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Research report

## Depression and suicidal behavior in adolescent inpatients with obsessive compulsive disorder

Alan Apter<sup>a,b,\*</sup>, Netta Horesh<sup>c</sup>, Doron Gothelf<sup>a,b</sup>, Gil Zalsman<sup>b,d</sup>, Zippy Erlich<sup>e</sup>,  
Noam Soreni<sup>b,c</sup>, Abraham Weizman<sup>b,c,f</sup>

<sup>a</sup>Feinberg Child Study Center, Schneider Children's Medical Center of Israel, 14 Kaplan Street, Petach Tikva 49202, Israel

<sup>b</sup>Department of Psychiatry, Tel Aviv University, Tel Aviv, Israel

<sup>c</sup>Clinical Psychology Program, Bar Ilan University, Ramat Gan, Israel

<sup>d</sup>Geha Psychiatric Hospital, Petach Tikva, Israel

<sup>e</sup>Computer Science Department, Open University, Tel Aviv, Israel

<sup>f</sup>Felsenstein Medical Research Center, Petach Tikva, Israel

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### Abstract

**Background:** To investigate the prevalence and correlations of suicidal behavior in obsessive compulsive disorder (OCD) among adolescent psychiatric inpatients. **Methods:** A total of 348 adolescents, representing consecutive admissions to an adolescent inpatient unit, were assessed. Of these, 40 patients had OCD, 118 had schizophrenia, 59 had an affective disorder, 81 had a conduct disorder and 50 had an eating disorder. In addition, 87 normal community controls were assessed. All subjects were assessed for suicidal behavior by the Childhood Suicide Potential Scale (CSPS), for depression by the Beck Depression Inventory, for impulsiveness by the Impulse Control Scale, for anxiety by the State-Trait Anxiety Scale and for aggression by the Yudowsky Overt Aggression Scale. **Results:** All the psychiatrically ill subjects, including those with OCD, had high levels of depression, anxiety and impulsiveness, which were far higher than those of the controls. The rate of attempted suicide was, however, much lower in the OCD subjects. In addition, there was a significant inverse correlation between suicidal behavior levels on the CSPS and depression in the OCD subjects, while all other subjects showed the expected significant positive correlation between level of suicidal behavior and depression. **Limitations:** This study looked at a referred population and generalization to outpatient and community samples cannot be made. Distinguishing between the primary and the comorbid diagnosis is difficult and some findings are based on small sample size and therefore may be vulnerable to type I error. **Conclusions:** Although suicidal ideation and depressive symptoms are common in OCD adolescent inpatients, they seem to be protected against suicide attempts. The inverse relationship between suicidal behavior and depression may mean that suicidal behavior is, in some ways, qualitatively different from that seen in other psychiatrically ill adolescents.

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**Keywords:** Adolescents; Suicide; Depression

\*Corresponding author. Present address: Feinberg Child Study Center, Schneider Children's Medical Center of Israel, 14 Kaplan Street, Petach Tikva 49202, Israel. Tel.: +972-3-925-3617; fax: +972-3-925-3874.

E-mail address: apter@post.tau.ac.il (A. Apter).

## 1. Introduction

Obsessive compulsive disorder (OCD) is a well described disorder in childhood and adolescence occurring in ~3% of 16-year-olds (Apter et al., 1996). Although effective methods of treatment are available, ~30–40% of patients do not respond to therapy and have a relatively poor prognosis (Greist et al., 1995). The factors contributing to treatment failure include: comorbidity with personality disorders, tic disorders, conduct disorders and oppositional disorders, dysfunctional families and the presence of depression and suicidal behavior (Foa, 1979). The present study will focus on those adolescent inpatients with OCD in whom suicidal behavior was prominent and will look at the context in which the suicidal behavior took place, especially in relation to depression.

