Recognition and Treatment of DSM-IV Intermittent Explosive Disorder

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Although models of impulsive aggression are often associated with psychiatric disorders, some individuals demonstrate violent outbursts of rage that are variously referred to in the field as rage attacks, anger attacks, episodic dyscontrol, and intermittent explosive disorder. According to DSM-IV, intermittent explosive disorder is characterized by discrete episodes of failure to resist aggressive impulses resulting in serious assaults or destruction of property. Virtually no research has been done on intermittent explosive disorder as defined by DSM-IV criteria, and this article discusses the phenomenology, comorbidity, and treatment response of 27 individuals who met the DSM-IV criteria for the disorder. The association of the explosive episodes in these subjects with maniclike affective symptoms, the high rate of lifetime comorbid bipolar disorder, and the favorable response of explosive episodes to mood-stabilizing drugs suggest that intermittent explosive disorder may be linked to bipolar disorder.
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Historical literature is rich in descriptions of persons who probably had intermittent explosive disorder. Many psychiatric disorders are associated with impulsive aggression, but some individuals demonstrate violent outbursts of rage—which are variously referred to as rage attacks, anger attacks, episodic dyscontrol, or intermittent explosive disorder. Intermittent explosive disorder was first formally conceptualized as a psychiatric disorder in the third edition (1980) of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III). The current edition (DSM-IV) includes diagnostic criteria for intermittent explosive disorder in the Axis I category of Impulse-Control Disorders Not Elsewhere Classified; other disorders in this category are kleptomania, pyromania, pathological gambling, and trichotillomania.[1] The essential feature of impulse-control disorders is the failure to resist an impulse, drive, or temptation to perform an act that is harmful to the person or to others. In most of the impulse-control disorders, the individual feels an increasing sense of tension or arousal before committing the explosive act and then experiences pleasure, gratification, or relief at the time the act is committed. The individual may also experience remorse, regret, or embarrassment after the act, which is aptly described by Maletzky[2] in a 1973 discussion of episodic dyscontrol: "Particularly prominent among these subjects, and not previously described, was the extreme remorse expressed at their actions. They viewed these episodes as foreign and distasteful; many wept in describing the effects of their violent behavior, yet all agreed that such sorrow had not been helpful in averting aggression in the past."

Some clinicians doubt the validity of intermittent explosive disorder as a separate clinical entity and consider the lack of control of aggressive impulses as a nonspecific symptom that occurs in a wide range of psychiatric and medical disorders.[3,4] Others consider the DSM-IV criteria to be sound but incomplete because of the lack of emphasis on (1) the concept of an irresistible impulse and (2) the highly egodystonic and uncontrollable nature of the rage outbursts. This article will present the DSM-IV diagnostic criteria of intermittent explosive disorder and the phenomenology, comorbidity, and treatment response of 27 individuals who met the criteria for the disorder.

PHENOMENOLOGY

The DSM-IV diagnostic criteria for intermittent explosive disorder[1(p610)] are (1) the occurrence of discrete episodes of failure to resist aggressive impulses that result in serious assaultive acts or destruction of property, (2) the degree of aggressiveness expressed during an episode is grossly out of proportion to any provocation or precipitating psychosocial stressor, (3) a diagnosis of intermittent explosive disorder is made only after other mental disorders that might account for episodes of aggressive behav-

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ior have been ruled out—such as antisocial personality disorder, borderline personality disorder, a psychotic disorder, a manic episode, conduct disorder, or attention-deficit/hyperactivity disorder, and (4) the aggressive episodes are not due to the direct physiologic effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition—for example, head trauma or Alzheimer's disease. Nonspecific or soft neurologic abnormalities such as reflex asymmetries or mirror movements may be associated with intermittent explosive disorder, but these individuals rarely have frank neurologic disease.

