

ALCOHOL ABUSE AND RECOVERY AFTER HEAD INJURY

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SUMMARY

The clinical observation of a turbulent recovery phase in the alcohol abusers among the head injured patients was studied. Various parameters of severity such as duration of hospital stay, length of coma, post-traumatic amnesia, focal neurological deficits, presence of fracture and the behaviour problems during recovery were studied. Behaviour problems and the length of hospital stay were found to be more in the abuser group than in the control population. It is concluded that the behaviour problems contribute to the disturbed recovery process in these patients.

Introduction

Recent statistics indicate the increasing incidence of head injuries with each year, major share of it being due to road traffic accidents. The cause of such injuries may vary nationally and even regionally. About traffic accidents, Tandon (1984) observes "In one decade there has been 180% increase in these accidents and far worse 250% increase in the number injured and 420% increase in fatality. It is generally recognized that head injury is responsible for 70% of these deaths". Studies among our patients indicate that head injury in our patients result from road traffic accidents or in group or individual clashes and that a few sustain head injury either in falls or when fast moving objects hit against the head. Taking these three as the major causes of head injuries we observed that significant proportion of patients in all categories had consumed alcohol and the physiological and/or psychological sequelae of alcohol abuse could have contributed as a causative factor. Moreover, the intoxication as such and the withdrawal symptoms which unfolded subsequently modified the course of the recovery, occasionally assuming even more significance as a management problem than the head injury itself. During follow-up the head injury was found at times

to bring about a change in their pattern of abuse and tolerance to alcohol.

Material and Methods

The patients included in our study had been admitted in the trauma ward in the Dept. of Neurosurgery. The patients included were those in whom the primary injury was to the head. Poly-traumatic patients who required to be treated by other specialities were not included. Only adult (aged 20 years and above) surviving patients admitted after the 15th September 1984 upto 28th February 1985 were included. The patients were followed up daily by a psychiatrist in conjunction with the neurosurgery team taking overall care of the patient. There were 92 patients including 13 women patients and as is found with the general population, men out-number women in alcohol abuse.

The inclusion as an abuser was done according to DSM III criteria. In spite of explanations, the informants and at times patients were reluctant to give details of the alcohol abuse, particularly at the time of the accident, because of medico-legal and compensation implications. When the details were not adequate or conflicting, the information was classified as not available

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and the patient even if under doubt, not included as an abuser. Five males were thus excluded. Out of the rest, forty among the 74 males and 1 of 13 women were alcohol abusers. Twenty among the 41 abusers did not give history suggestive of withdrawal symptoms or tolerance in the past. The presence of withdrawal symptoms was not inferred on the basis of confusional, hallucinatory or paranoid symptoms observed during the post-traumatic period.

Alcohol abusers and non-abusers did not show much variation in the age-wise distribution. Twelve abusers were above 35 years. Younger group predominates in both the populations and female representation is minimal in abuser group. The common drinks used were arrack, toddy and occasionally whisky, brandy and rum. This goes in line with the wide-spread prevalence and economic considerations of alcohol use among the natives. Duration of alcohol abuse varied from a minimum of 1 year to a maximum of more than 10 years. There were seven abusers with a drinking span beyond 15 years. The amount of alcohol consumed as given by the patients themselves varied between 200 ml. to 500 ml. of arrack/day or 1½ to 3 litres of toddy or upto 750 ml. of whisky/day.

Almost all in the dependent group had experienced withdrawal tremors. Insomnia, delirium tremens and black-outs had been the other symptoms. One reported withdrawal fits. The medical complications given or made out on clinical examinations were minimal. One patient reported haematemesis and peripheral neuropathic sensory loss was made out in about one third of the patients. Twenty-nine patients were drunk at the time of head injury, but it was not possible to infer if they were 'intoxicated' at the time of injury. Modality of sustaining the injury was not different in both the groups with comparable percentage of road accidents, clashes and falls contributing

their share to the head injury in both the groups.

Table 1
Patient and Injury Characteristics

	Abusers N=41	Non-abusers N=51	Statistical significance
Age (in years)			
20-25	11	19	
26-35	18	18	
36-45	5	7	Not significant
46 and +	7	7	
Sex:			
Male	40	39	
Female	1	12	Significant at 1% level.
Cause of Injury:			
Road traffic accident	21	27	
Clashes	13	14	Not significant
Falls	7	10	
Nature of Injury:			
Open	17	25	
Closed	24	26	Not significant

Results

The severity of the head injury was compared in both the groups using different parameters of outcome. Measuring severity on the basis of outcome appears legitimate, "because this can take account of the net effects of the initial impact and of subsequent complications. This is certainly what matters to the patient and his family - not how hard he was hit but what the consequences were" (Jennet 1976). The following measures were used for assessing the severity.

