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Access and outcome in chronic haemodialysis: which one takes the lead - the first, the last or the one with longest lifespan?

Reply to the letter to the Editor "Chronic haemodialysis: the access determines the outcome?" by Chia-Ter Chao

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We very much appreciate the comment of Chao C.-T. on the importance of differences in haemodialysis access patterns with regard to outcome [1].

As Chao C.-T. points out, haemodialysis accessrelated complications are an important cause of morbidity and mortality in end stage renal disease patients and are strongly influenced by the choice of haemodialysis access [2, 3]. Notably, permanent tunnelled cuffed catheters (PC) are associated with a higher frequency of access infections and higher mortality risk [4–8]. Since various studies have found striking differences in the vascular access routes used in different regions and countries [4, 9–11], we agree that this fact should be allowed for when comparing survival data.

In our population we found a high rate of native arterio-venous fistulas (AVF) (85%, n = 227), which may contribute to the low rate of infection-related deaths (7% of all deaths) and the overall fair survival (one-, three- and five-year overall survival rates of 88%, 68% and 46%, respectively) as suggested by Chao C.-T. [1, 12]. However, there was no difference in number of AVF, arterio-venous grafts (AVG) or PC between survivors and non-survivors (table 1), and Cox regression did not detect significant survival differences between access routes (table 2). If AVF and PC alone were included in the analysis (n = 250), there was still no significant difference in survival between the two types of access (HR 0.791, p = 0.630). The missing statistical significance may of course be due to the small number of PC (9%, n = 23) and AVG (6%, n = 16) in our dialysis population.

Further, it should be noted that the above-mentioned survival analysis refers to the primary vascular access. However, revisions and even creations of new vascular accesses during the course of dialysis are not uncommon. Thus further studies are needed to illuminate the impact of the last/most recent vascular access as well as the impact of the access with the longest in-use period on the outcome of patients on haemodialysis.

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Letter to the Editor:
http://www.smw.ch/content/smw-2011-13187/

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Table 1: Type of vascular access stratified by survival status.

	All (n = 266)	Non-survivors (n = 91)	Survivors (n = 175)	p-value°
AVF	227 (85)	80 (88)	147 (84)	0.467*
AVG	16 (6)	6 (7)	10 (6)	0.790*
PC	23 (7)	5 (5)	18 (10)	0.251*

Data are displayed as counts and percentages (%); ° p-values comparing survivors and non-survivors; * Fisher exact test; AVF: native arterio-venous fistula, AVG: arterio-venous graft, PC: permanent tunnelled cuffed catheter

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Table 2: Cox regression analysis of patient survival on haemodialysis.

	HR	**p-value°**
Sex	0.867	0.541
Age at start of dialysis	1.048	<0.001
DM	1.084	0.737
CAD	1.076	0.759
PAD	1.543	0.090
CVD	1.078	0.777
COPD	1.228	0.457
Autoimmune disease	1.108	0.797
Malignoma	1.352	0.245
PC		0.871
AVF	0.778	0.604
AVG	0.818	0.751

HR: hazard ratio, ° p-value of hazard ratio; DM: diabetes mellitus, CAD: coronary artery disease, PAD: peripheral artery disease, CVD: cerebrovascular disease, COPD: chronic obstructive pulmonary disease, PC: permanent tunnelled cuffed catheter, AVF: native arterio-venous fistula, AVG: arterio-venous graft