Virtually no research has been done on intermittent explosive disorder as defined by DSM-IV criteria; however, numerous studies describe patients with episodic dyscontrol and explosive rage.[2,5,6] Although the prevalence of intermittent explosive disorder is unknown and considered to be rare,[1] the disorder is probably more common than realized and may be an important cause of violent behavior. As presently defined, intermittent explosive disorder is more common in men. However, women also have problematic impulsive aggression, and some women have reported an increase in intermittent explosive symptoms when they are premenstrual.[3] The ability to control aggressive and/or violent behavior may be associated with abnormalities in central serotonergic function. It has been proposed that serotonergic neurons are involved not only in behavioral arousal but also in the ability of the organism to arrange or tolerate delay before acting.[7,8] Several studies have confirmed a relationship between low concentrations of CSF 5-hydroxyindoleacetic acid (5-HIAA), a serotonin metabolite, and aggressive behavior.[9–11] Linnoila et al.[12] specifically divided aggressive behaviors into impulsive and nonimpulsive types and found a relatively low CSF 5-HIAA concentration in impulsive violent offenders but not in those offenders who premeditated their violent acts. The authors concluded that a low CSF 5-HIAA concentration may be a marker of impulsivity rather than violence. In an effort to update existing data on intermittent explosive disorder, my colleagues and I evaluated the phenomenology, comorbidity, and treatment response of 27 subjects who met the DSM-IV criteria for the disorder.[3]

DSM-IV INTERMITTENT EXPLOSIVE DISORDER IN 27 SUBJECTS

The 27 subjects for the study were recruited by asking clinicians and staff from the local medical center and from a halfway house for difficult-to-place felons to refer to us individuals with impulsive aggressive outbursts that resulted in serious assaultive acts or destruction of property.[3] Subjects were also recruited by means of a newspaper advertisement that requested persons with rage outbursts to participate in an interview study. A total of 9 (33%) subjects were self-referred, 10 (37%) were referred from the medical center, and 8 (30%) were referred from the halfway house. The subjects were evaluated by using (1) a structured interview to assess symptoms of intermittent explosive disorder on the basis of DSM-IV criteria, (2) a semistructured interview to elicit demographic data, phenomenology, and course of the disorder, and (3) the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P).[13] In keeping with the DSM-IV criteria for intermittent explosive disorder, subjects were excluded if their aggressive episodes were better accounted for by another mental disorder or were due to the direct physiologic effects of a substance or a general medical condition. For example, aggressive episodes were attributed to isolated antisocial acts or to antisocial or borderline personality disorder if they were premeditated, performed impulsively but still under the individual's volition or control, or performed to achieve some desired effect or goal; attributed to mania or hypomania if they occurred only during manic or hypomanic episodes; attributed to psychosis if they occurred only with psychotic symptoms; or attributed to intoxication if they occurred only under the influence of alcohol.

Three fourths (N = 20) of the sample were men, and the explosive behavior typically began in adolescence (mean ± SD age at onset = 14 ± 7 years). All subjects experienced aggressive impulses prior to their explosive acts, and descriptions of the aggressive impulses were strikingly similar among subjects. The impulses were consistently described as a model of defensive aggression—that is, the need to attack, strike out, or defend oneself. Subjects also described an "adrenaline rush," "seeing red," "letting the beast out," and the "urge to kill somebody." Of 24 subjects specifically queried, 21 (88%) experienced tension with the aggressive impulses, 18 (75%) experienced relief with the explosive episodes, and 11 (46%) described pleasurable feelings associated with the explosive episodes. All subjects stated that the aggressive episodes were brief with a mean ± SD duration of 22 ± 23 minutes. The mean ± SD frequency was 9 ± 14 episodes/month.

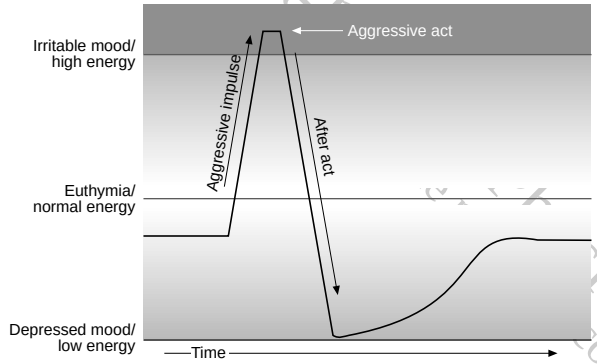
All subjects reported that the degree of aggressiveness expressed during the episodes was grossly out of proportion to any precipitating psychosocial stressors and that most episodes were triggered by minor conflicts. Nineteen subjects reported having spontaneous episodes. Two (7%) subjects destroyed only property, 4 (15%) committed serious assaults only, and 20 (74%) acknowledged both property destruction and assaultive acts during the explosive episodes. Acknowledged behavior during explosive episodes included 11 (41%) subjects who attempted homicide, 10 (37%) who committed assault with weapons, and 1 (4%) subject (self-referred) who actually committed a homicide. Nine (33%) subjects, all medical referrals, had a prior diagnosis of intermittent explosive disorder, but many subjects described a past history of full-blown ag-

Table 1. Affective Symptoms in 24 Subjects With DSM-IV Intermittent Explosive Disorder[a]

	With Impulses		During Episodes		After Episodes	
Affective Symptoms	N	%	N	%	N	%
Irritability/rage	22	92	19	79	6	25
Anxiety	10	42	5	21	2	8
Depressed mood	8	33	4	17	13	54
Euphoria	1	4	4	17	0	0
Increased energy	20	83	23	96	5	21
Decreased energy	0	0	0	0	13	54
Racing thoughts	15	62	16	67	8	33

[a]Adapted from reference 3. Remaining 24 subjects specifically queried after affective symptoms became apparent.

