Hemodynamically Isolated Intracranial Aneurysms on DSA and CEMRA : Clinical and Experimental Data

정태섭 · 강원석 · 심용운 · 임윤철* · 이승구 · 주진양**

연세의대 진단방사선과, *연세대학교 기계공학과, **연세의대 신경외과

목적 : To evaluate the physiologic background of poorly visualized aneurysms during DSA a contrast-enhanced MRA(CEMRA) due to hemodynamical isolation on clinical and experiment data.

대상 및 방법 : Two cases of intracranial aneurysm which were poorly visualized on DSA a CEMRA and one case of intracranial aneurysm which had poor turnover of contrast mediu during DSA were selected for this clinical study. We evaluated the turnover of blood in t terminal aneurysm of handmade elastic silicon phantoms for comparative experiment. Flo experiments with DSA and contrast enhanced MRA were performed in elastic phantoms aneurysm with 3 different diameters (2, 5 and 10 mm) of neck mimicking basilar ti aneurysm, attached to pulsatile pump similar to that of human physiologic parameters. W compared the results with those of computational flow dynamics(CFD).

결과 : DSA image of aneurysm with narrow neck (2 mm) showed small volume of contrast mediu wash into aneurysm during the systolic phase. As the size of aneurysm neck becam wider(2, 5, 10mm), the turnover volume of fragment of contrast bolus got larger respectively. The progression of fragment of contrast bolus became faster when the size aneurysm neck got wider. Aneurysm with broad neck (10 mm) was visualized simultaneous with passage of main bolus of Gd-DTPA on CEMRA. Aneurysm with narrow neck (2 m was visualized after passage of bolus Gd-DTPA and was continuously visualized on dela CEMRA. The results were well matched with those of CFD. The three cases of poor visualized aneurysm on DSA and CEMRA showed unusually narrowed neck of aneurysm revealed poor turnover of blood flow.

결론 : As visualization of intracranial aneurysms on DSA, 3D-TOF MRA and CEMRA was gre dependent upon the size of aneurysm neck, aneurysms with narrow neck had potential to b missed during DSA and CEMRA due to hemodynamical isolation.