

# Transient global amnesia and migraine

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*Formal neuropsychological evaluation in patient with transient global amnesia (TGA) associated with migraine was performed 6 days and 17 months after the episode. Verbal learning difficulties and verbal IQ deficit were observed in line with the neuropsychological profile seen in the follow-up of TGA. A common origin for the TGA-Migraine episode and isolated TGA is discussed.*

**Key-Words:** Memory — migraine — TGA

Transient global amnesia (TGA) is a well-defined clinical entity, characterized by abrupt onset, preserved immediate memory, anterograde amnesia, retrograde amnesia for some days to several years, difficulty in time and space orientation and relatively intact cortical functions. Although numerous cases have been reported, the pathogenetic mechanism is still unknown but is believed to be related to mono- or bilateral hippocampal dysfunction [7, 9].

Attention has repeatedly been drawn to TGAs that are associated with migraine attacks [6, 10, 5, 3, 10, 8]. Some of these cases, however, are included in general reports of TGA or migraine and none of them describe the neuropsychological features of the amnesic episode, which is the principal aim of the present report.

## Case report

A 59 year old right-handed woman with a primary school certificate had suffered since childhood from episodes of classic migraine, sometimes with

transient left homonymous hemianopia. The past history was otherwise unremarkable except for some episodes of allergic bronchial asthma. Recently she began to complain of common migraine attacks occurring one to 3 times a week, accompanied only by nausea and vomiting. At the end of one of these episodes, during which the patient had been taking Viamal tablets in a single dose (acetylsalicylic acid 0,375 g, acetyl-p-phenetidin, 0,168 g, caffeine 0,056 g), she had sudden total amnesia, which lasted approximately 24 hours and was followed by complete subjective recovery of normal memory faculties. During this time she was referred to our neurological emergency unit, where global amnesia with the typical TGA features [5, 9, 20] was diagnosed. Neurological examination revealed a tendency to internal rotation of the right hand with no other neurological signs. One hour after admission the amnesic episode ended. The rest of the physical examination was normal; blood pressure was 120/70 mmHg. The ECG showed signs of mild lateral hypoxia. EEG, Doppler ultrasound examination and chest x-ray were all within the normal range.

TABLE I. Memory tests scores 6 days and 17 months after TGA episode.

	6 days	17 months
<b>Wechsler Adult Intelligence Scale (WAIS)</b>		
Verbal IQ	93	91
Performance IQ	105	105
Total IQ	98	97
<b>Wechsler Memory Scale (WMS)</b>		
Information	5/6	5/6
Orientation	5/5	5/5
Mental Control	7/9	7/9
Logical Memory	5,5/23	3,5/23
Digit forward	5	5
Digit reversal	3	4
Paired associated learning	8/21	13,5/21
Visual reproduction	12/14	11/14
WMS Quotients	97	103
Non-verbal memory (6 forms)	5/6	6/6
Non-verbal memory recall (after 30')	4/6	6/6
Maze learning	criterion at the 5th. trial	criterion at the 2th. trial
Maze recall (after 30')	criterion at the 1th. trial	criterion at the 1th. trial
Serial Digit learning Test (form D8)	18/24	11/24
Verbal fluency (letter T for 5')	21/30	30/30

Skull x-ray revealed hyperostosis frontalis interna. Cervical spine x-ray showed a mild reduction of physiological lordosis with marginal osteophytosis and spondylarthrosis. A brain CT-scan (taken without contrast medium because of the above-mentioned allergy) revealed a mild atrophy. Routine blood chemistry, hematology and sedimentation rate were normal, except for a moderate increase in  $\beta$ -globulin levels. The neuropsychological testing performed 6 days and 17 months following the episode is summarized in Table I.

The results show a mild impairment on verbal memory (paired associative learning), logical memory and verbal fluency task. The immediate and delayed non-verbal memory was normal. No other abnormalities were found on visuo-perceptive tasks. Attention/concentration and information/orientation parameters were within normal range too. On retesting (17 months later) the memory quotient increased slightly, from 97 to 103, because of an improvement on paired associative subtests. There were no variations on verbal and non-verbal IQ, the former remaining lower.

**Discussion**

The present report confirms that TGA associated with migraine has all the features typically attri-

buted to this disorder in its general definition [5, 2, 9].

Formal neuropsychological testing performed 6 days and 17 months after the episode confirmed the presence of selective verbal learning difficulties and verbal IQ deficit opposite to that observed in deterioration processes, similar to the neuropsychological profile in the follow-up of TGA [7]. Noncognitive and mnestic difference can therefore be presumed between this migraine-TGA episode and the other TGA episodes, so that a nosological identity and a common pathogenetic origin cannot be excluded. Recently [7] 12 patients with TGA have been reported, seven of them suffering from headache during amnesic episode and five of the 12 were migraineous. The patients underwent a complete rCBF procedure by the  $Xe^{133}$  inhalation method and an abnormal flow pattern, consisting in an impaired vasomotor response between the middle and posterior cerebral artery in the parietal and temporal lobes, was found. This is similar to the pattern observed in patients with migraine and strongly supports the migraine hypothesis of TGA. Others authors (Ghidoni et al., personal communication 1987) reported similar conclusions on the basis of a neuropsychological interview on a sample of 77 patients recruited in a case-control procedure. Obviously further rCBF or PET studies are needed for full understanding of this "amnesic entity", not

only during the acute phase, but also during the follow-up, in order to provide more detailed pathophysiological support for the memory abnormalities.

### Sommario

*Una paziente che presentò un episodio di Amnesia Globale Transitoria (AGT) associata ad Emicrania venne sottoposta ad esame neuropsicologico standard 6 giorni e 17 mesi dopo l'episodio acuto. Furono riscontrati deficit nell'apprendimento verbale e nel Q.I. verbale, in accordo con il follow-up neuropsicologico dell'AGT. Viene quindi discussa la possibilità di una origine comune fra la AGT-Emicrania e la AGT Isolata*

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