OCD is a common co-morbid condition with affective disorder. About 10% of unipolar depressives and 21% of bipolar sufferers show comorbid OCD (Chen and Dilsaver, 1995). Perugi et al. (1997) found that 15.7% of subjects with OCD had episodes of bipolar disorder. It appears that depression is also common among adolescents with OCD (Swedo et al., 1989; Valleni-Basile et al., 1994) and that depression, in combination with OCD, may confer an increased risk for suicidal behavior (Valleni-Basile et al., 1994; Chen and Dilsaver, 1995). Non-fatal suicidal behavior occurs in ~15% of individuals suffering from OCD (Angst, 1993; Hollander et al., 1996), principally in those showing comorbidity with anti-social behavior or borderline personality disorder. It appears, therefore, that the potential risk factors for suicidal behavior in OCD may include comorbidity with major depressive disorder, comorbidity with bipolar affective disorder and comorbidity with conduct disorder and impulsiveness.

Although inpatients cannot be regarded as a representative population, adolescent psychiatric inpatients represent an important group of individuals for research into suicidal behavior, for a number of reasons. First, the prevalence of suicidal behavior in this group is high (Motto, 1984; Robbins and Alessi, 1985). Moreover, many studies have suggested that the majority (up to 90%) of young people who commit suicide and those who make serious suicide

attempts have at least one diagnosable mental disorder at the time of their suicide attempt (Brent et al., 1993; Shaffer et al., 1996; Beautrais et al., 1998). Second, adolescent patients usually have a history of repeated suicide attempts (Barter et al., 1968). Third, a high percentage of adolescents who have a history of psychiatric hospitalization go on to commit suicide (Welner et al., 1979; Motto, 1984; Pfeffer et al., 1988).

Severe depression is ubiquitous in adolescent psychiatric inpatients, irrespective of diagnosis (Apter et al., 1988a) and there have been many studies of the correlates of suicidal behavior in adolescent psychiatric inpatients. Important correlates include depression, anxiety, aggression, anger, impulsiveness and anti-social behavior (Apter et al., 1988b, 1995; Stein et al., 1998). We were not able to find a specific report of the relationship of these variables to suicidal behavior in adolescent OCD. Thus, the study of depression and suicide in adolescents who have been hospitalized for OCD seems to be an important but rather neglected area for study.

The aims of the present report were thus: (1) to determine the prevalence of attempted suicide in adolescent inpatients with OCD, (2) to describe the psychiatric comorbidity of inpatient OCD attempters, and (3) to determine the association of suicidal behavior with negative affects in these subjects.

The specific hypotheses of this study were:

1. Adolescent inpatients with a diagnosis of OCD will show high levels of depression
2. Adolescent inpatients with a diagnosis of OCD will show high levels of suicidal behavior
3. The correlations of suicidal behavior with other psychological dimensions will be similar to those shown by suicidal adolescents with other diagnoses.

## 2. Methods

### 2.1. Subjects

The subjects consisted of 348 adolescents consecutively admitted to the adolescent inpatient unit at the Geha Hospital in Israel between 1996 and 1999.

Diagnoses were based on DSM-IV criteria following extensive ward observations and a structured psychiatric interview, the Childhood Version of the Schedule for Affective Disorders and Schizophrenia (K-SADS), which has proved to be reliable and valid in our hands (Shanee et al., 1997). A total of 40 of these patients had OCD as their diagnosis. Many of them also had other comorbid psychiatric diagnoses (Table 1). The diagnostic distribution of the other psychiatric conditions was as follows (Table 1): schizophrenia ( $n = 118$ ); affective disorder ( $n = 59$ ); conduct disorder ( $n = 81$ ); eating disorders ( $n = 50$ ). Many of these patients also had comorbid conditions and these are shown in Table 1. The mean age of the subjects was 16.44 (S.D. 2.06). They had 9.2 (S.D. 3.09) years of schooling. Average IQ was 108.9 (S.D. 17), 90% were Israeli born and were Jewish and most were of middle or lower middle class. There were no significant differences in these measures between the different diagnostic groups and the OCD subjects. However, 71% of OCD subjects were boys and 28.9% were girls, while in the patient and normal controls, girls made up 53.5 and 56.2%, respectively, of the sample.

In addition, a group of 87 community controls matched for age, sex and socio-economic status with the ward norms was also assessed. Controls were obtained via the services of a marketing service and were matched for age, sex, ethnic origin and socio-economic status for the whole unit sample. Subjects were given a compact disc for agreeing to take part

in the study. All had negative life time histories for psychiatric treatment.

