MATRIX METALLOPROTEINASE 2 PREDICTS ARTERIOVENOUS FISTULA FAILURE IN HAEMODIALYSIS PATIENTS

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Introduction and objectives: The vascular access is responsible for an important amount of morbidity events in haemodialysis patient, with impact on the dialysis efficacy and costs (1-3). The major cause of the arteriovenous fistula (AVF) dysfunction is the stenosis and the pathological substrate is represented by the neointimal hyperplasia. In the pathophysiological mechanism of neointima formation, matrix metalloproteinase 2 (MMP2) was demonstrated to play an important role (4, 5). Our study tried to assess the clinical impact of this protease on the AVF survival.

Methods: Seventy-nine dialysis prevalent patients with functional AVFs were included in the study. Clinical, hystorical, ultrasonographical (presence of stenosis and pre-existing thrombosis) and laboratory data were recorded. The seric level of MMP2 was determined at the beginning of the study. The patency of the AVFs was followed-up for two years.

Results and Conclusions: About half of patients had stenosis of the AVF at inclusion. During follow-up 16 (20.3%) patients lost their vascular access (thrombosis of AVF) and 9 (11.4%) patients were lost to follow-up due to the death. Cox regression analysis showed that MMP2, stenosis of the AVF at inclusion, history of delayed maturation and other factors were significant predictors of loss of access in univariate analysis. In multivariate regression MMP2 along with stenosis of the AVF at baseline remained significant predictors of vascular access loss. There were not significant differences in MMP2 between patients with/without stenosis (44.60±30.50 ng/ml vs. 38.15±26.75 ng/ml, p=0.69). If patients were divided according to a cut-off of MMP2 of 50 ng/ml, patients with lower MMP2 had a significantly better survival as compared to those with MMP2 above the threshold. MMP2 was an even stronger predictor of AVF loss when only the subgroup of patients with stenosis, were included in the analysis (HR=1.076, 95%CI 1.027-1.127, p=0.002). In our study MMP2 has a predictive value for AVF failure. In univariate and multivariate Cox regression analysis, alongside AVF stenosis, MMP2 is the most important predictor of AVF failure. The majority of events in the high MMP2 group occurred within the first few months of surveillance.

