Purpose: Damage to specific areas outside the primary visual cortex can cause selective deficits of higher visual processing. Patients with stroke may have undetected abnormalities of higher visual processing because these are not routinely assessed. If present, these could impact significantly on recovery and residual function. This pilot study aimed to determine the extent of these abnormalities in patients who had recovered from stroke.

Methods: 26 patients (65.5 ± 13.9 years; 12 female) who had recovered from stroke were compared with 29 age-matched controls (67.6 ± 13.1 years; 17 female). Ophthalmological causes of visual loss were excluded. Higher visual function was assessed using Ishihara charts and Farnsworth-Munsell D15 (FMD15), kinematography, random dot testing (depth), stereofly, line bisection, and the Cambridge facial memory test (CFMT).

Results: Looking at the entire group, stepwise regression showed that random dot and CFMT were the most significant predictors of stroke (F1,77 = 5.08, p = 0.027). At a false positive rate of 10%, random dot classified 38.4% (± 17.6% SE) of patients and CFMT classified 28.0% (± 9.1% SE). Principal component analysis revealed two independent factors which accounted for 29.9% and 21.3% of the variance, respectively. Variables which contributed significantly to the first factor were random dot, FMD15, CFMT and kinematography. Line bisection, Ishihara and CFMT contributed to the second factor. The receiver operator characteristic yielded an area under the curve of 0.75 ± 0.071 (mean ± SE).

Conclusions: Many patients with stroke had undetected abnormalities of higher visual processing. As a group, this was most obvious in terms of random dot testing for depth perception. These findings have potential relevance to the process of rehabilitation and to residual post-stroke function. Further investigation in the form of a larger trial is warranted.

This is an abstract that was submitted for the 2016 ARVO Annual Meeting, held in Seattle, Wash., May 1-5, 2016.