SHORT REPORT

Transient topographical amnesia

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Abstract

Ten healthy middle aged or elderly women experienced isolated episodes of topographical amnesia without an obvious aetiology. It is likely a benign cognitive disorder, similar to transient global amnesia.

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The syndrome of defective route finding in familiar places has been known for a century.¹ It is rarely due to an agnosic mechanism, and is often caused by a topographical amnesia, when subjects recognise their surroundings but are unable to use them as landmarks to find their way.²⁻³ Topographical amnesia has been found in dementias and confusional states as an isolated permanent deficit after damage to the non-dominant hemisphere, especially the hippocampal system and the parietooccipital areas.²⁻⁴

We report a series of patients who have had isolated episodes of topographical amnesia not associated with cerebral lesions or overt aetiology.

Patients and methods

Ten apparently healthy women experienced isolated episodes of topographical disorientation in known surroundings during middle or old age (table 1). Five patients (cases 1, 2, 4, 8, and 9) were examined a few days after the episode; the others were seen one or more years later. All received neurological and neuroradiological examination, EEG, SPECT, cerebrovascular Doppler echotomography (CDE), and psychometric tests. Two episodes (in cases 8 and 9) were witnessed by relatives.

FEATURES OF THE EPISODES OF TOPOGRAPHICAL AMNESIA

The histories presented are representative of the phenomena seen.

Case 1

A detailed report of this case has been given elsewhere.⁵ In 1987 and 1988 this 64 year old

woman had two brief episodes of topographical disorientation in places well known to her, without consequences. A third more prolonged episode occurred in January 1990. After having heard mass at the cathedral in her town, she went out and immediately lost her way. Despite a preserved recognition of buildings and streets, she was not able to orientate herself. She asked a person for help, but despite the information received, continued to have problems in finding her way. No other disturbances were noticed. The disorder lasted about 40 minutes, then rapidly disappeared.

Case 9

A 67 year old woman, had a history of migraine and a recently diagnosed mild hypertension. On 6 February 1993, she was working with her husband in her own store not far from her house when she decided to go home to prepare lunch. Outside, she began to walk, but immediately lost her way. She tried to orient herself by concentrating on some landmarks. She recognised a bakery, then a phone booth, which she knew to be very near her house, but despite this she could not find her home. After several attempts, 20 minutes later she decided to return to the store, asking her husband for help. The husband told us that she did not show any other disturbances, so that initially he thought she was joking. The next day she complained of a severe migraine attack, which led to her admission.

Case 10

A healthy 68 year old right handed woman presented with a mild, recent memory impairment. At 53, she had had a brief episode of topographical disorientation, walking in town in a well known square. At the age of 67, she experienced a similar, more prolonged episode (20 minutes) in the same place. She went out of a store and suddenly lost her way. Even though she recognised the square, she was not able to find a parking area, not far away, where she had parked her car. She asked someone for help, but despite the information received, she continued to walk without finding the right way. After about 20 minutes she realised how to reach the parking area.

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Table 1 Clinical data and ancillary examinations

Case	Age at observation	Data from history	TTA attacks	Duration (min)	Age at episode	EEG	CT/MRI	SPECT*
1	64	—	3	5, 5, 40	61, 62, 64	N	N	Right occipital
2	62	Diabetes, chronic hepatitis	1	10	62	N	Mild atrophy	N
3	79	—	1	15	76	N	Mild atrophy	Frontal bilateral
4	81	—	1	30	81	N	—	Left frontal and occipital
5	59	Hypertension, dyslipidaemia	1	20	54	Left temporal theta	N	Left temporal
6	58	Hypertension, TGA	1	10	56	N	N	N
7	66	—	1	5	65	Temporal theta	N	Left hemisphere diffuse
8	64	—	3	5, 5, 5	54, 64, 64	N	Mild atrophy	Left hemisphere diffuse
9	67	Hypertension, migraine	1	20	67	N	Subcortical lacunes	Left parietal
10	68	—	2	5, 20	62, 67	Left temporal theta	Mild atrophy	N

*Mild hypoperfusion.

TTA = transient topographical amnesia; TGA = transient global amnesia; N = normal.

