The structural changes of aneurysm after endovascular aneurysm repair

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Purpose: Several studies showed the change of neck and aneurysmal sac after endovascular aneurysm repair (EVAR), but they included the fragmentary contents of single topic. We investigated neck angle, neck length, maximal diameter, maximal area and thrombus of aneurysm after EVAR. This study assessed the changes, the association among the factors and the relationship between neck changes and type Ia endoleak.

Methods: From January 2010 to February 2015, 108 patients with AAA underwent EVAR in our institution. Among them, 90 patients evaluable by computer tomography (CT) were included this study. The changing factors were examined preoperatively, immediate postoperatively, after EVAR at 6 months, 1 year, and 2 years. For statistical analysis, generalized linear model was used.

Results: Mean last CT follow-up period was 30.02 ± 145.06 months. A significant decreases in the neck angle and length were found on immediate postoperative period (P<0.001 and 0.036). Maximal diameter decreased on 6 months (P=0.003). The thrombus volume in aneurysm sac increased on immediate postoperative study (P=0.008) and decreased after 6 months. The greater the preoperative values of neck angle, length and thrombus were, the greater their difference were immediately after EVAR (P=0.000, 0.000, 0.003). The greater maximal diameter was, the greater neck angle was and the shorter neck length was (P<0.001 and 0.048). Thrombus volume was great in the aneurysms with great neck angle, short neck length, great diameter and great area (P=0.002, 0.013, <0.001 and <0.001).

Conclusion: Neck angle, length and thrombus changed significantly immediately after EVAR and the greater the preoperative their values were, the greater their differences were immediately. Aneurysm sac regression occurred at 6 months after EVAR. There were statistically significant correlations among the size of aneurysm, neck angle, neck length and thrombus of aneurysm.