ALCOHOLISM AND HOMICIDE WITH RESPECT TO THE CLASSIFICATION SYSTEMS OF LESCH AND CLONINGER

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Abstract — Aims: Worldwide criminal statistics show a disproportionately high incidence of violent offences committed under the influence of alcohol. A psychopathological subtyping of alcohol dependence in offenders who committed homicide has mainly been related to impulsive and dissocial personalities up to now. Methods: In an investigation on 48 alcohol-dependent offenders who committed homicide, a subtyping according to the multidimensional classification systems of Lesch and Cloninger has now been conducted for the first time. Results: In Lesch’s classification, there was a high incidence of homicides committed by type II and type III subjects with the comorbidity anxiety and cyclothymia. While type III offenders were more often repeat offenders, there was a remarkably high rate of first offenders among type II subjects (Chi-squared test; \( \chi^2 = 30.0, df = 3, P < 0.001 \)). With respect to Lesch’s typology, the blood alcohol concentrations did differ significantly in the group of offenders (Kruskal–Wallis; \( \chi^2 = 18.3, df = 3, P < 0.001 \)), whereas the blood alcohol concentration of type II offenders at the time of offence was significantly lower than in type III offenders (Mann–Whitney-U, \( Z = -3.47, P = 0.001 \)). Regarding to the Cloninger’s typology, no significant differences in the aforementioned parameters could be found. Discussion: An excessive noradrenergic reaction of anxiety offenders with initial withdrawal is discussed as a possible explanatory model.

INTRODUCTION

An alcohol offence is present in up to 60% of violent crimes (Quensel, 1984). The offences most often connected with alcoholism are homicide, sexual offences, and arson (Hore, 1988). In northern Sweden, one-third of all homicides were committed by alcoholics or drug addicts (Lindqvist, 1991). Similarly high rates have been described in Denmark (Gottlieb et al., 1988) and the USA (Mayfield, 1976).

In a cross-cultural comparison of alcohol and homicide in 14 European countries, total alcohol sales were positively and statistically significantly associated with homicide rates, specifically in the northern European countries with a drinking culture that is characterized by heavy drinking episodes (Rossoow, 2001). In Russia, rates of alcohol consumption and homicide are among the highest in the world. Models employed to estimate the impact of alcohol consumption on regional homicides revealed a significant relationship between alcohol consumption and homicide.

In Germany, the proportion of alcohol offences resulting in death in the years 1990 and 1993 was 49.2 and 39.5%, for manslaughter and assisted suicide or bodily injury with a lethal outcome of 45.3 and 37.9% (Soyka, 1995). In view of the general effect of alcohol on aggressive potential, numerous investigations have demonstrated that the potential for physical aggression is intensified at a blood alcohol concentration of 0.6–1.3 per ml and in particular here interacts with psychological and psychosocial influencing factors (Gustafson, 1991; Sayette et al., 1993).

In the scientific evaluation of violent crimes related to chronic alcohol consumption, apart from situative influencing variables, disease-associated behavioural anomalies and personality characteristics are being given increasing attention.

In the group of alcohol-dependent subjects, two subgroups are thus considered to be particularly violent: impulsive and dissocial alcoholics.

The main violent offences arising in these groups are criminal acts resulting in death, which come to light in criminal law particularly through a considerable loss of control functions. Here, a truly fatal interaction between behavioural anomalies on the one hand and an alcohol-induced threshold reduction on the other is seen to potentiate the risk. Beside psychopathological criteria, a further subtyping within this high-risk group is increasingly also based on the findings of biochemical investigations. Both in impulsive and in alcohol offenders with an antisocial personality structure, cerebrospinal fluid has been found to contain lower concentrations of 5-HIAA and higher concentrations of testosterone (Virkkunen et al., 1994). In extremely impulsive, violent alcoholics, associations of the genotype of the enzyme tryptophan hydroxylase with elevated 5-HIAA concentrations and elevated basal cortisol levels have been described (Branchey et al., 1981).

A variety of multivariate, multidimensional typologies of alcoholism have been proposed, which also include specific parameters with forensic relevance, such as familial criminal history, or negative personality characteristics, such as aggression and antisocial behaviour (Cloninger et al., 1981; Morey and Blashfield, 1981; Skinner, 1982; Cloninger et al., 1988; Lesch and Walter, 1996). Cloninger et al. (1981) identified two separate forms of alcoholism based on differences in alcohol-related symptoms, patterns of transmission and personality characteristics.