NEUROLOGICAL AND ANCILLARY EXAMINATIONS (TABLE 1)

All patients were neurologically normal. Seven of them complained of a mild memory impairment. An EEG was normal in seven patients, and showed moderate temporal theta activity in the others. Neuroimaging (nine cases) showed normal findings or mild signs of atrophy. One case had subcortical lacunae. Haemodynamic disorders were ruled out by CDE, apart from a left subclavian artery stenosis (case 10). Cerebral SPECT was normal in three cases. Mild perfusional abnormalities on different areas were seen in the others, mostly in the left hemisphere. Follow up of case 9 is in progress. The other patients had no further neurological disturbances from one to five years after topographical amnesia. None deteriorated mentally or developed dementia.

NEUROPSYCHOLOGICAL TESTING (TABLE 2)

Cases 1, 2, 8 and 9 were studied within a month after the last episode, the others from one to five years after the last attack. A poor long term memory and a moderate impairment of visuospatial abilities were the most frequent findings. Global mental deterioration was ruled out in all.

Table 2 Neuropsychological findings

Test ^{a,7}	Performances below cut off (%)
Mental deterioration index	0/10 (0)
Barrage	0/10 (0)
Simple analogies	2/10 (20)
Copy of Rey's figure	2/10 (20)
Street	2/8 (25)
Mazes (Elithorn/WISC)	2/8 (25)
Map of Italy/map of town	3/10 (30)
Short term memory:	
Digit span forward	0/10 (0)
Digit span backward	2/10 (20)
Rey's 15 words: short term	1/10 (10)
Serial position curve: recency	1/10 (10)
Corsi's cube	1/10 (10)
Immediate visual memory	2/10 (20)
Long term memory:	
Rey's 15 words: long term	1/10 (10)
Paired associate learning	4/10 (40)
Story recall	3/10 (30)
Serial position curve: primacy	7/10 (70)
Supraspan spatial learning	4/10 (40)
Delayed visual memory	3/9 (33)
Reproduction of Rey's figure	3/10 (30)

Discussion

These patients had brief, usually single, episodes of temporary loss of topographical orientation in familiar places, that meet the criteria for topographical amnesia.^{2,3} During the attack the subjects were aware of being in a known environment, often recognising the places or some components (buildings, streets, etc), but were not able to use them as landmarks to find their way. No impairment of consciousness or other neurological or cognitive dysfunctions were reported by the patients or seen by witnesses when present. The episodes occurred in healthy middle aged or old women, who often complained of a mild forgetfulness, not hampering vocational and daily functioning. No history or features of major psychiatric disturbances were noted and EEG and neuroimaging were unremarkable. The cerebral SPECT showed mild perfusional abnormalities in different areas, mostly in the left hemisphere. This was unexpected, as topographical amnesia is thought to be due to damage to the minor hemisphere,^{2,4} but the extreme variance of the times of examination limits interpretation of these data. They may reflect moderate age related changes, rather than definite areas of damage. No occlusive arterial pathology was found at CDE. Psychometric testing showed minor defects, mainly affecting long term memory and visuospatial abilities. None of the patients showed dementia or global mental deterioration. The follow up did not show other neurological disturbances.

The nature of these episodes is unclear. The age of the patients, the presence of vascular risk factors in some of them, the brevity of the attacks, and their reversibility could indicate a transient cerebral ischaemic attack. The absence of a history of cerebrovascular disease, the lack of consistent signs on the ancillary investigations, and the absence of vascular events in the follow up, however, does not favour such a hypothesis. That topographical amnesia may be an early symptom of dementia is possible, but our patients had no signs of mental deterioration and none of them developed dementia in the subsequent years. The absence of a history of seizures, the characteristics of the attacks, and the tendency not to recur are elements against diagnosis of epilepsy. The lack of a psychiatric setting rules out a psychogenic illness.

Delirium or confusional states due to toxic or metabolic disorders are reasonably excluded by the clinical and laboratory findings.

