Incurable Psychopaths?

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Treatment, comprising pharmacotherapy and an educational program based on cognitive behavior therapy, of four psychopathic, criminal men fulfilling the criteria for borderline personality disorder and antisocial personality disorder is described. The diagnoses were made during a forensic psychiatric evaluation. An estimation of the capacity of the central serotonergic system was performed by analysing the platelet monoamine oxidase (MAO) activity. The pharmacotherapy was combined with an educational program involving strategies for developing better impulse control. All four men had earlier been regarded as resistant to conventional therapy. In the present cases, a combined psychosocial and biological approach seemed to be effective in developing an increased control of impulses, leading to improved coping strategies. Controlled studies are needed in order to clarify whether the described treatment program proves beneficial.

Psychopathy, as originally described by Cleckley,[1] comprises a set of clinical characteristics including superficial charm, unreliability, untruthfulness, lack of remorse or shame, failure to learn by experience, incapacity for love, general poverty in major affective relations, and failure to follow any life plan. The impulsiveness sometimes associated with habitually violent behavior, the decreased arousal often leading to abuse of central stimulant drugs, and the lack of empathy are important character features and are probably associated with the risk of developing criminal behavior. These individuals often meet the criteria for antisocial personality disorder and/or borderline personality disorder according to DSM-III-R.[2]

The possibility of curing or even trying to treat criminal psychopathic individuals is often looked upon as futile. Most treatment programs involve various psychosocial interventions and little effort has been made to investigate and stabilize a possible biological vulnerability in these individuals.

In recent years an association between a decreased capacity of the central serotonergic system and habitually impulsive behavior has been suggested.[3–5] If impulsiveness is associated with a serotonergic dysfunction in the brain, pharmacotherapy aiming at increasing the serotonin metabolism by administering antidepressants could be of value. Case reports regarding borderline personality disorder[6] and psychoactive substance use disorders[7] are in line with this assumption.

Mania may also be associated with de-

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creased ability to control impulses and aggression. Lithium has become well established as an effective and specific treatment for mania.[8,9] Lithium may decrease the frequency of aggressive antisocial acts in male delinquents[10] and reduce violent incidents in chronically aggressive inmates.[11] Lithium may have beneficial effects in hyperactive psychopathic individuals with a tendency to aggressive outbursts.

Serotonin is metabolised via deamiation by monoamine oxidase (MAO; E.C. 1.4.3.4) to 5-hydroxyindoleacetic acid. The implications of platelet MAO activity in various neuropsychiatric disorders have been reviewed by Oreland.[12] Platelet MAO activity is to a certain extent genetically determined and is also suggested to reflect the functional capacity of the central serotonergic system.[13]

The objective of this pilot study was to investigate whether it is possible to obtain noncriminal behavior in psychopaths using a combination of pharmacotherapy and an educational program based on cognitive behavior therapy.

Patients and Methods

Four patients, all white men meeting the criteria for borderline personality disorder and antisocial personality disorder according to DSM-III-R,[2] are described. The degree of psychopathy was scored using the Hare Psychopathy Check List-Revised (PCL-R).[14] The PCL-R consists of 20 items (Table 1), with each item scored 0, 1, or 2 (not true, uncertain, and true, respectively). A score higher than 30 indicates psychopathy.

In childhood all patients had presented hyperactivity and perceptual dysfunctions. A lack of adequate impulse control and an antisocial/conduct disorder became apparent in adolescence.

Table 1
Items in the Revised Psychopathy Checklist

1. Glibness/Superficial charm
2. Grandiose sense of self-worth
3. Need for stimulation/Proneness to boredom
4. Pathological lying
5. Conning/Manipulativeness
6. Lack of remorse or guilt
7. Shallow affect
8. Callous/Lack of empathy
9. Parasitic lifestyle
10. Poor behavioral controls
11. Promiscuous sexual behavior
12. Early behavioral problems
13. Lack of realistic, long-term goals
14. Impulsivity
15. Irresponsibility
16. Failure to accept responsibility for own actions
17. Many short-term marital relationships
18. Juvenile delinquency
19. Revocation of conditional release
20. Criminal versatility

Pharmacotherapy, as described in each case example, was combined with an educational program based on cognitive behavior therapy,[15,16] developing strategies for obtaining more effective impulse control. The program comprised individual sessions with the patients during which information regarding brain-body interactions was given. They were asked to analyse steps from thoughts to actions and the importance of understanding connections between the past, the present, and the future was pointed out. Various coping strategies to stabilize impulse control in everyday life were taught. Exercises in training anticipation and realizing consequences of different actions were per-

Table 2
Brief Description of the Educational Program

1. Mechanisms contributing to control of an act. Steps from impulse to act (via cognitive processing and experience of emotion) are analysed. Responses such as "Everything happened so fast" and "I did not think before I acted" are scrutinized.
2. Physiology including brain-body interactions, aggressiveness, depression, discomfort, sexuality.
3. Impulse control in everyday life.
4. Treatment and coping strategies aiming at improved impulse control (e.g., acupuncture, hypnosis, pharmacotherapy).
5. Society and the individual.
6. Detailed analysis of earlier committed crimes (e.g., pros and cons, alternatives to crime, the feelings of the injured person).
7. Drugs, alcohol, anabolic androgenic steroids.
8. How to be conscious of emotions—learn how to manage and express them in an appropriate and well-balanced manner. The importance of transferring emotions to words is emphasized.

formed. In Table 2 a brief review of various steps of the educational program are given.