Figure 1. Mood and Energy Changes in Intermittent Explosive Disorder[a]



[a]Reprinted from reference 3, with permission.

gressive episodes that would readily have satisfied the DSM-IV criteria for intermittent explosive disorder. Because the behavior was so problematic, however, these subjects had learned to exert some measure of control over their aggressive impulses and channel their behavior into less destructive forms, such as screaming or punching an object (without incurring damage). The subsequent behavior was experienced as chronic anger and subthreshold anger attacks, similar to those described by Rosenbaum[14] elsewhere in this supplement. A total of 9 (33%) subjects also reported that their aggressive episodes were preceded by or coincided with physical or autonomic symptoms such as increased heart rate, palpitations, tingling, tremor, chest tightness, head pressure, and hearing echoes. Explosive episodes were also associated with a change in or loss of awareness in 14 (52%) subjects, but complete amnesia was not reported.

Most subjects reported that their aggressive episodes were accompanied by affective symptoms, particularly mood and energy changes. When these affective symptoms—which seemed to resemble microdysphoric manic episodes—became apparent to researchers, they specifically queried the remaining 24 subjects about the affective symptoms of irritability/rage, anxiety, depressed mood,

Table 2. Current and Lifetime Axis I Diagnoses in 27 Subjects With DSM-IV Intermittent Explosive Disorder[a]

	Current Diagnosis		Lifetime Diagnosis	
Diagnosis	N	%	N	%
Mood disorders	24	89	25	93
Major depressive[b]	9	33	10	37
Bipolar I	9	33	9	33
Bipolar II	3	11	3	11
Bipolar NOS	2	7	2	7
Cyclothymia	1	4	1	4
Substance abuse	2	7	13	48
Anxiety disorders	10	37	13	48
Eating disorders	5	19	6	22
Other impulse-control disorders	9	33	12	44

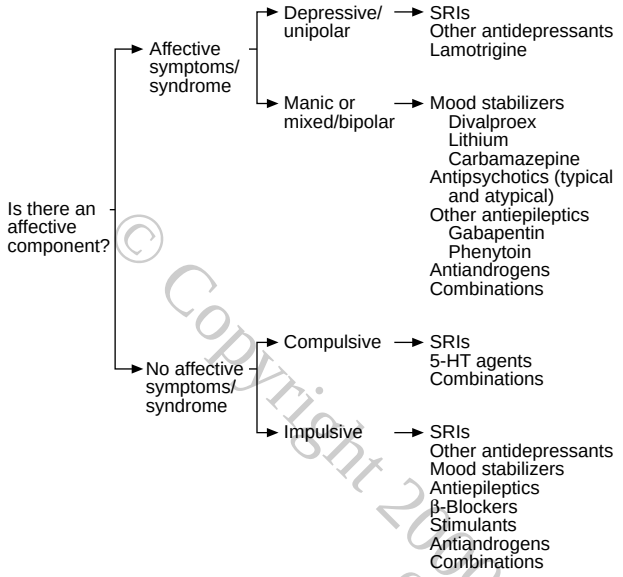
[a]Adapted from reference 3.
[b]One subject with major depressive disorder also had substance (antidepressant)-induced hypomania.

euphoria, increased energy, decreased energy, and racing thoughts (Table 1). When the aggressive impulses and explosive episodes were occurring, the subjects typically described irritability and/or rage, increased energy, and racing thoughts; after the episodes, the subjects described depression and decreased energy (Figure 1). Comorbidity with other psychiatric disorders, particularly mood disorders, was profoundly high (Table 2). A total of 25 (93%) subjects had lifetime DSM-IV diagnoses of mood disorders; 13 (48%), substance use disorders; 13 (48%), anxiety disorders; 6 (22%), eating disorders; and 12 (44%), impulse-control disorders other than intermittent explosive disorder. Of the 25 subjects with lifetime DSM-IV diagnoses of mood disorders, 10 (37%) had lifetime diagnoses of major depressive disorder; 9 (33%), bipolar I disorder; 3 (11%), bipolar II disorder; 2 (7%), bipolar disorder not otherwise specified; and 1 (4%), cyclothymia. In keeping with the DSM-IV criteria, subjects who displayed aggressive impulses and acts only during hypomanic or manic phases of bipolar disorder were excluded. Moreover, all subjects with comorbid bipolar disorder clearly described explosive episodes that occurred during euthymic or depressive periods as far too brief a duration to meet the DSM-IV diagnostic criteria for a hypomanic or manic episode.

