

Vascular access at hemodialysis start: a regional multicenter observational study.

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Introduction and objectives

Dialysis vascular access (VA) is of critical importance to the dialysis patients. Central venous catheter (CVC) use is associated to a significant increased risk of morbidity and mortality especially within the first year of dialysis.¹⁻⁴ Our experience⁵ and clinical practice guidelines strongly recommend to start hemodialysis (HD) using an arteriovenous fistula (AVF).⁶ The aim of this study is to determine guideline adherence and differences among VA type at HD start patient in Ticino (Southern Swiss region).

Methods

A multicenter cross-sectional observational study has been made on patients undergoing HD in 4 center in the Canton of Ticino (Bellinzona, Locarno, Lugano, Mendrisio) at 30.11.2015. **Fig 1** All data were obtained from clinical software (Geco and TDMS-Fresenius®). Patients were eligible if all the following records were available: age, renal failure cause, HD vintage, time of HD referral (early referral= known for renal failure at least 6 months before starting HD vs late referral = unknown for renal failure 6 months before starting HD), VA history (time of creation, type, primary and secondary patency, complications, and endpoint).

Results

A total of 203 out of 210 prevalent patients were enrolled: age at 1st HD 69.8 ± 12.2 years, mean age 73.7±12.2 years, HD vintage 3.91±3.33 years, male sex prevalence 62%, late referral prevalence 13%, diabetes mellitus prevalence 41%. The causes of end stage renal disease (ESRD) are shown in **Fig 2**.

149 (73%) patients undergo HD with an AVF, and 54 (27%) patients using a CVC. 28 (14%) did not undergo any AVF placement because of unsuitable anatomy or clinical conditions; 26 (13%) were late referral.

Patients were divided in two groups according to VA type used at HD start: group A (CVC first) and group B (AVF first).

127 (63%) started HD with CVC, and 76 (37%) patients started HD with AVF (fistula first principle). **Fig 3**

638 new VA were created (456 group A vs 128 group B, p<0.05), 295 rescue intervention, surgical or endovascular, were made (162 group A vs 128 group B, p<0.05) in a follow up time of 9706 months (5030 group A vs 4676 group B). **Tab 2a**

Incidence rate of VA interventions expressed as n° of intervention/patient/year was 1.47 in group A vs 0.8 in group B (p < 0.05), that means 1 intervention every 8.2 months in group A and 1 intervention every 14.4 months in group B. **Tab 2b**.

Conclusions

According to guidelines recommendations, the AVF prevalence rate is acceptable. Late referral and unsuitable anatomy do not justify the low rate of patients starting HD with AVF. In our study, patients starting HD with CVC are exposed to an higher risk of new intervention to keep the primary and the secondary patency.

These data suggest that a timely referral to surgeons and early creation of permanent vascular access by dedicated teamwork can improve the success rate of AV fistulae, decreasing HD-bridge CVC, so enhancing survival and quality of life of patients with end stage renal disease.

This is a preliminary study to create a VA register to monitor the quality of VA management .

References

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Fig 1- Southern Swiss Geography: the Canton of Ticino.

CHARACTERISTIC	
Records n°	633
Age at 1 st HD (yrs)	69.8 ± 12.2
Mean age (30-11-15)	73.7 ± 12.0
Male sex (%)	62
Late referral patients (%)	13
1 st HD with AVF (%)	37
HD vintage (yrs)	3.9 ± 3.3 (10 gg- 18 aa)
Diabetes Mellitus prevalence (%)	41

Tab 1- HD population characteristic at 30.11.2015.