Official arrest records were used to receive information about relapses in criminal behavior. The frequency of criminal activities was supposed to reflect coping strategies. With regard to the complexity of the psychopathology of psychopaths, it seemed not possible or reliable to make an evaluation of factors (e.g., reliability and capacity to develop empathy and establish relationships). All of the men had earlier presented frequent relapses in criminality and during the period of the last 10 years they had all, after release from prison, relapsed to criminality after four to six months, according to official arrest records.

Blood samples (5 ml) for analysis of platelet MAO activity were obtained in the morning after eight hours of fasting; these were taken by venipuncture using citrated vacutainer tubes (Becton Dickinson, Grenoble, France). Within 18 hours of venipuncture the tubes were centrifuged at 200 $\times$ g for 10 minutes and about 1 ml of platelet-rich plasma was removed by careful suction. The platelet count was measured by a Coulter Counter (Dunstable, United Kingdom) and the plasma frozen at $-70°C$ until analysis. After thawing, MAO activity was estimated as described by Hallman *et al.*[17] by using phenyletylamine as substrate. MAO activity was expressed as nanomoles of substrate oxidized per minute per 10^{10} platelets. The obtained values were compared to a reference limit of low activity.

Case Reports

Case 1 A 38-year-old man presented with motor restlessness, hyperactivity, and aggressive outbursts since early childhood. He had been convicted 13 times for crimes involving property and violence (assault). The family history was positive for alcoholism type II and possibly mild mental retardation. Immediately after military service he started to use narcotics; initially he used amphetamines, but after a few years he showed a preference for heroin and alcohol, which made him calm. He had repeated periods, most often during late spring and summer, of wide-ranging criminal behavior, increased sexual activities, sleep disturbances, and marked motor restlessness.

After being suspected of severe assault, he was admitted for a forensic psychiatric evaluation.

His PCL-R score was 36. The investigation suggested increased basal activity of the serotonergic system. His platelet MAO activity level was 15.6 (the corresponding reference limit for low activity was 8.46). In addition to an antisocial personality disorder, hypomanic/manic episodes, including lack of adequate reality testing, were diagnosed. Treatment with lithium (168 mg/day) was initiated. A positive effect was reached at a lithium concentration of 0.4 mmol per liter. For 16 months this man was able to work and have a stable relationship with a woman. His criminal activities decreased and were restricted to illegally driving a car, for which he was sentenced to prison. In prison the medication was disrupted. After 10 days he presented with hyperactivity, sleep disturbances at night, and repeated aggressive outbursts. After another three months he was released from prison. He continued to present the same mood disturbances as in prison and relapsed into criminal activities (assault), for which he was again sentenced to prison. After being released from prison, he once again entered an educational program in combination with lithium treatment. He has not relapsed into criminal activities for 16 months.

Case 2 A 50-year-old man presented with feelings of discomfort and uneasiness since youth. For 35 years he had regularly used amphetamines. He exhibited repeated relapses into criminal behavior. He had been convicted 32 times for crimes involving property.

His PCL-R score was 38. The investigation suggested a dysfunction of the central serotonergic system as reflected by a platelet MAO activity level of 3.48 (the corresponding reference limit for low activity was 8.46). He was treated with citalopram, a selective serotonin reuptake inhibitor.[6] Doses were increased from 10 mg daily to 40 mg daily over a period of 14 days. After seven days of treatment, he declared that he was feeling "mentally healthy for the first time in my life." After four months he used amphetamine intravenously, but then experienced unpleasant feelings. After 10 months of treatment, no relapse in criminal behavior has occurred. His proneness to boredom and constant need of stimulation has decreased, which has made it possible for him to reach a better level of concentration, thereby enabling him to start establishing long-term goals.

Case 3 A 40-year-old man presented with mood disturbances, including depressive/aggressive periods marked with either passivity, sleep disturbances, and anxiety or periods of abusing amphetamines and criminal behavior that often comprised violent acts. He had 36 earlier convictions, mostly involving crimes of violence.

His PCL-R score was 38. His platelet MAO activity level was 2.98 (the corresponding reference limit for low activity was 8.46). Citalopram, a selective serotonin reuptake inhibitor,[6] reduced his passivity and seemed to increase his arousal, resulting in a diminished need for central stimulant drugs. His impulse control was stabilized, resulting in a better cognitive capacity to manage aggressiveness. Since

he was released from prison 20 months ago, he has not committed any new crimes. He has been able to finish basic school work and has now started vocational training. He manages to live in an apartment by himself and pays his rent regularly.

