Long term clinical outcome after self-expandable nitinol stent implantation for femoropopliteal occlusive disease in hemodialysis patients

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Background: Endovascular therapy (EVT) using self-expandable bare nitinol stent (BNS) has been commonly accepted in patients with symptomatic femoropopliteal (FP) occlusive disease. However, poor clinical outcomes in hemodialysis (HD) patients are major problems. We investigated the impact of HD on clinical outcome after EVT in patients with FP disease.

Methods: A total of 427 consecutive HD patients undergoing successful EVT with BNS for FP disease were enrolled with 157 non-HD patients as a control group. They were followed-up for 5 years. We collected data on target lesion revascularization (TLR) rate, and limb salvage rate as well as survival rate. Propensity-score matching analysis was performed to investigate the true impact of HD on the outcome.

Results: Critical limb ischemia was observed in 44.0% of overall population (43.0% in HD group vs. 46.8% in non-HD group, p=0.42). Rates of diabetes (67.1% vs. 58.1%, p=0.045) and coronary artery disease (73.5% vs. 58.3%, p=0.0008) were higher, while age (70±10 years old vs. 76±10 years old, $p<0.0001$) and TASC2 C/D lesion (27.9% vs. 44.6%, p=0.0002) were lower in HD group compared to non-HD group. Pre-procedural C-reactive protein level (0.4mg/l vs. 0.3mg/l, p=0.045) was higher and serum albumin level (3.6g/dl vs. 3.8g/dl, p=0.0045) was lower in HD group than those in non-HD group. The freedom rate from TLR at 5 years was significantly lower in HD group than in non-HD group [47.2% vs. 65.2%, hazard ratio (HR) 1.77, 95% confidence interval (CI) 1.23–2.64, p=0.0017]. The limb salvage rate was comparable between the groups (93.3% vs. 97.1%, HR 1.57, 95% CI 0.58–5.47, p=0.41), while the survival rate was significantly lower in HD group compared to non-HD group (60.6% vs. 86.0%, HR 2.53, 95% CI 1.56–4.36, p=0.0002). After propensity-score analysis, 250 patients (125 in each group) were matched without any difference of clinical characteristics in both groups. In the matched cohort, the freedom rate from TLR was still lower in HD group compared to non-HD group (46.7% vs. 66.6%, HR 2.25, 95% CI 1.35–3.87, p=0.0019). The adjusted limb salvage rate was consistently similar between the groups (95.4% vs. 97.3%, HR 1.10, 95% CI 0.20–5.94, p=0.91). Also, the adjusted survival rate was lower in HD group than in non-HD group (47.6% vs. 89.9%, HR 3.60, 95% CI 1.89–7.44, $p<0.0001$).

Conclusion: The freedom rate from TLR at 5 years after BNS implantation for FP disease were significantly lower in HD group than in non-HD group, though the limb salvage rate was similar between the groups. The survival rate was consistently lower in HD group compared to non-HD group. HD status had a great impact on TLR and mortality after EVT with BNS in patients with FP disease.