Type 1 is characterized by either mild or severe alcohol abuse. No criminality was found in the fathers. Type 2 is characterized as being associated with familial alcoholism, having severe related alcohol problems and violence (Cloninger et al., 1981). In heritability studies of type 1/2 in twins (van den Bree et al., 1998), type 2 was found to have a higher heritability than type 1.

The multidimensional classification system by Lesch (subtypes I–IV) also includes genetic, developmental biological,
sociobiographic, and personality influencing factors (see also part methods below). The advantage of this multi-aetiopathogenetic approach could be that it not only facilitates improved primary diagnostics, but also offers the benefit of an estimation of the individual criminal prognosis.

Particularly in the adequate evaluation of violent acts, and specifically homicides in the group of alcohol dependents, there is an urgent need for the application of such classification systems. Apart from the correct, comprehensive diagnostic classification, which is decisive for evaluating the question of criminal capacity in initial expert reports, the use of these classification systems is also of major importance for the further prognosis. This prognosis must be oriented exclusively on minimizing the dangerousness of the individual alcohol-dependent offender by maximizing the efficiency of treatment in special hospitals on the basis of therapeutic methods individually adjusted to their deficits.

Therefore, we concentrated on a well-defined sample of alcohol-dependent offenders found guilty of homicide. The purpose of this study was to evaluate the association between the classification systems of Lesch and Cloninger, and offence-specific parameters such as blood alcohol concentration and criminal history.

Subjects and methods

The total collective of criminal psychiatric expert reports on the question of criminal capacity (full, reduced, no) comprised a total number of \( n = 536 \) cases at the special psychiatric hospital of Erlangen in the years 1985–2005. The number of homicides was \( n = 134 \). On the basis of the criteria of ICD-10 and DSM-IV, and the objectifiable organic parameters documented within the expert reports (e.g. laboratory findings such as GOT, GPT, gamma-GT, CDT, MCV, or the results of imaging procedures such as cCT or MRT), all subjects with the primary diagnosis of a manifest alcohol-related disorder were determined within the group of homicides by two independent psychiatric specialists. All subjects without definite proof of a manifest alcohol dependence according to ICD-10 or DSM-IV were excluded, especially also subjects in whom the homicide was exclusively related to alcohol abuse or intoxication. Also excluded were subjects with a secondary dependence accompanying a different primary psychiatric diagnosis (e.g. schizophrenia) or subjects with proven polytoxicomania.

The number of cases of alcohol-dependent homicide offenders thus determined under consideration of the inclusion and exclusion criteria was \( n = 50 \). Apart from sex and age, the sociodemographic data in this group included details of school education and age at onset of disease (Table 1).

On the basis of the expert assessments, the substance-specific, psychopathological evaluations of the expert report for reclassification according to the Lesch’s (types I–IV) and Cloninger’s (types I–II) typology were made by two independent specialists in psychiatry and psychotherapy. Allocations to types I–IV by the Lesch classification were done using a computer program according to the decision tree (Lesch and Walter, 1996). Lesch’s type I alcoholics were defined as patients with early withdrawal, alcoholic psychosis, and convulsions. While type II represented alcohol-dependent patients with anxiety- and conflict-drinking behaviour, type III was defined as a group of alcohol-dependent patients with cyclothymic depression. Within this type, alcohol is used as self-medication. In type IV patients, certain disturbances were already clear before they embarked on a career of drinking. These patients more often have evidence of prenatal cerebral damage (e.g. prenatal ischaemic brain damage, damage to cerebral white matter).

The Cloninger classification (Cloninger et al., 1988) distinguishes two types. Type 1 includes alcoholism for both sexes, first onset after the age of 25, typical symptoms such as loss of control, withdrawal symptoms, and feelings of guilt, medical sequelae, and unremarkable social behaviour. Type 2 is limited to men, has strong genetic components, early onset, antisocial behaviour, and previous attempts to give up alcohol.

With respect to these both classification systems the different evaluation of the study head in two cases led to exclusion of the respective subjects from the investigation.

In the subtyped subjects, the following further specific variables were then determined from the available dataset:

- The subject’s status regarding criminal capacity, as determined by the primary expert (no criminal capacity, reduced criminal capacity according, full criminal capacity).
- The blood alcohol concentration at the time the offence was committed, as determined by forensic medicine (direct determination by police investigation, or calculation backwards as part of forensic medical evaluation using ADH, GC-method).
- The frequency of the offence: first offenders, repeat offenders.