I. Total Duration of Hospital Stay:

Our criteria include those who had suffered only a head injury. The patients are admitted in the emergency ward and then followed up in the trauma ward. Discharge

is only after a reasonable degree of improvement. Long-term follow-up and rehabilitation are continued on an out-patient basis. Same criteria are applied for admission and discharge of all patients, and they are seen by the same neurosurgical team. Hence the length of stay in the hospital is a good measure of the severity of the head injury. Seven of these patients had either absconded or had voluntarily sought to be discharged against medical advice. They were excluded. Among the rest, alcoholics (N=37) have stayed in the hospital for 14.7 days and the non-alcoholics (N=48) for 12 days on the average. The increase in the length of hospital stay in the former group is statistically significant.

II. Duration of Coma:

The depth and duration of altered consciousness in head injury are very good indicators of the underlying brain injury. As a readily available and comparable measure, Glasgow Coma Scale was used in all patients. Coma which is defined as the state in which patients were unable to open their eyes, verbalize coherently or were unable to follow simple commands is by definition any score of 8 or less. Taking the cut-off score at 8, patients were classified as mild, moderate or severe according to whether they recovered beyond GCS 8 at less than 1 hour, 1 to 6 hours and beyond 6 hours. The abusers and non-alcoholics were compared on the basis of recovery from coma. Fourteen abusers compared to 24 of the other group had sustained mild injuries and 16 of the former and 11 of the latter had sustained severe injuries. Though abusers showed a higher degree of severe injuries, the results were not statistically significant.

III. Post-traumatic Amnesia:

This is widely accepted as a good indicator of the diffuse brain damage suffered at the time of head injury and as a reliable

predictor of late outcome (Brooks 1976). It is defined as the time interval between the injury and regaining of continuous day-to-day memory. PTA was measured by daily assessment of memory and the memory loss was further ascertained during the follow-up before the definite duration was arrived at. Patients who had complications such as delirium tremens, amnesic syndrome etc., and those who went home before total recovery from PTA were excluded. Definite measurement of PTA was possible with 24 of the abusers and 29 of the other group. PTA does not show significant difference between the groups.

IV. Focal neurological signs:

Focal damage to the functional or anatomical integrity of the brain was taken as variable indicating the severity of the head injury. Neurological damage occurring at the time of primary injury, post-traumatic epilepsy, intra-cranial hematoma or those associated with contusion were all taken as indicative of the focal injury. Cranial nerve injuries have not been included as the damage had occurred in the extra-cranial course. Ten patients in each group had suffered such deficits. Though alcohol abusers do show an increased incidence of focal damage, the difference is not found to be statistically significant.

V. Skull Fracture:

A fracture is evidence of a certain degree of violence to the skull, and so by implication to the brain. However, it is not uncommon to find fracture in patients who have never had impairment of consciousness, nor is it unusual to have a serious damage without a fracture (Jennet 1976). In closed head injuries, it indicates the deformity it undergoes under the stress of the impact and in open injuries, is often indicative of the extent of force applied locally. All fractures may not be visible on routine

views of skill. Apart from those evident on clinical or operative findings, those inferred on the basis of rhinorrhea, otorrhea orbital hematomas etc., were also included. All the different types of fracture have been included in the single category. Twenty-four (58.54%) abusers and 24 (47.06%) of the other group had suffered a fracture. But the difference between the groups is not statistically significant.

IV. Psychiatric sequelae:

All these measures described so far, have been explained by previous studies to have a discernible neuro-anatomical basis. Yet another aspect of recovery is the presence and typology of various behaviour complications. The clinically evident experience of a turbulent course of recovery in an abuser was studied in detail. The following types of psychiatric morbidity were excluded.

1. Those resultant of primary consequences of injury to the brain, leading to disturbance of perception, personality etc.,
2. Those emotional consequences of the psychological hurt, privation of physiological function and their personal and social sequelae.
3. The impairment secondary to the mental confusion of the post-traumatic period is characterised by disorientation, periods of restlessness and even aggressive tendencies. This form of traumatic delirium is a common event during recovery and is marked as significant only if the patient is unmanageable without tranquilizers. The time course of its occurrence and its clearance with return of full alertness indicate clearly its nature though at times the delirious picture in an alcoholic can as well be a withdrawal phenomenon, modified as it is by the vagaries of brain damage. When there was difficulty in differentiation, the delirium was taken as traumatic and is

marked as significant only if the patient is unmanageable. Hallucinatory disorders were disturbing in 11 of the abusers, accompanied in some of them by persecutory delusions. The hallucinations were both visual and auditory and occurred after recovery of alertness. The voices were conversing, advising and at times even commanding. The visions consisted of human figures, more often threatening to the patient. The typical case is that of a palmyra-tapper who fell down from the tree and sustained a severe closed head injury. He recovered normal consciousness and shortly thereafter began to hear voices of his dead brother and was able to see him. The voices told him that he had been murdered (though he died of an illness) and that a similar fate awaited the patient also in the hands of the same persecutors.

