

PSYCHOPATHOLOGY OF CONFABULATIONS IN HEAD INJURY

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SUMMARY

Confabulations observed during head injury recovery were of two types ; momentary and fantastic. Both occurred in relation to either the dysmnestic phase of early recovery or the post traumatic amnesic syndrome. In a follow-up of 174 head injured patients, all 12 patients evincing confabulations had suffered from acceleration injuries. In comparison to controls, they had a longer post traumatic amnesia period. Clinical and psychometric lateralization of the deficits pointed to left sided impairment. Their memory scores were not qualitatively or quantitatively different from those of equivalent controls. Patients differed from the controls in certain personality dimensions. Relative contribution of clinical deficits, memory impairment and personality dimensions to the occurrence of confabulations and its dynamic significance in maintaining the personal identity system of the patient are discussed.

Confabulations are morbid falcifications occurring in relation to disturbed memory. Confabulations of embarrassment (or momentary or provoked or compensatory confabulations) consist in ad hoc filling up of gaps in memory, Fantastic confabulations far exceed the needs of memory impairment and the contents are spontaneous in occurrence and fantastic in nature (Angelergues, 1969; Berlyne, 1972; Kopelman, 1987). Both types of confabulations are observed following head injury. They occur either in relation to the dysmnestic phase of early recovery or as a sequel to post traumatic amnesic syndrome (Sabhesan and Natarajan, 1988 a).

Many pathogenic factors have been described in relation to the emergence of confabulations. Among the neurological factors, dementing illnesses and frontal lobe pathology have been made out as significant (Luria, 1976; Kanpur and Coughlan, 1980). Disorders of memory, jumbled temporal sequencing of events, linguistic difficulties in symbolic expression etc., have been invoked as causative factors (Victor et al., 1971; Weinstein, 1971), and the importance of personality factors has been emphasized (Lewis, 1961; Sabhesan and Natarajan, 1988 b). Weinstein (1971) observed that confabulations as a pattern of language indicate a relationship among neurological, psychological and social factors, and that they are concerned with preserving the personal identity system in the context of cognitive disturbances.

The present study aims to understand if patients with confabulations during the recovery from head injury evinced unique features in relation to cerebral damage, quantitative or qualitative aspects of memory and in their personality make-up.

Materials and Subjects:

The study was conducted in the Trauma Ward, Department of Neurosurgery, Govt. Rajaji Hospital, Madurai. One hundred and seventyfour patients admitted between September 1984 and June 1985 were included. A team of neurosurgeon, psychiatrist, psychologist and social workers followed them up daily during their stay in the hospital and subsequently for a period of 18 months.

Confabulations were defined as falcifications of memory occurring in clear consciousness, in association with an organically derived amnesia (Berlyne, 1972). The following patients were excluded :

- i. Falcifications of memory occurring in clouded consciousness such as delirious states were excluded as per the definition.
- ii. Falcifications of memory in relation to organic delusional syndrome were excluded.
- iii. Patients in whom florid falcification of events resulted from the expansive mood changes in organic affective syndrome were excluded.
- iv. Patients in whom falcifications were attributable to disorders in perception such as anosognosia were excluded.

Defined by the above criteria, 12 patients were included as evincing confabulations. The following measures were used in the study :

- i. Severity of coma was defined by the duration of coma. It was classified as mild, moderate and severe if the duration was less than one hour, one to six hours, and more than six hours respectively to reach a Glasgow Coma Scale score of eight (Teasdale and Jennett, 1974).
- ii. Post traumatic amnesia (PTA) was defined as the lapse of time between the injury and return of continuous memory (Jennett, 1977).
- iii. Lateralization of neuropsychological impairment was done using scores in dissimilar pair verbal retention sub-test of P.G.I. Memory scale and the configurational score in Bender-Gestalt test as measures of left and right hemispheric functions respectively (Benton, 1968 ; Heilman et al., 1986 ; Sabhesan et al., 1990). The scores in both tests were converted into 'z' scores, with the help of age and education controlled norms. Positive score in configurational scores indicated a poor performance and positive scores in verbal test related to a better performance. Hence, signs in verbal retention test were reversed and a positive 'z' score pointed to poor performance.
- iv. Memory was tested using P.G.I. Memory scale (Pershad, 1977).
- v. Personality dimensions were tested using Eysenck Personality Questionnaire (Eysenck and Eysenck, 1975).

All psychometric tests were done after recovery from PTA period, at the earliest. Controls were chosen among the rest of the head injured patients. All patients with confabulations had suffered from acceleration injuries. Hence, for comparison of clinical indices, rest of the patients in the acceleration injury group were taken as controls (N=103). As the performance of psychological tests depended upon many variables, for each patient in the confabulated group, one patient was chosen from among the rest, on the basis of comparability in age, sex, educational attainments, nature of injury, and severity of unconsciousness. The parallel group of 12 patients constituted the control for the comparison of memory tests, personality dimensions, and psychometric lateralization of

functional disorganization.