The age- and sex-matched control group (\( n = 48 \)) was recruited from a large population of 509 patients with alcohol disorders, who had not been convicted of criminal offences, who were classified according to Lesch’s and Cloninger’s typology.

All statistical tests were two-sided with a significance level of \( \alpha = 0.05 \).

RESULTS

Forty (83.3%) offenders were male, and 8 female. Mean age was 42.7 (SD 11.4) years with a mean age at onset of alcoholism of 28.5 (SD 9.1) years (Table 1).

Nineteen offenders (39.6%) were first offenders, and 29 (60.4%) repeat offenders.

No significant differences in the distribution of Lesch’s typology (\( \chi^2 = 1.3, df = 3, P = 0.74 \)) and Cloninger’s typology (\( \chi^2 = 0.8, df = 1, P = 0.37 \)) could be observed between criminal offenders who had committed homicide and a sex- and age-matched group of alcohol-dependent in-patients.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|}
\hline
Lesch’s typology & Cloninger’s typology & \multicolumn{2}{l|}{Age at onset of alcoholism (mean, SD)} \\
\hline
I & 5 (8/0) & 35.8 (14.0) & 20.9 (2.9) \\
II & 16 (11/5) & 46.4 (9.7) & 29.4 (9.4) \\
III & 18 (15/3) & 43.2 (10.2) & 31.9 (9.0) \\
IV & 6 (6/0) & 40.7 (13.2) & 26.0 (9.3) \\
\hline
Cloninger’s typology & & & \\
\hline
1 & 16 (8/8) & 40.5 (10.2) & 28.8 (7.7) \\
2 & 32 (32/0) & 43.8 (11.9) & 28.3 (9.9) \\
\hline
\end{tabular}
\caption{Sociodemographic data of the included 48 alcohol-dependent offenders found guilty of homicide}
\end{table}
With respect to Lesch’s typology, the blood alcohol concentrations did differ significantly in the group of offenders (Kruskal–Wallis, $\chi^2 = 18.3, df = 3, P < 0.001$), whereas the blood alcohol concentration of type II offenders at the time of offence was significantly lower than in type III offenders (Mann–Whitney-U, $Z = -3.47; P = 0.001$) (see Fig. 1). No differences could be observed for Cloninger’s typology (Mann–Whitney-U, $Z = -0.01; P = 0.99$).

Moreover, the distribution of first and repeat offenders was significantly associated with the Lesch’s typology (Chi-squared test; $\chi^2 = 30.0, df = 3, P < 0.001$). Type III offenders were more often repeat offenders, and there was a remarkably high rate of first offenders among type II subjects (see Fig. 2). Regarding the two Cloninger types, the distribution of first and repeat offenders did not differ statistically ($\chi^2 = 0.7, df = 1, P = 0.40$).

**DISCUSSION**

The high statistical association between alcohol and violent offences has been demonstrated many times in the literature (Benjamin and Fränkel, 1930; Lindqvist, 1991; Pridemore, 2002). The fact that the criminality rate drops markedly after longer phases of desired or undesired abstinence underscores the forensic importance of the problem posed by alcohol. As early as the beginning of the 1930s, ‘offences committed while drunk’ were distinguished from ‘offences committed by chronic drinkers’ (Benjamin and Fränkel, 1930). Up to now, the psychiatric comorbidity in alcoholic homicide offenders has been considered to be based mainly on the interaction of a deviant personality with a dissocial, impulsive pattern and chronic alcohol dependency (Ojesjo and Hagnell, 1980; Quensel, 1984; Lindqvist, 1991).

Within the population we investigated, similar comorbidity patterns became apparent on the basis of the subtyped groups, but also patterns that go beyond this. Alcoholic offenders with an antisocial (Cloninger type 2) and aggressive behaviour (Lesch types II, III) were thus predominant. With respect to the classification system of Cloninger the need to use a differentiated vulnerability model in alcohol-dependent criminals could be demonstrated specifically for type 2 patients. Within this type, the markers of a strong gender and genetic component, the early onset of drinking in combination with antisocial behaviour could be interpreted as interacting influence variables that increase the personal risk of committing homicide. Affective disorders in the form of anxiety (type II according to Lesch) and cyclothymia (type III according to Lesch) were also found to be highly important in relation to comorbidity. The types IV and I according to Lesch, characterized by organic brain or psychotic vulnerability tended to be underrepresented in this respect. Since the rate of distribution of the respective subgroups within the control population did not show any notable deviations compared with the study group, the overall distribution did not appear typical with regard to violent offences, but did not deviate from the normal distribution either.

