Right temporal lobe

The right temporal lobe has many different functions that complement left temporal lobe functions, and new information is being discovered all the time. The major functions of the right temporal lobe are nonverbal memory, nonverbal aspects of communication, aspects of pitch and sound location and certain aspects of personality.

The patients with right temporal lobe lesions showed significantly better scores in verbal intelligence and verbal memory in comparison with patients with left temporal lobe lesions and those with other focal brain lesions or diffuse brain damage. In contradistinction, study of the personality and the emotional changes (MMPI and FAF) failed to demonstrate pathological scores in the 3 groups with different CT lesions, without any significant difference being found between the groups with temporal lesions and those with other focal brain lesions or diffuse brain damage. The severity of the brain injury and the prolongation of the disturbance of consciousness could, in our patients, account for prevalence of congnitive impairment on personality and emotional changes [1)].

In adults, left temporal lobe pathology is typically associated with verbal memory deficits, whereas right temporal lobe pathology is thought to produce visual memory deficits in right-handed individuals. However, in children and adolescents with temporal lobe pathology, conclusions regarding material specificity of memory deficits remain unclear.

Right side lesions result in decreased recognition of tonal sequences and many musical abilities. Right side lesions can also affect recognition of visual content (e.g. recall of faces).

Right side lesions result in recall of non-verbal material, such as music and drawings.

Prosopagnosia was a symptom in right temporal lobe atrophy patients. These patients also exhibited a variety of behavioural symptoms including social disinhibition, depression and aggressive behaviour. Nearly all behavioural disorders were more prevalent in the right temporal lobe atrophy patient group than the semantic dementia group. Symptoms particular to the right temporal lobe atrophy patient group included hyper-religiosity, visual hallucinations and cross-modal sensory experiences. The combination of clinical features associated with predominant right temporal lobe atrophy differs significantly from those associated with the other syndromes associated with focal degeneration of the frontal and temporal lobes and it is, therefore, proposed that this right temporal variant should be considered a separate syndromic variant of frontotemporal lobar degeneration [2)].

In patients with temporal lobe glioma, neurocognitive functioning (NCF) decline in the subacute postoperative period is common. As expected, patients with left temporal lobe (LTL) tumor show more frequent and severe decline than patients with right temporal lobe (RTL) tumor, particularly on verbally mediated measures. However, a considerable proportion of patients with RTL tumor also

exhibit decline across various domains, even those typically associated with left hemisphere structures, such as verbal memory. While patients with RTL lesions may show even greater decline in visuospatial memory, this domain was not assessed. Nonetheless, neuropsychological assessment can identify acquired deficits and help facilitate early intervention in patients with temporal lobe glioma [3].

The goal of a case series is to examine the profile of verbal memory and visual memory impairment in children with temporal lobe tumors.

Three patients with identified right temporal tumors and three patients with left temporal tumors are included. The Wide Range Assessment of Memory and Learning-Second Edition (WRAML-2) was administered as part of a larger neuropsychological battery. As anticipated, participants with right temporal lesions showed impaired visual memory relative to intact verbal memory. Interestingly, although the discrepancies between verbal and visual indices were less extreme, those with left temporal lesions showed a similar memory profile. These seemingly counterintuitive findings among left temporal tumor patients likely reflect less hemispheric specialization in children in comparison to adults and the fact that early developmental lesions in the left hemisphere may lead to functional reorganization of language-based skills [4].

1)
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