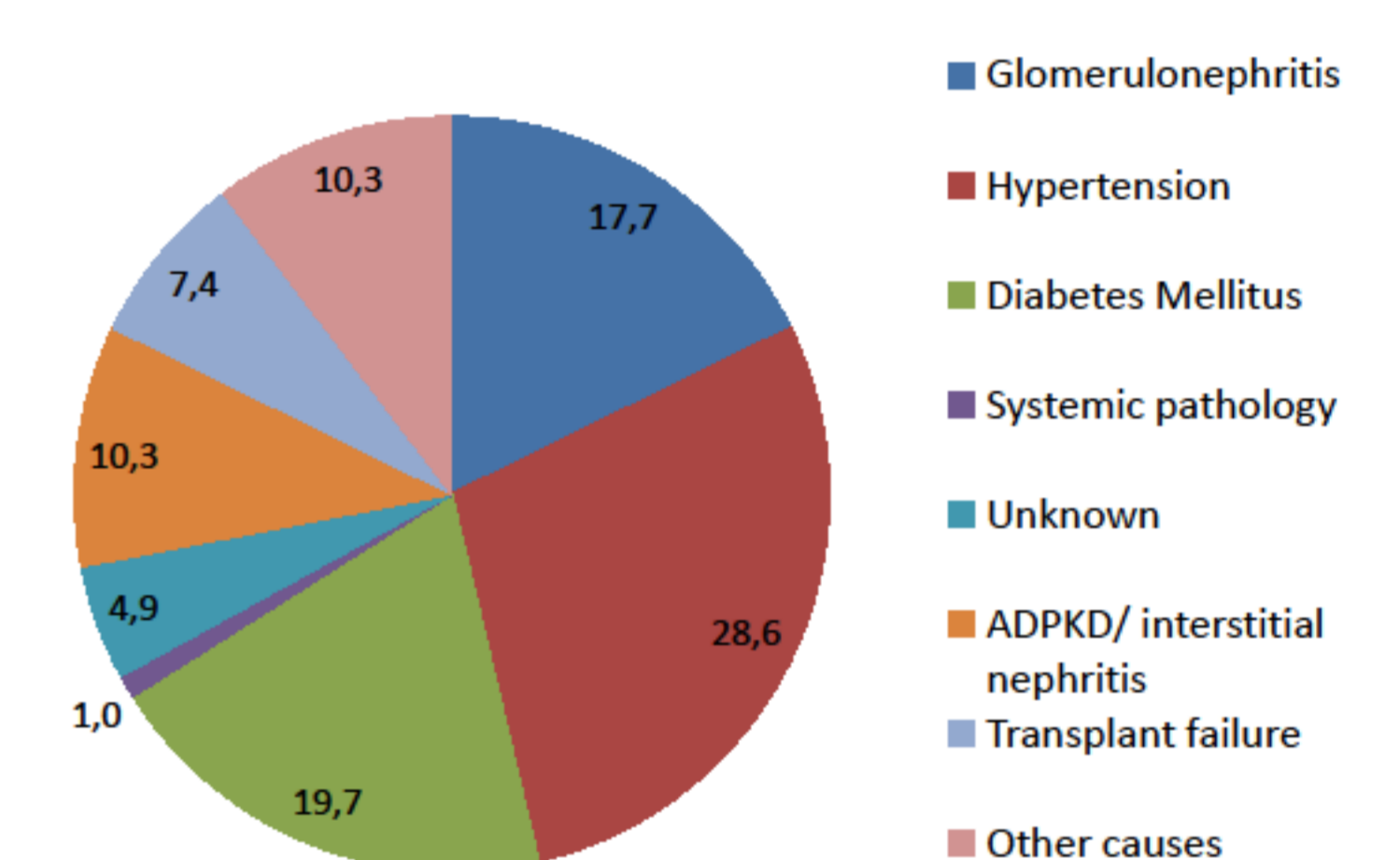


Fig 2- ESRD causes.