Delusional symptoms complicated the recovery in 9 out of 41 abusers and 1 out of 51 non-abusers. Delusions were at times transitory, occurring mostly before recovery from PTA, some of them temporally related to the hallucinations. They were often responsive to phenothiazines given for a short period. The other type which occurred towards the end of PTA were held with more conviction and were sometimes understandable from the premorbid personality and the background of the patient. Delusions of persecution predominated particularly, in the early phase. Grandiose delusions, delusions of marital infidelity and referential delusions were the other types. In a few cases the delusions were part of the ongoing psychosis. The only patient in the control group who suffered from delusions had a family history of schizophrenia and himself underwent a brief catatonia followed by a florid paranoid syndrome.

The category 'others' includes cases of delirium which required drug

management, affective syndromes, amnesic syndromes, fugue and schizophreniform psychosis. It is noteworthy that all the cases of axial amnesia totalling 3 had occurred among alcoholics and two of three cases of secondary mania in the non-alcoholic group. There were 15 cases among the abusers, the bulk of them suffering from an aggressive and at times a violent post-traumatic delirium. In the other group, there were only four cases, two of them with affective symptoms; one a case of schizophreniform psychosis and the other post-traumatic delirium.

It is obvious that significant and disturbing psychiatric sequelae are more common among alcohol abusers (24/41) compared to non-abusers (5/51). The difference is statistically significant.

Discussion

The role of alcohol in causing accidents is well-known. Flicker fusion tests for visual acuity, reaction-time assessments for the quickness with which decisions could be made and tests of muscle co-ordination have indicated that the subnormal physiological functioning have been contributory to the accident proneness of these individuals (Forney and Harger 1971). Equally the effects on psyche invoking disinhibited behaviour has well been instrumental in most cases of individual and group clashes. Including the alcohol intake by the other persons involved in the injury, such as the driver in a pedestrian accident or the assaulting group in the clashes, the contribution by the alcohol to the genesis of such head injuries is evident.

Alcohol abuse contributes to a disturbed recovery also. The various parameters have been compared in the study. The deeper physiological disturbances characterised by the longevity of the coma or the diffuse damage to the cortical functions denoted

by the duration of the post-traumatic coma are more in the abuser group; but not to a statistically significant level. The severity of the local damage is measured by the extent of focal neurological deficit and the prevalence of skull fractures. Again, though the abusers have a higher degree of local damage, the difference is not statistically more. But, the hospital stay is prolonged and the behaviour problems are significantly more in the abusers. The prolongation of the hospital stay is attributable to the increased incidence of such disorders. The study confirms that, with similar degrees of severity, the course of recovery is more turbulent among the abusers.

Conclusion

It is probable that the metabolic consequences of alcohol abuse contribute to the genesis of such complications and the behaviour problems could have been due to summation of withdrawal features over the disturbed cognition of brain recovering after trauma. The role of constitutional vulnerability and of the premorbid personality is difficult to delineate in the genesis of behaviour disorders. Apart from the clinical significance, the strain on the hospital resources is important because alcohol injection reportedly occurs between 49% to 60% in head injured patients in different countries, and our own statistics put the problem at comparable levels.

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Table 2
Comparison of Severity Criteria in Alcohol Abusers and the controls

	Hospital stay		G.C.S Severity				P.T.A			Focal Neurological Deficits		Fracture of skull		Behaviour changes							
	Mean	(S.D)	N	Mild	Moderate	Severe	N	Below 1 Hr.	1-24 Hours	1-7 Days	1 Week	N	Present	Absent	N	Present	Absent	N	Present	Absent	N
Abusers	14.7	(7.27)	37	14	11	16	41	6	2	4	12	24	10	31	41	24	17	41	24	17	41
Non-abusers	12.0	(2.35)	48	24	16	11	51	8	6	4	11	29	10	41	51	24	27	51	5	46	51
Statistical Significance	at 5% level						N.S			N.S				N.S		N.S		at 1%			

There were no significant differences on G.C.S. severity, P.T.A. Focal neurological deficits and fracture of skull.