



**ON-LINE FIGURE.** Example set of 10 male patients with varying levels of large-vessel cerebral vascular disease chosen from our data base who underwent 2 CVR tests and their associated ID CVR z-maps. The On-line Table provides additional information and commentary for each subject. L indicates left; R, right; PCO<sub>2</sub>, partial pressure of CO<sub>2</sub>.

**On-line Table: Clinical comments in reference to On-line Figure**

| Subject | Detailed Diagnosis  | CVR Maps and ID Z-Map Description   |
|---------|---|---|
| 1       | 59 yr of age with previous Hx of stroke; presented with left-sided TIAs; L EC-IC bypass between scans   | The first CVR map prebypass shows steal in the entire left hemisphere. The second CVR map postbypass indicates less steal and improved CVR in the left hemisphere. The CVR ID z-map shows the extent of improvement between pre- and postbypass CVR, indicating improved CVR in the entire brain (predominately in the left hemisphere) postbypass. Red in a single voxel represents <5% probability that change in signal was by chance. CVR tests were performed 2 months before and 1 month after the operation. |
| 2       | 50 yr of age, L ICA occlusion and R ICA stenosis; L EC-IC bypass between scans  | The prebypass CVR map shows reduced left hemisphere reactivity. Postsurgery suggests some improvement in the impaired L hemisphere. The CVR ID z-map confirms the extent of improvement in L hemisphere CVR but also shows further reductions in CVR in the deep WM regions in the right hemisphere, not apparent from the CVR maps. CVR tests were performed 1 mo before and 4 mo after the operation.   |
| 3       | 70 yr of age, bilateral vertebral and ICA stenosis; R CEA between scans   | The presurgical CVR map shows a bilaterally reduced CVR with scattered areas of steal. After the R CEA, there is normalization of the CVR scan. The CVR ID z-map shows marked improvement in CVR in the R hemisphere and increased CVR in the contralateral hemisphere. CVR tests were performed 1 mo before and 1 mo after the operation.  |
| 4       | 55 yr of age with previous history of acute ischemic stroke and TIAs; presented with TIA; angiography shows L ICA occlusion and R ICA stenosis; R CEA was performed 1 mo before first CVR; no surgical intervention between CVR tests, which were obtained 2 mo apart | The first postsurgical CVR map is symmetric, but the second f/u CVR shows slightly decreased reactivity in the left hemisphere. The CVR ID z-map scores the extent of CVR reduction in specific regions of impaired CVR with time. The z-map confirms that there are no areas of improvement or deterioration in CVR covering major vascular territories.   |
| 5       | 16 yr of age, bilateral MM with L intracranial hemorrhage; R STA-MCA bypass between scans   | The prebypass CVR map shows severely impaired CVR bilaterally in the MCAs, which extends to the ACA territories. Postbypass on R, the CVR seems to have improved bilaterally, particularly in the R cortical areas. The extent of steal is also reduced. The CVR ID z-map confirms the improvement of the CVR but also identifies decreases in CVR in both PCA territories that were otherwise inapparent. CVR tests were performed 1 mo before and 5 mo after the operation.                                       |
| 6       | 53 yr of age with isolated L ICA stenosis; L EC-IC bypass between scans   | The prebypass CVR map shows areas of steal bilaterally in deep GM and WM. Postbypass, the CVR appears to have normalized. The CVR ID z-maps confirm the degree and distribution of improvement. CVR tests were performed 1 mo before and 3 mo after the operation.  |
| 7       | 26 yr of age, MM with bilateral ICA stenosis; no surgical intervention between CVR tests, which were obtained 8 mo apart  | The first CVR map shows reduced CVR in both MCA territories. The second f/u CVR map shows more extensive steal and reduced CVR. The CVR ID z-map shows the areas with high probability of worsening CVR, including ACA and PCA territories.   |
| 8       | 63 yr of age, Hx of previous stroke; R ICA occlusion; R EC-IC bypass between scans  | The prebypass CVR map indicates a reduction of CVR throughout the R MCA territory. The postbypass CVR map shows improvement in the right cortex with continued steal in the R WM. The CVR ID z-map confirms improvement in the R hemisphere and clearly shows that the CVR in the R WM has improved (is less negative). However, the CVR in the L hemisphere has markedly decreased in the interval. CVR tests were performed just before and 3 mo after the operation.   |
| 9       | 58 yr of age, presented with ischemic stroke; L ICA occlusion and R ICA stenosis; L EC-IC bypass between scans  | The first CVR map indicates a reduction of CVR throughout the L hemisphere. Postoperatively, there is moderate improvement on the L. The CVR ID z-map confirms improvement in CVR ipsilateral to the operation and reduction in CVR in the contralateral hemisphere. CVR tests were performed 1 mo before and 3 mo after the operation.   |
| 10      | 72 yr of age, with bilateral ICA stenosis; L CEA; 2 CVR tests were obtained 2 mo apart as f/u to CEA and 6 mo and 8 mo postsurgery  | Findings of both postoperative CVR maps appear to be normal. Blue areas in first CVR map are artifacts that occurred over the ventricles. The second CVR map appears to have greater CVR in the L cortical areas, but it is difficult to be certain. The CVR ID z-map shows that the positive changes in CVR on the L are unlikely due to random variability alone.   |

**Note:**—ACA indicates anterior cerebral artery; CEA, carotid endarterectomy; f/u, follow-up; Hx, history; L, left; MM, Moyamoya disease; PCA, posterior cerebral artery; R, right; STA, superficial temporal artery.