Thus, specifically the above-average incidence of addictive disorders in patients with anxiety disorders is well known (George et al., 1988; Cox et al., 1989) and is explained in the sense of the self-treatment or stress-reduction hypothesis (Conger, 1956; Bibb and Chambless, 1986).

In this connection, however, a higher incidence of outward aggression with homicide offences in alcoholic anxiety patients is initially in need of explanation.

Upon closer examination of the homicide offences committed by Lesch type II subjects, states of arousal with a massive secondary vegetative reaction (sweating, trembling) were frequently described, so that an elevated noradrenergic activation during the course of the offence has to be discussed here, too. In addition, it was noticeable that the offences were not uniformly committed within the ‘alcohol milieu’ (restaurants) or in places with direct access to alcohol, rather mainly outside of this milieu. The time elapsed between the last consumption of alcohol and the offence being committed was, according to the expert evaluation, often a number of hours, so that the possibility of the onset of withdrawal symptoms must be discussed here. Typically, the lowest blood alcohol
concentrations at the time of offence were found within subtype II and subtype IV according to Lesch (high organic alcohol vulnerability) (see Fig. 1), so that initial withdrawal symptoms within the context of tolerance drinking cannot be excluded either. Elevated noradrenergic activities are indeed described in the withdrawal phase in neurobiological research on anxiety disorders in alcoholics (Carlsson and Lindqvist, 1973; Potter et al., 1984), as well as higher concentrations of betaendorphins and 3-methoxy-4-hydroxyphenylglykol (PPHG) plasma levels than in alcoholics without anxiety. To this extent, on the basis of our current results, the comorbidity of an alcohol-dependent person with an anxiety disorder, particularly during the withdrawal phase, is possibly of far greater relevance forensically. Typologies of alcohol addiction varied during studies from a two-type solution (Cloninger et al., 1988; Babor et al., 1992a,b) to four-type solution (Windle and Scheidt, 2004; Cardoso et al., 2006) to a five subtype resolution, in which an anxiopathic (subtype I), heredopathic (subtype II), a thymopathic (subtype III), a sociopathic (subtype IV), and an adictopathic subtype were differentiated (Cardoso et al., 2006). The anxiopathic subtype has been characterized by the four and five type resolution as a group whose alcoholic behaviour is modelled by anxious personality traits and psychopathy, providing a variation in the alcohol consumption pattern, behaviour, and emotionality (Windle and Scheidt, 2004; Cardoso et al., 2006). Withdrawal from alcohol leads to aggression behaviour. These findings could be confirmed by our data with the use of the Lesch classification in subtype II.

A further major characteristic noticeable in subtype II according to Lesch was the significantly higher percentage of first offenders compared with all other groups. Here, homicide does not represent the culmination of a long-existent career of offending, but a massive offence right at the outset. In the majority of cases, the offence was found to originate from interpersonal conflict situations between offenders and victims in which the offenders described a massive inner tension, anxiety or panic. The "key-lock principle" of initial withdrawal symptoms in combination with the affective component anxiety and situative overburden through the exposure to conflict represents a possible model to explain the primary 'delinquent alcohol offender' in the sense of an absolutely excessive defence reaction with massive outward aggression.

In the evaluation of criminal capacity (no criminal capacity, reduced criminal capacity), predominance for reduced criminal capacity was found within subtype II, with criminal capacity in no cases. Partial control by the offender was thus recorded here by the expert reports. Remarkably often (14/16 subjects), within subtype II the corrective measures were applied according to a treatment in a withdrawal hospital. Especially with regard to the ability to exert control, the comorbidity of anxiety was classified as less serious and not sufficient for placement in special psychiatric hospitals. The alcohol disorder was seen as a clear causative disease in the foreground. Subtype III according to Lesch, which was also strongly represented in our population, was found to have elevated blood alcohol concentrations at the time of offence and a higher proportion of repeat offenders with numerous criminally relevant offences prior to the homicide, in contrast to type II.

In conclusion, the results obtained from subtyped alcohol-dependent homicide offenders point to the increased proportion of dissocial personality structures described in the literature. In addition to this, there was a remarkably high rate of anxiety and bipolar subjects among the offenders, which had major effects on the further therapeutic options within the context of corrective measures. The classification systems according to Cloninger and Lesch thus confirm the need for subtyping also within forensically relevant questions of alcohol dependence. But, with respect to the high rate of patients with cyclothymia and anxiety we futurally would prefer the four and five type resolution of alcohol classification systems.

REFERENCES


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