

Arteriovenous fistula outcomes in a single-center cohort: "Fistula First" for the elderly?

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INTRODUCTION AND OBJECTIVES

The number of elderly patients receiving hemodialysis has risen steadily in the last twenty years. International guidelines recommend the placement of an arteriovenous fistula (AVF) in all patients. However, this may not always be the best strategy for the elderly, due to a higher prevalence of comorbidities that contribute to AVF failure. The aim of this study was to assess if elders at our centre have poorer AVF-related outcomes.

METHODS

We designed a retrospective cohort study enrolling all pre-dialysis patients who underwent AVF construction in our centre, between January 2014 and February 2015. Patients were followed during two years or until death or renal replacement therapy occurred. For comparison purposes we divided our patients into two groups, according to their age at AVF placement: < 75 years and ≥ 75 years (study group). eGFR was calculated using CKD-EPI formula.

RESULTS

BASELINE PATIENTS CHARACTERISTICS

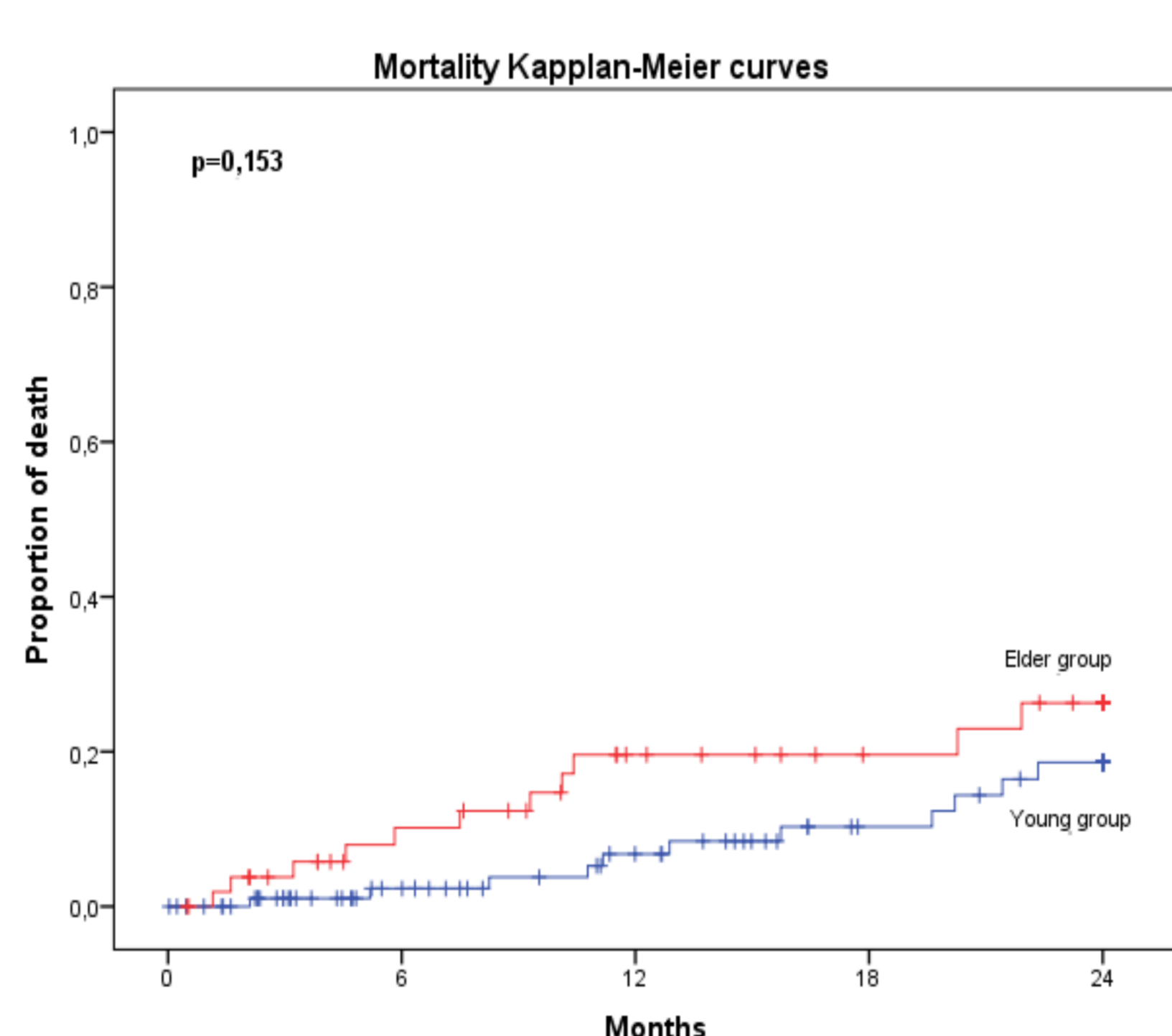
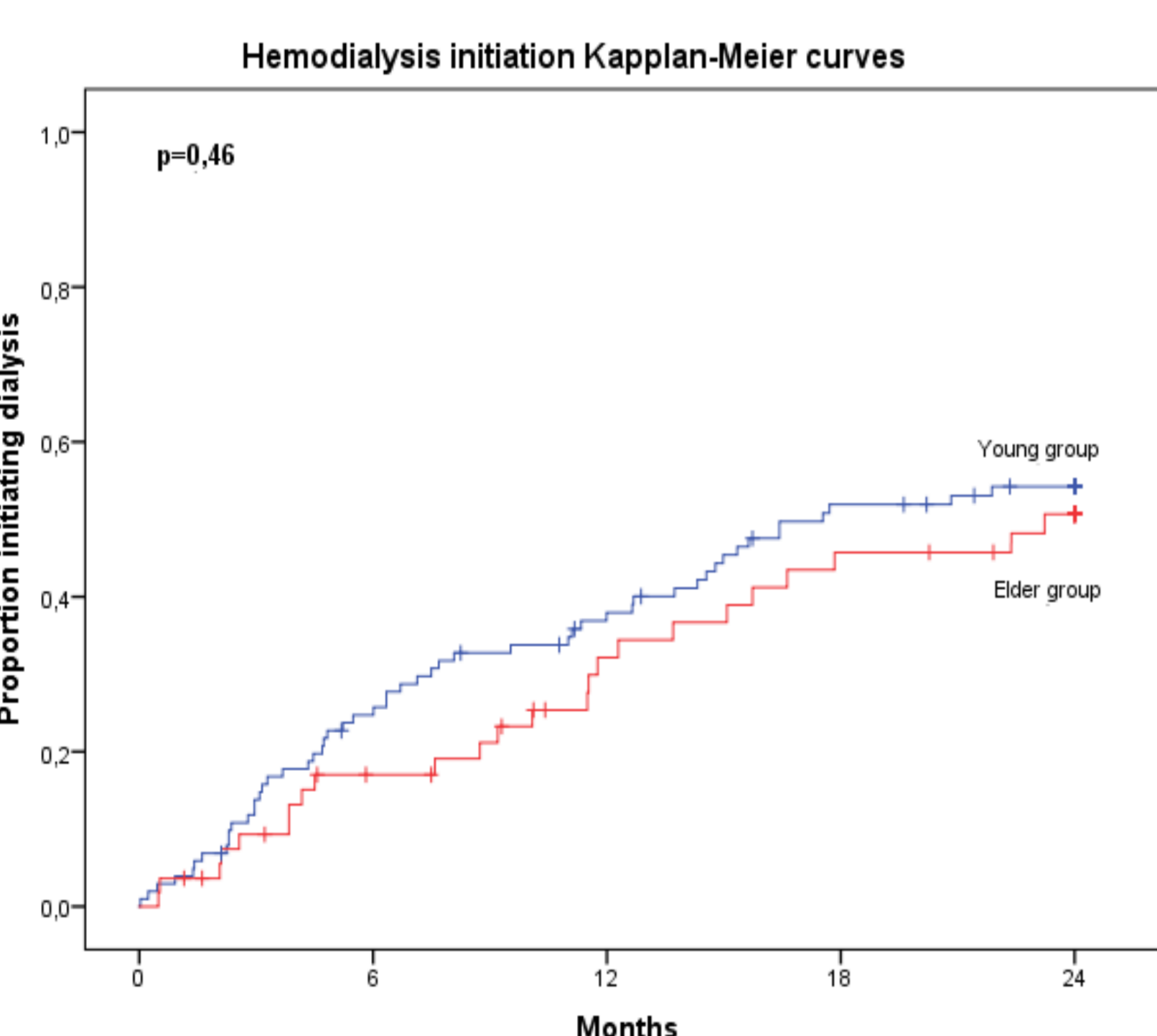
	Young group (n=102)	Elder group (n=55)	p-value
Age (years)	61,5 ± 10,0	80,4 ± 4,0	na
Previous follow-up time by nephrology (years, IQR)	3,2 (1,2-5,4)	2,6 (0,6-4,9)	0,222
Male sex, % (Nr.)	68,6% (70)	56,4% (31)	0,126
Diabetes, % (Nr.)	54,9% (56)	50,9% (28)	0,632
Hypertension, % (Nr.)	90,2% (92)	94,5% (52)	0,345
Coronary disease, % (Nr.)	21,6% (22)	30,9% (17)	0,196
Peripheral arterial disease, % (Nr.)	12,7% (13)	23,6% (13)	0,08
Cerebrovascular disease, % (Nr.)	18,6% (19)	18,2% (10)	0,945
Obesity, % (Nr.)	28,4% (29)	30,9% (17)	0,745
Smoking history, % (Nr.)	29,4% (30)	12,7% (7)	0,019
Anti-agregation, % (Nr.)	44,1% (45)	45,5% (25)	0,872
CKD etiology			
Diabetic nephropathy, % (Nr.)	42,2% (43)	41,8% (23)	0,967
Hypertensive, % (Nr.)	3,9% (4)	23,6% (13)	<0,001
Chronic glomerulonephritis, % (Nr.)	15,7% (16)	5,5% (3)	0,061
ADPKD, % (Nr.)	13,7% (14)	0% (0)	0,004
Others, % (Nr.)	12,7% (13)	14,5% (8)	0,752
Unkwon, % (Nr.)	11,8% (12)	14,5% (8)	0,618
eGFR (ml/min/1,73m²)	16,1 ± 4,3	14,5 ± 4,0	0,026
Proteinuria (g/g or g/24h, IQR)	1,8 (0,6-4,0)	1,3 (0,6-3,0)	0,275