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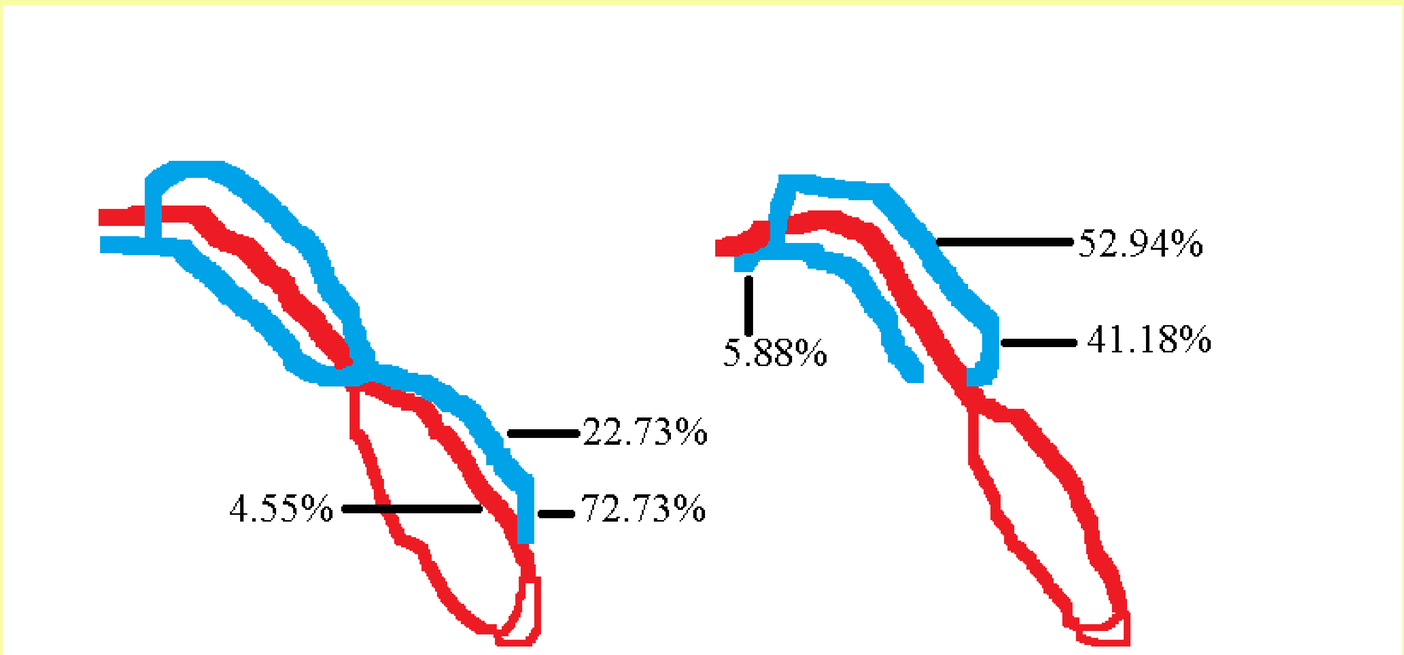
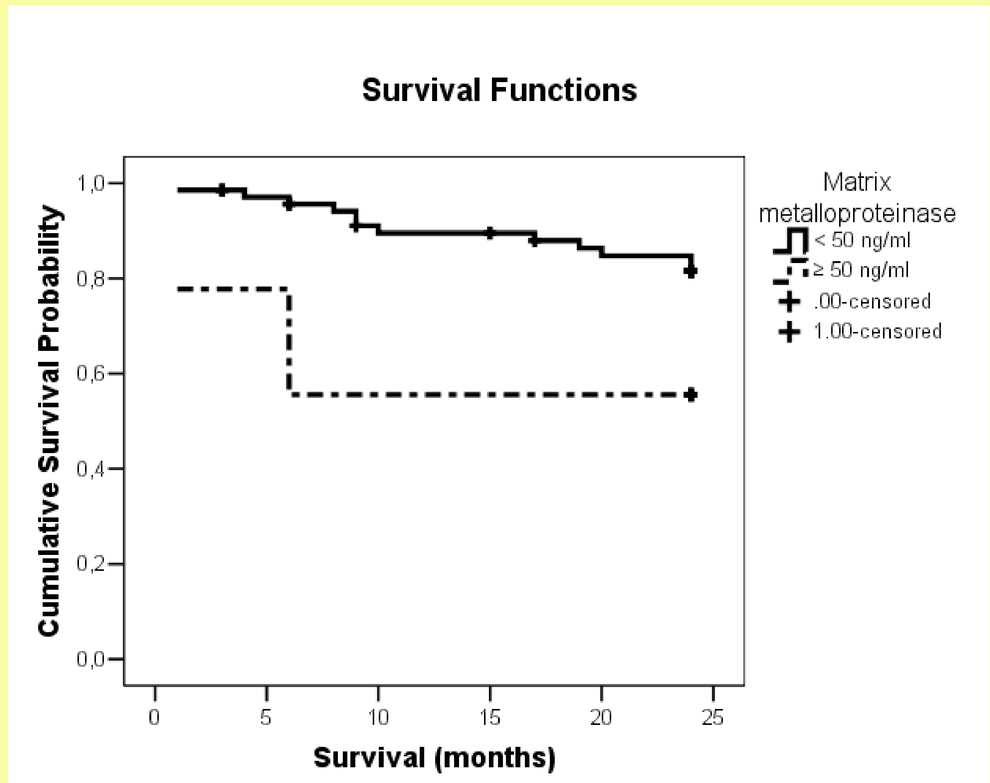


Figure 1. Localisation of stenoses in native arteriovenous fistulas in the forearm (left) and upper arm (right).



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