Results :

Confabulations were present only in patients with acceleration injuries. None of the 59 patients with contact loading evinced confabulations and the difference was statistically significant (Fisher's $p=.006$).

Confabulations were first made out when the patients emerged out of coma and disappearance was phenomenologically related to regaining of insight. In our patients, confabulations were associated with anterograde amnesia of post traumatic amnesic syndrome and in the rest, they were related to the PTA period. Among the latter, confabulations always disappeared at the end of PTA period.

Contents of confabulations had a personal reference frequently and sometimes consisted to temporally displaced events. One patient evinced reduplicative paramnesia, identifying the location, hospital and personnel with a similar admission one year previously. In another patient, the contents centered about memory-islands in the PTA period. Fantastic confabulations were observed in three patients. Their nature, contents, and relation to pre trauma personality have already been discussed (Sabhesan and Natrajan, 1988 b). In two patients, the confabulations persisted in the form of paramnesic delusions which differed from other organic delusions in their occurrence against the context of amnesia (Sabhesan et al., 1988). All patients had suffered from momentary confabulations. None had insight into the nature of confabulations. On being pointed to about the falcity of the talk, they felt embarrassed for a while and pursued with their confabulations alittle later.

Among the confabulated patients, three were below 30 years of age, three between 30 and 45 years, and six above 45 years. Seven of them were alcohol dependents prior to the trauma, compared to 32 of the controls (N=103). Two of them had suffered from early seizures and one had sustained a fracture of skull. Among the 10 patients in whom Glasgow Coma Scale was applicable, one had sustained mild injury, six suffered from moderate injuries, and three severe injuries. Compared to the controls, age, history of

Table 1. Comparison of memory scores of confabulated patients and those of controls

	Confabulated patients (N=8)		Control patients (N=8)		t
	Mean	S.D.	Mean	S.D.	
1 Remote memory	3.63	0.52	3.63	1.19	--
2 Recent memory	4.13	0.89	3.75	1.39	0.86
3 Mental balance	5.25	2.87	5.50	3.30	0.16
4 Attention-concentration	6.38	2.93	5.63	2.98	0.51
5 Delayed recall	6.13	3.04	7.50	2.62	0.79
6 Immediate recal	9.13	4.24	6.63	4.34	1.17
7 Retention of similar pairs	3.63	1.60	3.38	1.69	0.31
8. Retention of dissimilar pairs	5.13	4.12	8.25	3.11	1.17
9. Visual retention	4.88	4.61	4.25	5.77	0.24
10. Visual recognition	3.88	3.27	5.50	3.39	0.98
TOTAL SCORE	53.63	20.99	54.00	24.54	0.03

P.G.I. Memory Scale was used for comparisons. None of the value was statistically significant. alcohol dependence and severity of unconsciousness were not significantly more among these patients. Six of them had suffered from neurological deficits and compared to 13 among the controls, the early deficits were more common among the confabulated patients ($\chi^2=8.35$; d.f.=1; $p < .01$). All the deficits in the confabulated group were related to left hemispheric damage.

Excluding patients with amnesic syndrome, PTA of the rest of the patients ranged from 5 to 42 days, with a median of 24 days. Their mean PTA (23.5 days) was significantly longer than that of the controls ($t=2.68$; d.f.=109; $p < .01$). Leaving out those with amnesic syndromes and those with paramnesic delusions, duration of occurrence of confabulations ranged from five to 25 days, with a median of 10.5 days. Duration of confabulations correlated better with the length of PTA (Spearman's $r=.94$; $N=6$; $p < .02$), but, not with the duration of coma (Spearman's $r=.71$; $N=6$; N.S.).

Among the confabulated patients, neurological deficits were seen only in relation to left hemispheric damage. Excluding those with amnesic syndrome, psychometric performance was used in the lateralization of functional impairment. Comparison with the control group (chosen on the basis of comparability in age, sex, education, nature of injury and severity of coma) showed that performance in Dissimilar Pair Verbal

Retention test ($U=41.5$; $N=8, 8$; N.S.) and configurational scores in Bender Gestalt test ($U=24$; $N=8, 8$; N.S.) were not significantly different. Intragroup comparisons with Wilcoxon Signed Rank test for correlated samples showed that in the confabulated group, left hemisphere dysfunction was more than the right hemisphere dysfunction ($T=1$; $N=8$; $p < .02$), but, such differences was not observed among the control group patients ($T=13$; $N=8$; N.S.).