## 2.2. Assessment

### 2.2.1. The Childhood Suicide Potential Scale (CSPS) (Pfeffer et al., 1979)

The CSPS is a semi-structured interview intended to evaluate different aspects of suicidal behavior in children and adolescents. It consists of nine scales, of which we used only the spectrum of suicidal behavior, to measure the severity of suicidal behaviors occurring in the last 6 months and the scale to measure anti-social behavior. The suicide scale classifies suicidal behavior on a five-point spectrum of severity ranging between non-suicidal behavior rated (1), suicidal ideas (2), suicidal threats (3), mild suicidal attempts (4) and serious suicidal attempts (5). Each subject's score is determined by the highest degree of documented suicidal tendency. An example question was: 'Have you ever thought of hurting yourself?' (Pfeffer, 1986; Pfeffer et al., 1979, 1980, 1984, 1988).

Regarding psychometric properties, Chronbach  $\alpha$  for the scales ranged from 0.57 to 0.98, indicating good to high level of internal reliability (Pfeffer et al., 1979, 1980, 1983, 1987). Evaluation of inter-rater reliability for the spectrum of suicidal behavior showed 94% agreement between two clinicians. The inter-rater reliability was  $r = 0.93$  in our adolescent inpatients (Ofek and Weizman, 1997). Discriminate

Table 1  
Primary and comorbid diagnoses of adolescent inpatients

Diagnostic category	Primary diagnosis for controls	Comorbid diagnosis for patient controls	Comorbid diagnosis for OCD adolescents
Major depressive disorder	40	6	6
Bipolar affective disorder	19	2	6
Schizophrenia	118	–	6
Borderline personality disorder	–	11	5
Eating disorder	50	9	5
Narcissistic personality disorder	–	9	1
Schizotypal personality disorder	–	5	4
Tourette disorder	–	–	5
Conduct disorder	81	9	3
Oppositional disorder	–	2	1
Obsessive-compulsive disorder	40	–	–

validity has been established in several studies (Pfeffer et al., 1980, 1982).

### 2.2.2. The K-SADS

The K-SADS is a semi-structured psychiatric interview, which was used to assess diagnoses using DSM-IV criteria. The K-SADS has been translated into Hebrew and has been shown to be reliable in our hands for this population (Apter et al., 1989; Shanee et al., 1997).

### 2.2.3. The Impulse Control Scale (ICS)

The Impulse Control Scale (ICS), is a scale developed by Plutchik et al. (1989). This self report scale has 15 items each measured on a four-point range. The original version has been shown to be psychometrically sound (Plutchik et al., 1989; Apter et al., 1991). A Hebrew version tested on adolescents has shown high internal consistency and reliability with young males (Wagner, 1989).

### 2.2.4. The Overt Aggression Scale (OAS)

The Overt Aggression Scale (OAS), developed by Yudofsky et al. (1986), measures four types of aggression: against self, against physical objects, against people and verbal aggression. The OAS is based on weekly ward observations by the nursing staff and ratings are averaged out over a 4-week period. In this study only self-directed aggression was recorded.

### 2.2.5. The State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI; Spielberger, 1983) has been used extensively in research with both adults and adolescents. The STAI is a 40-item self-report measure that consists of two 20-item scales, the first assessing state, or current anxiety, and the second assessing trait, or characterological anxiety. Items are rated on a 1–4 Likert scale. The STAI has demonstrated high internal consistency and high test-retest reliability.

### 2.2.6. The Beck Depression Inventory

The Beck Depression Inventory (BDI; Beck et al., 1961) is a 21-item self-report instrument designed to measure the severity of depression in adults and adolescents. The frequencies of depressive symptoms are rated on a 4-point Likert scale ranging from 0 to

3. The BDI has demonstrated high internal consistency and high test-retest reliability (Beck and Steer, 1987).

## 2.3. Procedure

All patients and their parents signed informed consent forms to participate in the study. Diagnoses were made on the basis of a semi-structured interview (K-SDADS) performed by a senior child psychiatry fellow and by extensive ward observations and clinical team discussions led by the unit director (A.A.). After 10–14 days on the unit, the patients were asked to fill in all the self-report forms and an OAS was filled out for the 1st month of stay in the unit (or until discharge if the stay was less than 1 month). Patients who were discharged within 10 days of admission were not included in the study ( $n = 33$ ).

