Observer variability of an angiographic grading scale used for the assessment of intracranial aneurysms treated with flow-diverting stents.

Abstract

BACKGROUND AND PURPOSE:

Novel angiographic grading scales for the assessment of intracranial aneurysms treated with flow-diverting stents have been recently developed because previous angiographic grading scales cannot be applied to these aneurysms. The purpose of this study was to evaluate the inter- and intraobserver variability of the novel O'Kelly Marotta grading scale, which was developed specifically for the angiographic assessment of aneurysms treated with flow-diverting stents.

MATERIALS AND METHODS:

Multiple raters (n = 31) from the disciplines of neuroradiology and neurosurgery were presented with pre- and posttreatment angiographic images of 14 aneurysms treated with intraluminal flow diverters. Raters were asked to classify pre- and posttreatment angiograms by using the OKM grading scale. Statistical analyses were subsequently performed with calculation of a generalized multirater κ statistic for assessment of inter- and intraobserver variability and by performing a Wilcoxon signed rank sum test for assessment of group differences.

RESULTS:

Variability analysis of the OKM grading scale yielded substantial ($\kappa = 0.74$) and almost perfect ($\kappa = 0.99$) inter- and intraobserver agreement, respectively, with no statistically significant differences between raters with a background of neuroradiology versus neurosurgery or attending physician versus trainee.

CONCLUSIONS:

The OKM grading scale for the assessment of intracranial aneurysms treated with flow-diverting stents is a reliable grading scale that can be used equally well by users of varying backgrounds and levels of training. Comparison with interobserver variability of pre-existing angiographic grading scales shows equal or better performance.