Case 4 A 38-year-old man presented with atypical, depressive symptoms, which he tried to manage by using amphetamine; however, this resulted in repeated psychotic episodes during which he showed marked agitation, hyperactivity, perceptual dysfunctions (possibly involving hallucinations), and criminal behavior. He had five earlier convictions for crimes involving damage to property as well as for violence. He was admitted to the clinic of forensic psychiatry during such a psychotic episode and was initially treated with high doses of zuclopenthixol.

His PCL-R score was 30. The forensic psychiatric evaluation suggested a moderate reduction of the serotonergic system with a MAO activity level of 3.62 (the corresponding reference limit for low activity was 8.46). In addition to the low dose of zuclopenthixol, medication with moclobemid, a MAO-inhibitor,[18] was started. Gradually, over a period of four months, an affective stability developed. The dosage of zuclopenthixol was tapered to 2 mg daily. He remained in the hospital another 10 months, and during that period no agitation or aggressive outbursts occurred. The craving for amphetamine seemed to be reduced. He started to reestablish contact with relatives. For two months he has been on leave and is showing improved coping strategies, including a capacity to manage daily activities. No relapse into criminal behavior has occurred.

Discussion

Psychopathy involves various personality traits that constitute a complex psychopathology, causing lack of empathy and impulse control. The crucial point is, however, the association of psychopathy with frequent relapses into criminal behavior and incapacity to profit from adverse experiences, especially punishment. The implications of criminal behavior, including its costs, to society must also be kept in mind.

From a clinical point of view, it is difficult to present factual measures of improvement with regard to the personality traits. The frequency of criminal activity is possible to measure and may reflect not only the social functioning level but also such characteristics as impulsivity, aggressiveness, and capacity for empathy.

These case reports represent individuals with repeated relapses into criminal behavior. Since early childhood they had presented conduct disorders in combination with hyperactivity. The relationship of criminality to psychiatric status has been a matter of discussion among researchers. Children with diagnosed attention deficit disorder and hyperactivity might be at an increased risk for criminal activities according to Mannuzza *et al.*[19] The authors in this study also found, however, that the association between arrest history and childhood hyperactivity was almost entirely mediated by the occurrence of antisocial disorders in young adulthood. These suggestions are re-

flected in the present case examples. All individuals had a history of conduct disorder combined with hyperactivity in early childhood.

In the present cases the platelet MAO activity was measured in an attempt to estimate the capacity of the central serotonergic system. In three individuals a low MAO activity level was found. In a study of a group of mentally disordered offenders, those who had committed violent crimes had the lowest platelet MAO activity.[20] Assuming that low platelet MAO activity is associated with a decreased capacity of the central serotonergic system, serotonin-enhancing drugs might be beneficial. The results from these case studies are in line with that assumption. Further randomized controlled studies are needed, however.

A comparatively high platelet MAO activity level (Case 1) is more difficult to interpret. It might be that the serotonergic system contributed to a lesser extent to the symptoms as compared for example with norepinephrine. The noradrenergic system, however, was not monitored in Case 1. One might speculate that the observed comparatively high platelet MAO activity level could be a compensation mechanism for controlling the hypomanic/manic and psychotic disorders. It is conceivable that this compensation mechanism could fail during stress. It is well known that stress and trauma give rise to synthesis and release of corticosteroids. Biegon[21] has discussed possible effects of steroid hormones on the serotonergic system, including a possible depressant effect of corticosteroids on the serotonergic system.

The patients had earlier been subjected to several years of treatment either in psychiatric hospitals or in prisons. Except for neuroleptics (Case 4) the treatment had earlier been restricted to various psychosocial interventions. Each patient was regarded as impossible to treat. A thorough investigation of the histories of the patients implies the importance of not neglecting hypomanic (Case 1), depressive/aggressive (Cases 2 and 3), and schizophrenia-like symptoms (Case 4) associated with the primary personality disorder; this may possibly facilitate the choice of treatment. Recently published data suggest a certain comorbidity between antisocial personality disorder and mania.[22]

In the present treatment program, pharmacotherapy seemed to be the prerequisite for the patients' being able to participate in the educational program, and from a clinical point of view, the combined psychosocial and biological approach appeared to increase the level of social functioning. Earlier they had been subjected to milieu therapy, but after two to four months they always lost their capacity to fulfill the environmental demands and ceased to cooperate. This is in line with recent research regarding milieu therapy with psychopaths. One study even suggests that milieu therapy, when used exclusively, may increase the risk of psychopaths relapsing into criminal behavior.[23] The importance of getting beyond countertransference when treating psychopaths has been emphasized by Maier,[24] among others. A structured educational program based on cognitive behavior therapy, combined with appropri-

ate pharmacotherapy, may be one way to reach that goal.

In summary, the present case reports suggest that a combined psychosocial and biological approach may make it possible to treat even individuals with strongly marked criminal behavior associated with borderline/antisocial personality disorder and a high degree of psychopathy. In some cases biological tests may yield further information regarding a choice of pharmacotherapy. A conceivable relationship between brain pathology and impulsive behavior associated with such behavior as violent crime[25] may have implications for both forensic psychiatry[26] and treatment programs for "incurable psychopaths." The potential benefits to society, including a diminished need of institutional care and therefore decreased costs, should be kept in mind.

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