## 2.4. Data analysis

Analysis of variance (ANOVA),  $t$ -tests and  $\chi^2$  tests were used to test group differences. Correlations were calculated using Pearson coefficients.

## 3. Results

Beck Depression Inventory levels were 25.59 (S.D. = 13.46) for the OCD patients ( $n = 40$ ), 24.65 (S.D. = 16.84) for the patient controls ( $n = 308$ ), and 8.17 (S.D. = 4.25) for the healthy controls ( $n = 85$ ). One-way ANOVA and post hoc pair-wise analysis using the Sheffe test, shows that levels of depression as measured by the BDI are significantly higher for the OCD group than for the healthy controls ( $F(2,430) = 42.32$ ,  $P < 0.01$ ). There is hardly any difference between levels of depression for the OCD patients and the other psychiatric patients. Of the patients with OCD, 77.5% had BDI levels of over 20 (moderate to severe depression) and 47.5% of the OCD adolescents had BDI levels  $> 30$  (very severe depression).

Levels of suicidal behavior, as measured by the CSPS, for the different groups were 2.2 (S.D. = 1.2) for OCD subjects ( $n = 32$ ), 2.7 (S.D. = 1.4) for the patient controls ( $n = 254$ ) and 1.3 (S.D. = 0.6) for

the normal controls ( $n = 86$ ). Following a significant one-way ANOVA ( $F(2,369) = 38.85, P < 0.005$ ), the post hoc pair-wise analysis using the Sheffe test shows that levels of suicidal behavior, as measured by the CSPS, are significantly higher for the OCD group than for the healthy controls. The OCD patients do not differ from the rest of the patient groups with regard to level of suicidal behavior. When individual diagnostic groups were compared with the OCD group, only borderline personality disorder patients had significantly higher suicidal behavior levels ( $2.21 \pm 1.22$  vs.  $3.48 \pm 1.38; P < 0.05$ ).

A comparison of the actual suicide attempts, as measured by the CSPS made by the patient groups in the 6-month period prior to admission, showed the following: of the OCD group, 10.3% made actual suicide attempts versus 35% of the other patients ( $\chi^2 = 440.24, P < 0.01$ ). The odds ratio (OR) showed a 3.4 times greater likelihood that the non-OCD patients would actually attempt suicide despite the fact that, in terms of overall suicidal behavior (ideation, threats and gestures), they had equal levels to the rest of the sample. Thus, the CSPS scores in the OCD patients are due to the presence of suicide ideation and threats and not due to actual attempts.

Table 2 shows that measures of anxiety and violence were much higher and impulsiveness much lower in the OCD group than in the normal controls.

Moreover, these measures did not differentiate between the OCD and the non-OCD inpatients. The only measure which differentiated OCD patients from non-OCD patients was level of anti-social behavior, as measured by the CSPS.

Table 3 shows the correlation between levels of suicidal behavior, as measured by the CSPS, and the various psychological measures in the OCD inpatients versus the correlations in the non-OCD inpatients. Most correlations are similar in the OCD patients and the non-OCD patient controls. In the patient controls, most correlations were found significant while in the OCD patients, all but one were found not significant which may be due to the small sample size. The only measure to show a significant

Table 3  
Correlations between levels of suicidal behavior and other psychopathological dimensions

Factor	OCD	Patient control
Depression	-0.22	0.22***
Trait anxiety	0.22	0.31***
State anxiety	0.37	0.39***
Impulsiveness (ICS)	0.38	0.30***
Violence	0.28	0.28***
Aggression	0.22	0.37***
Anger	0.06	0.38***
Anti-social behavior	0.37*	0.36***

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

Table 2  
Comparisons between levels of psychological measures in different groups of adolescents

