Letters

Dear Editor:

The report by Simon and colleagues [1] contains a wealth of laterality indexed information not mentioned by the respected authors. They described CT of a right handed patient who had sustained a stroke involving the minor (right) hemisphere, showing conjugate eye deviation to the side of the lesion. They also referred to the occurrences of "lone abducting eye" under the same circumstances, elsewhere defined as “a single appreciably abducting eye with the other eye undeviated”. However, both of these observations are the expected manifestations of laterality of motor control as it relates to conjugate eye movements, as follows: if we look at the eyes as two limbs located on each side of the midline (as it is the case with the arms or the diaphragms), moving the limb(s) located on the left requires the command originating in the command center (major hemisphere, the left in a right hander) to be transferred to the minor hemisphere for its execution by the effectors in (or towards) the left side of the body. This is the so-called frontal eye field on the right side, innervating the appropriate muscles of the left eye alone. Thus, depending on the extent of the cortical lesion, the left eye will either remain motionless in the midline (if the lesion is more extensive), giving rise to a diaschitic lone abducting right eye (whose connection with the major hemisphere had remained intact). If the lesion is less severe and some of the fibers conducting the signals originally issued in the major hemisphere are still functional, the left eye will follow its counterpart suite (resulting in conjugate eye deviation to the right).

The figure depicts the nature of the callosal directionality alluded to above; applicable to effectors in or towards contralateral half of the body in neural right (a) and left (b) handers. Elsewhere I have given the verifiable details of this scheme which is best described as the 1-way callosal traffic theory of motor control in humans [2]. Thus, when it comes to the eyes moving them to the left takes longer by an amount commensurate to the interhemispheric transfer time [2].

References: