KSN 2016 Abstract Submission

Dialysis

KSN2016ABS-1494

Outcome of Cephalic Arch Stenosis in Brachiocephalic Fistula according to Management Strategies

Yaeni Kim*[1], Ji Hyun Yu[1], Byung Ha Chung[1], Bum Soon Choi[1], Cheol Whee Park[1], Chul Woo Yang[1], Yong-Soo Kim[1]

[1]Division of Nephrology, Department of Internal Medicine, College of Medicine, The Catholic University of Korea, Seoul, Korea, Seoul, Korea, Republic Of

Background: Cephalic arch stenosis (CAS) is the most common stenosis in brachiocephalic fistula. Although conventional percutaneous transluminal angioplasty (PTA) has been the first choice of management, recurrent stenosis and unacceptable primary patency rate after PTA often occur. We aimed to evaluate the patency rate of CAS in dysfunctional brachiocephalic fistulae and to identify factors that may affect their patency rate, especially according to the management strategies.

Methods: Out of 374 angiography in 178 patients with dysfunctional brachiocephalic fistulae from 2010 to 2015 in Seoul St. Mary's hospital, 234 angiography in 86 patients revealed CAS. Outcome of CAS in 86 patients was analyzed. PTA was the first choice of management. Cutting balloon angioplasty was performed when CAS was resistant to high pressure PTA. Endovascular banding (MILLER) procedure was done in cases of recurrent CAS (>3 times) with high access flow (>1.5 L/min). Kaplan-Meier method was employed to assess the primary, primary assisted, and secondary cumulative patency rate. Annual number of PTA before and after MILLER procedures was compared via a paired t-test.

Results: CAS was found in 86 patients (48.3%) out of 178 patients. Primary patency rates, primary assisted patency rates and secondary patency rates of CAS were 79%, 98%, and 98% at 6 months and were 65%, 92%, and 97% at 1 year, respectively. According to number of stenotic lesions, patients with only CAS lesion (n=40) showed greater primary patency rates at 6 months and 1 year as compared to those with CAS and other lesions (n=46) (82% and 72% vs. 76% and 60%, respectively). Concerning balloon size used during angioplasty, balloon diameter of $\geq$ 9 mm (n=11) was associated with better primary assisted patency rates as compared to those with smaller sizes (n=75) (p=0.013). Balloon sizes of $\geq$ 8 mm (n=51) were associated with greater secondary patency rates (p=0.001). Moreover, cutting balloon angioplasty (n=8) was associated with greater primary assisted patency rates at 6 months and 1 year. Subclinical (n=43), yet dysfunctional access as suggested by access flow surveillance showed favorable primary assisted and secondary patency rates as compared to those presenting clinical manifestations (n=43). MILLER procedures were performed in 14 patients. The number of cephalic arch PTA prior to the MILLER procedures was 1.76 per access-year, whereas it reduced to 0.80 per access-year following MILLER procedures (t=1.852, p=0.087). Neither thrombosis nor access abandonment occurred after the procedure.

Conclusion: Multiple stenotic lesions including CAS and small diameter of cephalic arch were associated with poor outcome of CAS. Access surveillance followed by preemptive PTA might improve the outcome of CAS. Moreover, MILLER procedure seems to improve outcome of CAS in patients with recurrent CAS and high access flow.

Keywords: brachiocephalic fistula, cephalic arch stenosis, endovascular banding, percutaneous transluminal angioplasty