Variable	OCD (mean + S.D.)	Patient controls (mean + S.D.)	Normal controls (mean + S.D.)	$F(2,384)$ $P$ -value
Impulsiveness	14.42 <sup>a</sup> (3.54)	14.04 <sup>a</sup> (3.54)	18.74 <sup>b</sup> (3.30)	53.19 $P < 0.005$
State anxiety	49.17 <sup>a</sup> (15.0)	44.55 <sup>a</sup> (14.7)	32.4 <sup>b</sup> (8.8)	24.55 $P < 0.000$
Trait anxiety	47.35 <sup>a</sup> (15.04)	45.65 <sup>a</sup> (15.46)	36.3 <sup>b</sup> (8.30)	27.34 $P < 0.000$
Violence	2.58 <sup>a</sup> (1.54)	2.41 <sup>a</sup> (1.53)	1.53 <sup>b</sup> (1.00)	13.28 $P < 0.000$
Anti-social behavior	0.42 <sup>a</sup> (1.00)	0.85 <sup>a</sup> (1.10)	0.21 <sup>b</sup> (0.50)	14.69 $P < 0.000$
Aggression	4.97 (2.6)	4.01 (2.7)	1.77 (1.9)	29.24 $P < 0.000$

Different superscripts mean significant differences on post-hoc analysis.

Table 4  
Distribution of suicidal patients according to level of depression in the different patient groups

Level of depression according to BDI	Rate (%) of suicide attempters among OCD patients	Rate (%) of suicide attempters among patient controls
Normal range (00–09)	16.6 (1/6)	10.9 (6/57)
Mild to moderate depression (10–19)	33.3 (1/3)	31.1 (14/43)
Moderate to severe depression (20–29)	8.3 (1/12)	33.9 (20/58)
Very severe depression (30–63)	5.6 (1/18)	46.2 (66/143)

correlation with suicidal behavior in the OCD inpatients was anti-social behavior.

The two non-similar correlations are between depression and suicidal behavior ( $-0.22$  vs.  $+0.22$ ) and between anger and suicidal behavior ( $0.06$  vs.  $0.38$ ).

In the OCD patients, not only was the direction of the correlation negative, but, notably, the mean depression level of the OCD suicide attempters was *lower* than the depression level of the non-attempters ( $16.7$  versus  $25.7$ ), although this difference was also non-significant, possibly due to the small sample size. The data show that the odds ratio of an OCD inpatient attempting suicide is three times less if he or she is *not* depressed, although, since only four OCD inpatients actually attempted suicide this finding must be treated with caution (Table 4).

Similarly a regression analysis shows that the coefficients of the predictors of suicidal behavior in the non-OCD patients differ from those with OCD. In fact no significant predictors of suicidal behavior were found in the OCD group, while state anxiety ( $T = 2.89$ ,  $P = 0.00$ ), aggression ( $T = 0.2.328$ ,  $P = 0.02$ ) and anti-social behavior ( $T = 3.774$ ,  $P = 0.00$ ) significantly predicted suicidal behavior in the non-OCD group.

## 4. Discussion

### 4.1. Limitations

The major limitation of this study is that it looks at a referred population and, thus, generalization to outpatient and community samples cannot be made. The second limitation is our uncertainty of how to deal with the issue of comorbidity. Defining which is the primary and which is the comorbid diagnosis is

difficult and the plethora of possible combinations makes for samples with small numbers that are inappropriate for statistical analysis and makes our results vulnerable to type I error. In this study, we have assumed OCD to be the primary diagnosis wherever the patient had symptoms that met the criteria for OCD. In other subjects the disease that appeared to be most prominent was assumed to be the primary diagnosis. Finally it may be that confounding variables such as the severity of the OCD and the fact that there was a high correlation between anti-social behavior and suicidal behavior (a common finding in adolescent inpatients) may be responsible for the puzzling finding of an inverse relationship between depression and suicidal behavior in the OCD subjects.

On the other hand, adolescent inpatients are an especially vulnerable population in terms of their risk for suicide and, thus, worthy of study. In addition, while the vast majority of children and adolescents with OCD are treated within the community, a substantial minority requires hospitalization. It is our experience that these individuals often have a poor prognosis and, therefore, they also deserve intensive investigation.

The data emerging from this study shed light on the extent of suffering undergone by all adolescents, including those with OCD, whose psychiatric illness requires them to be hospitalized. In all the areas of emotional distress assessed, the adolescent inpatients showed markedly higher scores than the normal controls.