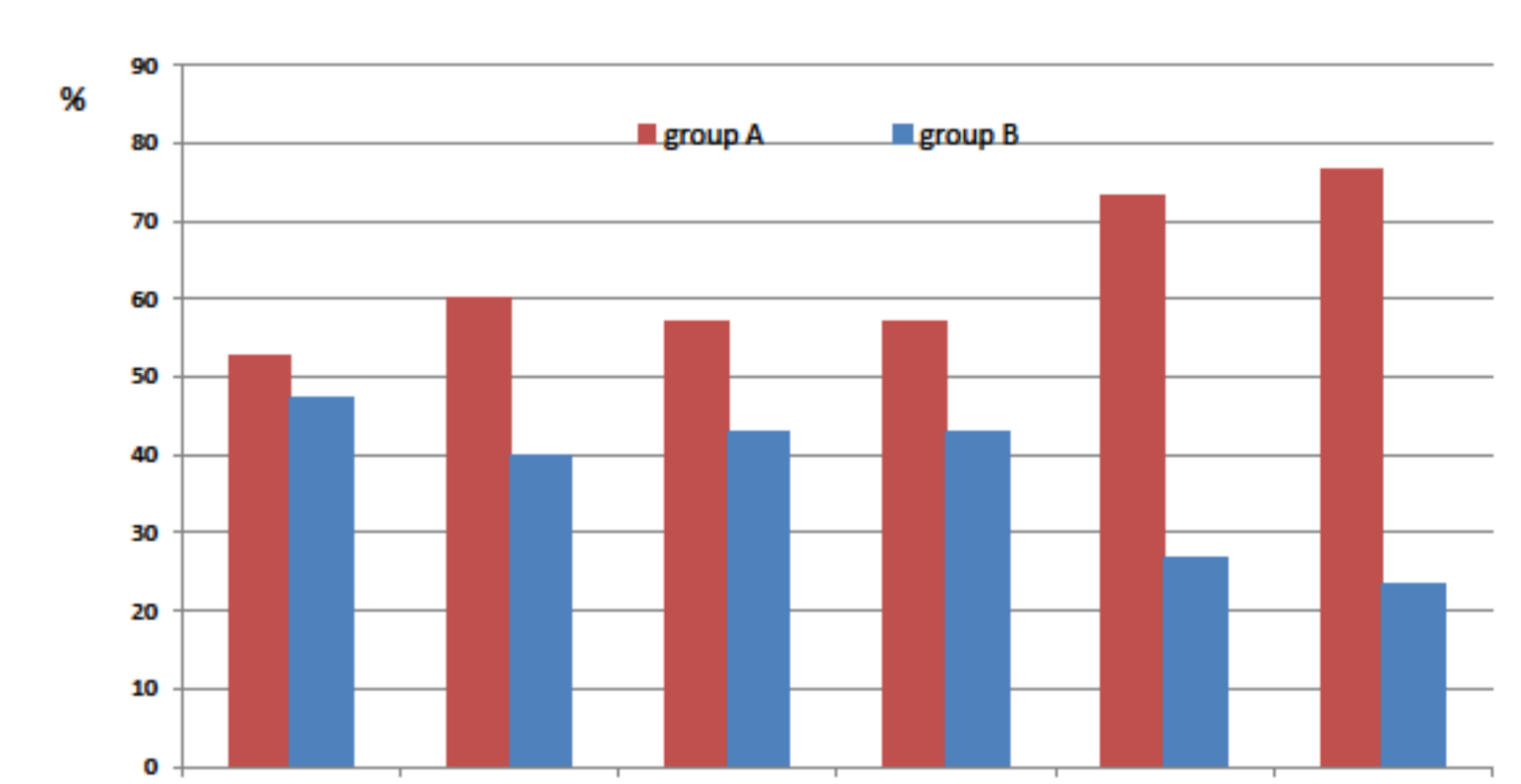


Fig 3- Vascular access used at 1° HD session.

Tab -2a

Group based on 1 st HD vascular access type	Pts n°	Total fav-graft N°	Total CVC n°	Total Vascular Ace n°	Rescue-interventions n° (surgery + endovascular)	Total Observation time (months)
A	129	174	296	470	166	5230
B	75	125	35	160	159	4443
total	204			630	325	9673

Tab -2b

Group based on 1 st HD vascular access type	Vascular Access n°/year/pts	Rescue-interv n°/year/pts	Total interventions (VA+R-int) n°/year/pts	1 int./month/pt
A	1.08	0.31	1.45	8.2
B	0.43	0.35	0.83	14.4

Group A = HD start with CVC, Group B= HD start with AVF.

Tab 2- New VA and rescue interventions: numeric values (a) and incidence rates (b).