IQR, inter-quartile range; na, non applicable; Nr, number; CKD, chronic kidney disease; ADPKD, autosomal dominant polycystic kidney disease; eGFR, estimated glomerular filtration rate

AVF-RELATED BASELINE CHARACTERISTICS

	Young group	Elder group	p-value
Delay from referral to placement (months, IQR)	2,7 (1,9-4,0)	2,4 (1,4-4,5)	0,565
Distal AVF, % (Nr.)	51,0% (52)	45,5% (25)	0,509
First AVF, % (Nr.)	71,6% (73)	69,1% (38)	0,745
Number of previously placed AVF, % (Nr.)	1,38 ± 0,69	1,36 ± 0,59	0,865

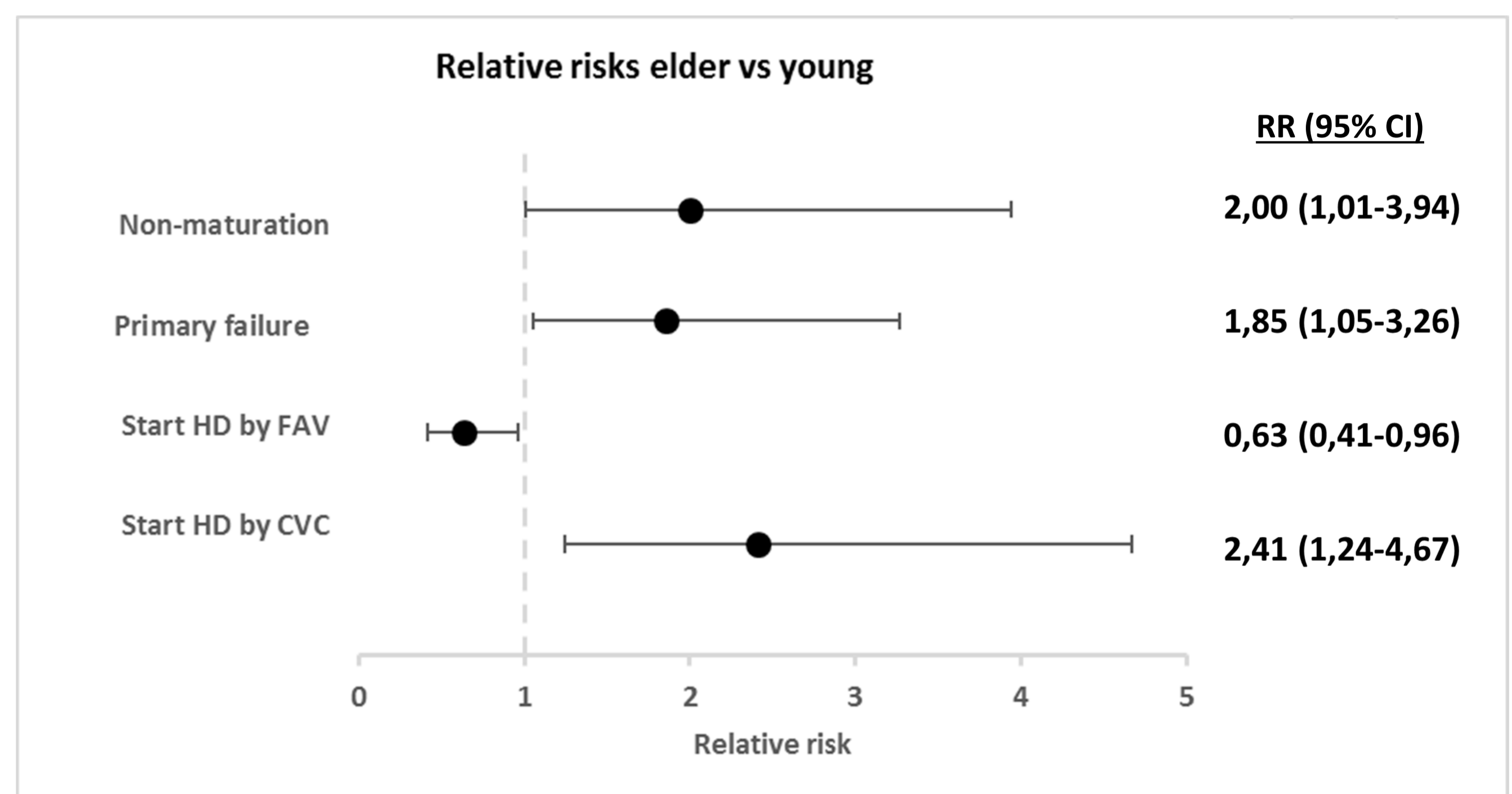
IQR, inter-quartile range; AVF, arteriovenous fistula



AVF-RELATED OUTCOMES

	Young group	Elder group	p-value
Primary failure, % (Nr.)	17,6% (18)	32,7% (18)	0,032
Thrombosis, % (Nr.)	4,9% (5)	5,5% (3)	0,881
Non-maturation, % (Nr.)	12,7% (13)	25,5% (14)	0,044
Surgical closure due to complications, % (Nr.)	2,0% (2)	1,8% (1)	1
Started hemodialysis, % (Nr.)	52,0% (53)	43,6% (24)	0,32
by central venous cateter (CVC), % (Nr.)	20,8% (11)	50,0% (12)	0,009
by AVF, % (Nr.)	79,2% (42)	50,0% (12)	0,009
Complications, % (Nr.)	7,8% (8)	5,5% (3)	0,576
Intervention to maintain patency or superficialize the vein, % (Nr.)	3,9% (4)	9,1% (5)	0,184

Nr, number; AVF, arteriovenous fistula



RR, relative risk; CI, confidence interval; HD hemodialysis; CVC, central venous catheter; FAV, arteriovenous fistula

FACTORS ASSOCIATED WITH AVF FAILURE (univariate and multivariate regression model)

	Non-adjusted			Adjusted		
	OR	CI	p-value	OR	CI	p-value
Elder (≥75yo)	2,13	1,00-4,50	0,049	3,70	1,37-9,98	0,010
Number of previously placed AVF	11,08	4,93-24,90	0,000	11,65	5,04-26,93	0,000
Antiagregation	0,44	0,20-0,96	0,040	-	-	-

OR, odds ratio; CI, confidence interval; yo, years old; AVF, arteriovenous fistula

CONCLUSION

1. Elderly patients had more primary AVF failure, mainly because of maturation failure.
2. In those who started dialysis, the need of CVC due to non-functioning AVF was higher in the elderly.
3. Older age (≥ 75 years) and the number of previously placed AVF seem to predict AVF failure.

References:

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