Adolescent inpatients with OCD show high levels of depression, suicidal behavior, anxiety, impulsiveness, violence and aggression. The levels of depression are higher than those generally reported for OCD and it is unclear whether these represent comorbidity with affective disorder or depression

secondary to a severe psychiatric condition. The fact that all the hospitalized adolescents, irrespective of their diagnosis, showed similar high scores on the BDI tend to support the notion that these depressive symptoms are non-specific and represent a reaction to illness and hospitalization.

Although the OCD adolescents resemble their inpatient counterparts on almost all the psychopathological dimensions they do seem to differ with regard to their suicidal behavior. This difference is, however, complex and not easy to explain.

Firstly, although the OCD inpatients are equal to the non-OCD patients in ideation, threats and gestures, they are significantly less likely to make an actual attempt at suicide. Secondly, and most strikingly, is the relationship between depression and suicidal behavior. In the patient controls, there is an expected positive correlation between levels of depression and suicidal behavior, while in the OCD group there is an unexpected negative correlation. Similarly, the relationship between both trait and state anxiety and suicidal behavior is highly significant in the patient controls but weak and non-significant in the OCD inpatients. The same findings apply to aggression, anger and violence. The findings for the non-OCD inpatients are in accordance with what is generally reported in the literature (Apter et al., 1993, Apter et al., 1995). The findings for the OCD patients seem to indicate that the correlations of suicidal behavior in these adolescents are different. In fact, the only significant correlation with suicidal behavior in the OCD subjects is the presence of anti-social behavior.

Classic psychoanalytic theory predicts that individuals suffering from OCD will be protected from both depression and suicide. This appears to be incorrect as far as depression is concerned but may be true with regard to suicidal behavior. The mechanisms that 'protect' OCD patients from suicidal behavior are unclear.

Our findings are in accordance with those of Coryell (1984) who found a relatively low mortality rate in OCD patients at follow-up. Similarly Chen and Dilsaver (1995) found that, while bipolar patients with comorbid OCD thought more about death and suicide than bipolar patients without OCD, they actually tended to act out these impulses to a lesser degree. Their results implied the possibility that,

while in most psychiatric illnesses depression acts as an augments of suicidal behavior, it acts as an attenuator in OCD subjects.

It is not clear from the variables included in our study which variables are indeed related to suicidal behavior in OCD adolescents. The only variable was anti-social behavior, which was, in itself, not a prominent feature of our OCD cases, which perhaps explains why actual suicide attempts are rare in this sample. What is clear, however, from our findings is that bipolar disorder, when associated with OCD, is related to actual suicide attempts. The relationship between bipolar disorder, in general, and suicidal behavior is well documented. Thus, rates of suicidal behavior are nearly twice as high in bipolar patients as they are in unipolar individuals (Rhimer and Pestalicy, 1999).

Another striking finding in this study is the high comorbidity (6/40) between bipolar disorder and OCD in this referred population. In addition, all the OCD patients who *did* attempt suicide had comorbid bipolar disease of one form or another. This high comorbidity is in line with recent reports from adult populations (Chen and Dilsaver, 1995; Kruger et al., 1995; Perugi et al., 1997). The Epidemiological Catchment Area Survey found a rate of 21% of OCD in patients with bipolar disorder. This is eight times higher than for the general population and double the rate seen in unipolar patients (Chen and Dilsaver, 1995). Similarly, rates of affective illness of between 15.7% (Perugi et al., 1997) and 35% (Kruger et al., 1995) were reported in OCD sufferers. Contrary to reports of a lack of compulsions in OCD related to adult affective disorder, our patients showed a wide range of obsessional thoughts and compulsive actions. It has been noted that OCD adults and children are considered to be at high risk for mania induced by SSRI agents (Jefferson et al., 1991; Diler and Avci, 1999). Interestingly, two of our bipolar patients with OCD had their initial manic attack induced by SSRI medication.

#### 4.2. Conclusion and clinical implications

It may be that a unique relationship exists between depression and suicidal behavior in severely ill adolescents with OCD. If this is indeed so, the investigation of this relationship may be useful in

understanding suicidal behavior in psychiatric patients in general. This understanding may lead to better preventative interventions in a population that is at extremely high risk from death due to suicide. Furthermore, the combination of OCD with bipolar disorder, especially while in a manic attack, should be recognized as a risk factor for a suicide attempt.

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