RESPONSE TO PSYCHOTROPIC MEDICATIONS

Studies suggest that patients with intermittent explosive disorders respond to treatment with antidepressants—such as tricyclic antidepressants and serotonin reuptake inhibitors (SRIs)—and mood stabilizers such as lithium, carbamazepine, and divalproex.[3,4,15,16] To assess the response of subjects to medication, my colleagues and I designed a treatment algorithm for agitated and/or violent individuals that specifically incorporated the affective component (Figure 2). In general, when affective symp-

Figure 2. Psychopharmacologic Treatment Algorithm for Agitation and Violence[a]



[a]Abbreviation: SRI = serotonin reuptake inhibitor.

toms were present, the depressive (unipolar) patients were started on SRIs and the manic or mixed bipolar patients were started on mood-stabilizing agents. If no affective symptoms were apparent, the choice of drug depended on whether the presentation was compulsive or impulsive. If the presentation was highly compulsive, SRI treatment was administered; if the presentation was impulsive with a unipolar component, SRI treatment was started; if there was a suggestion of affective instability or bipolarity, divalproex was administered. A favorable response was qualitatively defined as a 50% or greater improvement in symptoms of intermittent explosive disorder (Table 3). A total of 12 (60%) of 20 symptomatic subjects who received antidepressant SRI or mood-stabilizer monotherapy described a moderate (50%) response to SRIs and a marked (75%) response to mood stabilizers, as measured by a reduction in aggressive impulses and explosive acts. The favorable response of subjects to the antiepileptic divalproex may be explained in part by the mood-stabilizing properties of the drug.[3]

CONCLUSION

Intermittent explosive disorder may cause violent behavior that results in physical assault, destruction of property, and even homicide. The association of explosive episodes with mood and energy changes similar to manic and hypomanic symptoms, the high rate of comorbid bipolar disorder, and the favorable response of impulsive, aggressive symptoms to treatment with mood stabilizers suggest

Table 3. Response to Psychotropic Medications in 21 Subjects With DSM-IV Intermittent Explosive Disorder[a]

		Favorable Response[c]	
Monotherapy	Number of Trials[b]	N	%
SRIs			
Fluoxetine[d]	2	0	0
Sertraline	3	1	33
Venlafaxine	5	4[e]	80
Total	10	5	50
Mood stabilizers			
Lithium	2	1[f]	50
Divalproex	8	6[g]	75
Total	10	7	70
Antipsychotics	1	0	0
Stimulants	2	0	0

[a]Adapted from reference 3.
[b]Some subjects had more than 1 trial.
[c]Favorable response defined as ≥ 50% improvement in symptoms of intermittent explosive disorder.
[d]Both subjects had a diagnosis of bipolar disorder.
[e]The 4 subjects had a diagnosis of major depressive disorder.
[f]The subject had a diagnosis of bipolar I disorder.
[g]The 6 subjects had diagnoses of bipolar I disorder (N=4), bipolar II disorder (N=1), or bipolar disorder NOS (N=1).

the possibility that intermittent explosive disorder may be linked to bipolar disorder.[15] Further investigation of associated psychopathology, clinical course, and response to psychosocial and psychopharmacologic treatment of intermittent explosive disorder is warranted to design effective treatment measures and to better define its relationship to other Axis I or Axis II disorders.

Drug names: carbamazepine (Tegretol and others), divalproex (Depakote), fluoxetine (Prozac), gabapentin (Neurontin), lamotrigine (Lamictal), phenytoin (Dilantin and others), sertraline (Zoloft), venlafaxine (Effexor).

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DISCLOSURE OF OFF-LABEL USAGE

The author of this article has determined that, to the best of her knowledge, the following agents mentioned herein are *not* approved by the FDA for these respective uses: antidepressants for impulse-control disorders, mood stabilizers for impulse-control disorders, and the combination of antidepressants and mood stabilizers for impulse-control disorders.