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Is a cortical spike discharge "transferred" to the contralateral cortex via the corpus callosum? : An intraoperative observation of electrocorticogram and callosal compound action potentials

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Purpose: By means of intraoperative electrophysiological observation, the authors reevaluated the "transfer" theory that a transcallosal volley invoked by a cortical spike discharge in one hemisphere directly causes the contralateral counterpart via the corpus callosum (CC). Methods: Twenty-six patients who underwent corpus callosotomy for medically intractable epilepsy were the subjects of this study. Intraoperatively, electrocorticograms from both hemispheres were simultaneously monitored with callosal compound action potentials (CCAPs) from the CC. Interhemispheric delay of bilaterally synchronous spike and wave discharges (BSSWs), as well as the chrological relationship between BSSWs and CCAPs were then analyzed. Results: The side of prior spike discharges was never fixed but occasionally reversed. Interhemispheric delays between the BSSWs fluctuated considerably regardless of direction in all patients. Most of the BSSWs were distributed within 20 ms with a mode of 0 ms. The waveform of the CCAP was characterized by slow rising negative potential change which attained its peak following a cortical spike discharge. These findings were identical in all the patients regardless of whether the BSSWs were changed or unchanged after callosotomy. Conclusions: If the "transfer" role of the CC is true, interhemispheric delays between BSSWs must be longer than interhemispheric axonal conduction time (about 20 ms), and a preceding cortical spike discharge must produce first a CCAP and then a contralateral one. However, these hypotheses were not confirmed in the present study. The authors propose the interhemispheric recruitment of epileptogenic state as an alternate role of the CC on epileptogenesis.

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MRI and CT correlations in patients with epilepsy : an Indian experience

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CT scan is routinely used in diagnostic work up of epileptic patients with significant number of these scans showing structural abnormalities. Since the advent of MRI, this new imaging modality is increasing being used for additional morphological or imaging characteristics that might assist to make a definitive diagnosis and to initiate specific therapy. However there are far and few comparative studies of MRI and CT in these patients. The present study was carried out to find out correlations between these two imaging modalities in Indian epileptics. Methods : A consecutive 393 patients who presented with seizures were evaluated. Apart from historical details, complete neurological examination was done and routine investigations including EEG were done. CT Scan was done at the first instance and MRI was done within first few weeks of presentation.A follow up scan was done after 10-12 weeks where it was possible. Results: 158(40.2%) cases had normal MRI while in 235 (59.8%) patients MRI had some abnormal lesion like Single Granulomas71(30.21%), Ring enhancing lesions 62(26.38%),Multiple Cysticercosis 22(9.36%), Calcifications34(14.47%),Medial temporal Sclerosis 5(2.13%) and Miscellaneous41(17.45%). 158(40.20%) patients had both normal CT and MR scans, whereas 226(57.5%) had both abnormal CT as well as abnormal MRI. However only 9(2.3%) patients had abnormal MRI in whom CT scan was normal. The discrepancies noted in these patients were Cysticercosis in 4, Single Granuloma in 3 and calcification & Demyelination in one each. Conclusions: MRI and CT Scans have similar morphological lesions in most of patients with seizures, except in very few cases where some discrepancies may be seen.