5)	5(7.3)	53(77.9)	4(5.8)	1(1.5)	2(3)
AR + AS n=40	-	7(17.5)	24(60)	5(12.5)	1(2.5)	-
Isolated Aortic root dilatation n=13	-	1(7.7)	12(92.3)	-	-	-
Isolated Ascending aorta dilatation n=23	1(4.3)	3(13)	18(78.4)	1(4.3)	-	-

AR : Aortic Regurgitation ; AS : Aortic Stenosis

Figure 1 Aortic valve function regarding valve phenotype in 223 patients with BAV.

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Impact of ejection dynamics parameters on outcome in patients with aortic stenosis

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Objectives We sought to evaluate and compare both the prognostic value of acceleration time (AT) and the ratio of AT to ejection time (AT/ET) in aortic stenosis (AS).
Background Ejection dynamics parameters are useful in assessing prosthetic valve obstruction but very limited data are available in the setting of native AS.
Methods AT and AT/ET were measured in a prospective cohort of patients with aortic stenosis (AVA < 1.3 cm^2). The relationships between AT/ET, AT, overall and cardiovascular mortality during follow-up were studied.
Results Four hundred and fifty-six patients with AS (mean AVA 0.85 ± 0.24 cm^2) were included. After adjustment on variables of prognostic importance and on AVR as a time-dependent covariate, patients in the highest tertile of both AT/ET (> 0.36) and AT (> 112 ms) were at high risk of overall mortality (HR 2.57 [1.68—3.94] and HR 2.06 [1.33—3.18] respectively) and of cardiovascular mortality (HR 3.33[1.78—6.21] and HR 2.36[1.30—4.30] respectively), compared to patients in the lowest tertiles of AT/ET and AT, while the survival was similar for the other tertiles (all *P* values = NS). Compared to patients with an AT/ET≤ 0.36, an increased risk of overall and cardiovascular mortality was observed in patients with AT/ET > 0.36 (adjusted HR 2.55 [1.79—3.62] and adjusted HR 3.40 [2.05—5.64] respectively). Compared to patients with an AT≤ 112 ms, an increased risk of overall and cardiovascular mortality was observed in patients with AT > 112 ms (adjusted HR 1.75 [1.21—2.53] and adjusted HR 2.23[1.34—3.71] respectively). However, AT/ET showed better predictive performance than AT in terms of both overall and cardiovascular mortality with improved global model fit, reclassification, and better discrimination.
Conclusion Ejection dynamics parameters in AS, particularly AT/ET, are strongly associated with an excess risk of death during follow-up. AT/ET should be considered in the multi-parametric echocardiographic prognostic assessment of AS in clinical practice.
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Natural history of the enlarged ascending thoracic aorta: An observational long-term study

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To assess the long-term outcome of patients with an enlarged ascending thoracic aorta (ATA), a retrospective study was performed.
Methods Inclusion criteria: ATA diameter of 38 mm or more by ETT (813 consecutive cases). Inclusion period: 01.1.2003—31.12.2016.
Results At baseline, the mean diameter of the ATA was 42 ± 3 mm, the mean Z-score was 2.7 ± 0.8. Six years later, the mean diameter was 41.9 ± 4.8 mm, the mean Z-score 2.4 ± 1.1. During the follow-up, 52 patients had an intervention on the ATA, 22 patients were operated within the first 3 months after the diagnostic echocardiogram. In the 791 remaining patients (without early intervention), the event rate (death, intervention on the ATA) was assessed by the competing risk model. In the group of patients with a baseline ATA diameter of less than 41 mm (Group A: $n = 254$), the cumulative incidence of death at 5 and 10 y was 34% and 61%; in the group of patients with an ATA diameter of 41—42 mm (Group B: $n = 238$) the incidence was 34% and 61% respectively, in the group of patients with an ATA diameter of 43-44 mm (Group C: $n = 147$), the incidence was 32% and 58%, in the group of patients with a diameter of 45 and more (Group D: $n = 150$), the incidence was 31.1% and 61% (NS). The cumulative incidence of intervention at 5 and 10 years was 0.4% and 1% in group A, 1.3 and 1.8% in group B, 0.7 and 1.4% in group C and 9.8 and 12.9% in group D ($P < 0.05$). Similar results were observed in patients according to the Z-scores. In the group of patients (221) with a Z-score > 3, the incidence of intervention at 5 and 10 y was respectively 7.6% and 10.7% ($P = 0.01$).
Conclusions The diameter of the enlarged ATA remained nearly unchanged over a period of 6 years. No impact of the enlarged ATA on survival was observed. Only patients with an ATA diameter of 45 mm and more (or a Z-score of 3 and more) needed an intervention at a rate of ±10% at 10 y after the initial echocardiographic diagnosis.
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