The medical literature does not help, similar reported cases being rare and often not "pure". Ajmard *et al*⁸ described two patients with transient topographical disorientation accompanied by visual field defects and other cognitive dysfunctions. An ischaemic aetiology was suggested. Moretti *et al* reported a woman who experienced three episodes of transient topographical amnesia, assumed to be caused by a transient ischaemia of the right retrorolandic area. An EEG, CDE, and cerebral CT were normal.⁹ Laurent *et al*¹⁰ described five cases of selective transient spatial retrograde amnesia, but gave few details. Moretti *et al* considered the possibility of transient selective amnesias as part of transient global amnesia.⁹ Interestingly, one of our patients had had a transient global amnesia in the past. Transient topographical amnesia and transient global amnesia have many similarities. Both disorders occur in middle to old age and consist of a transient, brief, usually not recurrent cognitive dysfunction, with selective memory involvement. Both have a good outcome, characterised by a full clinical recovery and a possible mild memory impairment on neuropsychological tests.^{6 11 12} No associated lesions are usually found in either. Transient topographical amnesia seems to have a shorter duration than transient global amnesia and its amnesic defect is not global. Unlike transient global amnesia, patients with transient topographical amnesia can remember the attack in detail. Normal functioning of verbal memory during the attack or the hypothesis of a selective disorder of retrograde memory may explain this feature. Atypical or partial forms of transient global amnesia have occasionally been reported,^{10 13–15} sometimes with a definite aetiology.¹³ In 1983, Damasio *et al* described a transient retrograde amnesia confined to

verbal material.¹⁴ They hypothesised a temporary selective dysfunctioning of structures in the rostral temporal lobe of the dominant hemisphere. Transient topographical amnesia seems similar to this disorder, resembling its non-verbal counterpart. Transient topographical amnesia could be seen as a partial transient global amnesia, affecting non-verbal material, due to a transient dysfunction of the right hemispheric structures crucial for memory. Transient topographical amnesia does not seem to be rare as we found 10 cases in three years. A careful search within the areas of confusion and amnesia occurring in middle to old age will disclose similar episodes more often and help to clarify their nature.

- 1 Wilbrand H. Ein Fall von Seelenblindheit und Hemianopsie mit Sectionsbefund. *Dtsch Z Nervenheilkd* 1892;2:361–87.
- 2 De Renzi E, Faglioni P, Villa P. Topographical amnesia. *J Neurol Neurosurg Psychiatry* 1977;40:498–505.
- 3 De Renzi E. Disorders of spatial orientation. In: *Handbook of clinical neurology*. Vol 1(45): Frederiks JAM, ed. *Clinical Neuropsychology*, Amsterdam: Elsevier Science Publishers, 1985:405–22.
- 4 Habib M, Sirigu A. Pure topographical disorientation: a definition and anatomical basis. *Cortex* 1987;23:73–85.
- 5 Stracciari A. Transient topographical amnesia. *Ital J Neurol Sci* 1992;13:593–6.
- 6 Gallassi R, Stracciari A, Morreale A, Lorusso S, Rebutti GG, Lugaresi E. Transient global amnesia: neuropsychological findings after single and multiple attacks. *Eur Neurol* 1993;33:294–8.
- 7 Spinnler H, Tognoni G, eds. Standardizzazione e taratura Italiana di tests neuropsicologici. *Ital J Neurol Sci* 1987; suppl 8:5–120.
- 8 Ajmard G, Vighetto A, Confavreux C, Devic M. La desorientation spatiale. *Rev Neurol (Paris)* 1981;137: 97–111.
- 9 Moretti G, Caffarra P, Parma M. Transient topographical amnesia. *Ital J Neurol Sci* 1983;3:361.
- 10 Laurent B, Trillet M, Croisile B. Atypical semiology in transient global amnesia. In: Markowitsch HJ, ed. *Transient global amnesia and related disorders*. Stuttgart: Hogrefe and Huber Publishers, 1990:112–120.
- 11 Mazzucchi A, Moretti G, Caffarra P, Parma M. Neuropsychological functions in the follow-up of transient global amnesia. *Brain* 1980;103:161–78.
- 12 Hodges JR, Oxbury SM. Persistent memory impairment following transient global amnesia. *J Clin Exp Neuropsychol* 1990;12:904–20.
- 13 Hodges JR, Warlow CP. Syndromes of transient amnesia: toward a classification. A study of 153 cases. *J Neurol Neurosurg Psychiatry* 1990;53:834–43.
- 14 Damasio AR, Graff-Radford NR, Damasio H. Transient partial amnesia. *Arch Neurol* 1983;40:656–7.
- 15 Matias-Guiu J, Codina A. Transient global amnesia: criteria and classification. *Neurology* 1986;36:441–2.