Loss of memory for auditory-spatial associations following unilateral medial temporal-lobe damage

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Auteur	Lancelot, Céline [1], Ahad, Pierre [2], Noulhiane, Marion [3], Hasboun, Dominique [4], Baulac, Michel [5], Samson, Séverine [6]
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Résumé en anglais	The goal of the present experiment was to determine the role of medial temporal-lobe structures in episodic memory of auditory-spatial associations. By using a two-alternative forced choice paradigm in which an association between eight different sounds and their spatial location must be recognized, learning abilities over 10 learning sessions were tested in 19 patients who had undergone a right or a left medial temporal-lobe resection for the relief of intractable seizures as well as in nine normal control participants. The data demonstrated that significant learning took place over the successive sessions for all the participants. In addition, the results showed that patients with left but not right medial temporal-lobe lesion were impaired in this learning task as compared to normal participants, suggesting the predominant implication of left medial temporal-lobe structures in auditory-spatial associative learning. The predominant role of left hemisphere structures in this memory task could be explained by a spatial categorical coding, which was enhanced by the use of eight loud-speakers. This result also suggests that the ability to store an episodic event associated with a rich spatial (or temporal) context depends on the left medial temporal-lobe structures. Thus, this finding provides an interesting parallel with data obtained in the visual modality by documenting for the first time the role of the left medial temporal-lobe in episodic learning of auditory-spatial associations.

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