

Déjà vu in temporal lobe epilepsy

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Hughlings Jackson was the first to demonstrate that paroxysmal *déjà vu* (called by him 'reminiscence') is significantly related to disease of the temporo-sphenoidal region (Jackson, 1880, 1888; Jackson and Colman, 1898; Jackson and Purves-Stewart, 1899). Although he mentioned several cases of *déjà vu* with left-sided lesions (Jackson, 1888; Jackson and Colman, 1898) in his view the phenomenon arises much more frequently in cases in which the focus of discharge is in the right cerebral hemisphere (Jackson, 1880). This view failed to gain general acceptance, but has been revived following recent reports from the Montreal Neurological Institute that psychical seizures characterized by an aura of familiarity occur predominantly as the result of discharge or stimulation in the temporal lobe of the hemisphere minor for handedness and speech (Penfield, 1958). This predominance is stated to be of the order of 9 : 1 (Mullan and Penfield, 1959). One may add that their claim derives some support from Bingley's (1958) careful analysis of the psychic symptoms relating to the temporal lobe.

In the present paper an attempt will be made to establish the incidence of *déjà vu* in psychomotor epilepsy in relation to the laterality of the focus and the handedness of the patient. A review of the records of 110 cases of psychomotor epilepsy yielded 27 cases in which the evidence of a unilateral focus was considered sufficiently clear cut to justify operation. Fourteen of these proved to be cases of temporal lobe tumour. The records were then carefully scrutinized for reports of *déjà vu* or any closely related illusion of familiarity having occurred as an integral part of the seizure pattern or as an abnormally frequent and vivid experience between attacks. We found 13 cases, 10 of these being of tumour, in which we were both satisfied that the abnormal experience described by the patient had in fact been one of *déjà vu*. A brief analysis of the findings in these cases and in the 14 in which no *déjà vu* was reported follows.

ANALYSIS OF FINDINGS

The incidence of *déjà vu* in relation to the laterality of focus (or side of operation) is shown in Table I. Considering only the 13 patients experiencing *déjà*

vu, application of the binomial test indicates that the probability of getting four cases out of 13 is $P=0.133$, which is not significant. Hence these data fail to indicate a significant association between *déjà vu* and a focus in the right, as opposed to the left, cerebral hemisphere. It will be noted that the patients not experiencing *déjà vu* divide more or less equally between the two groups.

TABLE I
INCIDENCE OF PAROXYSMAL *DÉJÀ VU* IN RELATION TO LATERALITY OF THE FOCUS

<i>Déjà Vu</i>	<i>Side of Focus</i>		<i>Total</i>
	<i>Left</i>	<i>Right</i>	
Reported	4	9	13
Not reported	6	8	14
	10	17	27

Analysis of the findings in relation to hemisphere dominance is complicated by the relatively high proportion of fully or partly left-handed patients in this series, as in that of Mullan and Penfield (1959). In the 13 cases with *déjà vu*, eight of the patients were fully and three predominantly right-handed and two were left-handed. There were indications of dysphasia in three of the four patients with left temporal foci, two of whom were right-handed and one left-handed. The fourth patient with a left-sided focus who was strongly left-handed, was not dysphasic. No patient with a right-sided focus exhibited dysphasia.

In the 14 cases without *déjà vu*, 10 of the patients were fully and one predominantly right-handed; one was fully and two were predominantly left-handed. There were indications of dysphasia in four of six patients with left temporal lesions and in two of eight with right temporal lesions. The latter consisted of one predominantly right-handed and one predominantly left-handed patient, but in only the first of these was the speech disorder severe or persistent. The fully left-handed patient (right temporal lesion) showed no dysphasia. Aphasia was not a significant obstacle to obtaining descriptions of the seizures in any of the patients when they were first studied.

It is now appreciated that, even among left-handed individuals, left cerebral dominance for speech is the rule rather than the exception. None the less, there appear to be two cases in this series in which right cerebral dominance may be presumed. The first of these was the case of a strongly left-handed man with a large left temporo-parietal glioma who showed no trace of dysphasia either before or after operation. The second was the case of a predominantly right-handed man (with sinistral antecedents) who showed marked and persistent dysphasia after right temporal lobectomy. There were no patients with *déjà vu* who developed left handedness secondary to early left hemisphere injury. Table II shows the incidence of *déjà vu* in relation to cerebral dominance when allowance is made for these two somewhat exceptional cases.

TABLE II

INCIDENCE OF *DÉJÀ VU* IN RELATION TO
HEMISPHERE DOMINANCE

<i>Déjà Vu</i>	<i>Side of Focus</i>		<i>Total</i>
	<i>Dominant</i>	<i>Minor</i>	
Reported	3	10	13
Not reported	7	7	14
	10	17	27

Application of the binomial test indicates that the probability of getting three cases out of 13 is $P=0.045$, which is significant at the 5% level. This is clearly suggestive of an association between the incidence of *déjà vu* and a focus of discharge in the hemisphere minor for speech.

COMMENT

The findings in this small group of cases fail to establish a significant association between *déjà vu* and a focus in the right hemisphere but are suggestive of an association between this phenomenon and a focus in the minor hemisphere (significant at the 5% level). The predominance of minor hemisphere foci in our material is, however, considerably less than in that of Penfield (1958) and Mullan and Penfield (1959) and no obvious explanation of this discrepancy is forthcoming. Until further evidence is to hand, therefore, it would seem inadvisable to accept

the incidence of *déjà vu* as a convincing lateralizing sign of temporal lobe dysfunction.

The frequency of tumour (Table III) in the patients with *déjà vu* (10 out of 13) compared to those with tumour but no *déjà vu* (four out of 14) suggests that this may be of diagnostic significance. The high incidence of left handedness in the patients with tumours is against the idea that the sinistrality is secondary to early unilateral injury to the left hemisphere.

TABLE III

INCIDENCE OF *DÉJÀ VU* IN RELATION TO
TEMPORAL LOBE TUMOUR

<i>Déjà Vu</i>	<i>Tumour</i>		<i>Total</i>
	<i>Present</i>	<i>Absent</i>	
Reported	10	3	13
Not reported	4	10	14
	14	13	27

SUMMARY

The incidence of *déjà vu* in 27 cases of temporal lobe epilepsy has been ascertained, with special reference to the laterality of the focus, the handedness of the patient, and the presence or absence of dysphasia.

A slight predominance of minor hemisphere foci (significant at the 5% level) has been established. None the less, it is considered inadvisable on present evidence to accept *déjà vu* as a lateralizing sign of temporal lobe dysfunction.

Ten out of 13 patients with *déjà vu* were found to have tumours of the temporal lobe.

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