APPROPRIATE TIMINIG OF ARTERIOVENOUS FISTULA CREATION

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Objectives:

Recent report suggested that arteriovenous fistula (AVF) creation with an estimated glomerular filtration rate (eGFR) >15 ml/min/1.73 m^2 was associated with a higher risk of arteriovenous fistula (AVF) non-use and a more prolonged time to the need for HD[1]. It is also reported that initial AVF cannulation within 14 days lead to early AFV failure[2]. Those reports suggest that the appropriate timing to create AVF is difficult but there must be enough length of maturation period for AVF.
The Kidney Disease Outcomes Quality Initiative Guidelines for Vascular Access in hemodialysis patients recommend letting fistulae mature one or more month before cannulation. We investigated the eGFR between 30days to 40days before hemodialysis initiation and factors which affect the eGFR to determine the appropriate timing of AVF creation.

Methods:

This is a single center retrospective study. One hundred seventy six patients were initiated hemodialysis in our hospital for five years from 2009 to 2013. Necessary data were available for 131 patients out of all the patients. Those data include average age at the initiation of hemodialysis, male and female ratio, incidence of diabetes mellitus and serum creatinine level between 30days to 40days before hemodialysis initiation. eGFR was calculated with the creatinine level by Japanese GFR equation. Average male and female eGFR, average diabetic and non-diabetic eGFR were compared. T-test was used to examine those differences of average eGFR.

Estimated GFR was calculated by the following equations[3].

For men: $eGFR=194 \times sCr^{-1.094} \times Age(yrd)^{-0.287}$
For women: $eGFR=194 \times sCr^{-1.094} \times Age(yrd)^{-0.287} \times 0.739$
sCr: serum creatinine

Those equation were developed for Japanese patients.

Results:

The number of male and female was 73 and 58 respectively. Their mean age (standard deviation) were 66.1(13.3) yr and 70.9(12.2) yr respectively. Their mean eGFR (standard deviation) were 6.47(2.24) mL/min/1.73m^2 and 5.65(2.04) mL/min/1.73m^2 respectively ($P<0.05$). The number of Diabetic Nephropathy patients and non-Diabetic Nephropathy patients was 62 and 69 respectively. Their mean eGFR (standard deviation) were 6.3(2.2) mL/min/1.73m^2 and 5.9(2.2) mL/min/1.73m^2 respectively (NS). Pearson's correlation coefficient between age and eGFR was -0.31 (NS)

Conclusions:

It is appropriate to create AVF at the eGFR around 6.5 mL/min/1.73m^2 for male CKD patients, and at around 5.6mL/min/1.73m^2 for female CKD patients if 30 days is necessary for AVF maturation.
No significant difference between Diabetic Nephropathy patients and non-Diabetic Nephropathy patients was detected. This might due to the luck of enough statistical power. Female patients seemed to survive until lesser level of eGFR. This might reflect the fact that female can survive with lower kidney function. Female group was older than male group. However, the age and eGFR does not correlate

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