Excluding the patients with amnesic syndrome, sub-test scores in P.G.I. Memory scale were compared against those of controls. Neither the total score nor the sub-test scores were significantly different between the groups (Table 1).

Role of the personality factors in fantastic confabulations has been discussed. Among others, no specific type of personality was made out clinically. Personality dimensions measured with EPQ were compared against those of controls (except one in whom early assessment was not possible). Confabulated patients scored significantly more in Extraversion ($t=2.11$; d.f.=20; $p < .05$), and Psychoticism ($t=2.57$; d.f.=20; $p < .02$), but not in Neuroticism ($t=1.61$; d.f.=20; N.S.) and Lie score ($t=1.94$; d.f.=20; N.S.).

Discussion

Results of the study brought out certain areas of disturbances among the confabulated patients:

i. Confabulations occurred in the background of organic amnesia of PTA period or of amnesic syndrome. Among patients with amnesic syndrome, confabulations persisted in the context of axial amnesia even after recovery of other cognitive functions. But, no qualitative or quantitative differences in memory functions could be made out.

ii. Neurologically, acceleration injury, severity of injury as made out by PTA length, temporal correlation with PTA and presence of left hemispheric deficits were significantly related.

iii. Neurological deficits and neuropsychological disorganization pointed to a predominantly left hemisphere disturbance, in addition to the diffuse disturbances due to acceleration injuries.

iv. Personality dimensions of confabulated patients were different.

Berlyne (1972) contended that confabulations occurred against the background of defective recent memory, additional factors also played a role. In the present study, though confabulations occurred against amnesia, memory performance of confabulated patients was not significantly different. Weinstein (1971) observed 'Amnesia is so commonly associated with confabulations, not because confabulation is a way of filling the memory gap, or compensatory for memory loss, an explanation found in the textbooks, but because they are comparable phenomenon'. Memory deficit as made out in the present study was a necessary condition, but not sufficient to explain all phenomena related to the occurrence of confabulations.

Global cognitive impairment was a contributory factor. Confabulations occurred only in relation to acceleration injuries and increasing age with its attendant loss of 'cerebral reserve' predisposed the individual to its occurrence (Levin *et al.*, 1982). Severity of injury, denoted by the length of PTA, enhanced the occurrence of confabulations, which disappeared when the global impairment recovered at the end of PTA period. Temporal correlation of recovery of confabulations and of PTA pointed to the commonality of their recovery processes. Weinstein (1971) observed that in the presence of cognitive impairment, the

symbolic patterns of language and communication became highly condensed, more rigid, and less amenable to reinforcement from members of social group. Confabulations could thus persist despite refusal by others. Non-occurrence of confabulations in the contact injury group, who were characterized by focal rather than global disturbances, indicated that focal injuries in the absence of global cognitive impairment were not contributory.

Clinical and psychometric evidences pointed to the lateralization of disturbances to the left hemisphere. Lack of temporal datum lines, difficulty in logical sequencing of events, inability to correct even when pointed out, etc., simulated the features of right hemisphere mode of cognition (Glain, 1974). In the presence of left hemisphere disturbances, cognitive functions were dominated by 'right hemisphere mode', as made in the clinical profile of the confabulations.

Personality dimensions constituted important facets of the neuropsychological make-up of the individual which decided the organization of preconceived environmental events into socially compatible units of anticipated behaviour. Clinical correlations between fantastic confabulations and pretrauma personality traits pointed to the significance of the latter in the aetio genesis (Sabhesan and Natrajan, 1988 b). Psychometric differences in personality dimensions indicated variations in the personality make-up of the confabulated patients. Sabhesan *et al.* (1988) described previously the significance of pretrauma events to the contents of paramnesic delusion. Continued persistence of delusional confabulations even after recovery of cognitive functions had been described previously (Jaspers, 1963; Levin *et al.*, 1982).

Weinstein (1971) contended that confabulation might be viewed as disorders of experiential symbolic mode, the predominant aim which was to maintain the continuity of the personal identity system, in the presence of disordered cognition. The essence of confabulations was the social patterning of language to suit the patient's need to maintain the continuity of personal identity. The paramnesic phenomena (both duplications and

delusions), incorporation of memory islands in confabulations etc. pointed to the role of distorted personal identity system in contributing to the contents of confabulations.

Confabulations might be viewed as occurring in the context of memory impairments and global cognitive disturbances, both of which distorted the personal identity system. Right hemisphere mode of cognition facilitated their occurrence. Personality factors and the need to preserve the personal identity in the context of cognition explained the contents and the form of confabulations.

Acknowledgement :

This study was a part of the ICMR financed project on 'Adjustmental problems of head injured patients', conducted in the Department of Neurosurgery, Govt. Rajaji Hospital, Madurai. The authors thank the ICMR and the Dean, Madurai Medical College, for their kind permission to publish the work.

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