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THE COMORBIDITY BETWEEN BIPOLAR DISORDER AND ADHD IN A YOUNG ADULT: A FOCUS ON IMPULSIVITY

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SUMMARY

Impulsivity is a complex behavioural feature of many psychiatric disorders, in particular of risk-taking behaviour, and is an important determinant of personality. Both ADHD and bipolar disorder express features of impulsivity. The concept of having two or more simultaneous psychiatric conditions is an increasingly recognised concept in the field of psychiatry, and is important clinically for management and prognosis. Consequently, the aim of this case presentation is to report about a young patient with both bipolar II and ADHD, in order to better understand which of the possible clinical phenotypes of these psychiatric conditions exist in comorbidity, mainly focusing on impulsive features because of the relevant challenge that this psychological aspect can represent in the clinical treatment of these patients.

Key words: *bipolar disorder – ADHD – impulsivity – comorbidity - suicide*

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INTRODUCTION

Impulsivity is a well recognised and clinically important aspect of psychiatric disorders. It has been defined as 'a predisposition toward rapid, unplanned reactions to internal or external stimuli with diminished regard to the negative consequences of these reactions to the impulsive individual or to others' (Chamberlain 2007). Psychiatric disorders most significantly associated with impulsivity include ADHD, drug dependence and bipolar disorders; other conditions associated with impulsivity include cluster B, dependent and schitzotypal personality disorders (Chamorro 2012).

Degree of impulsivity is important clinically as it helps to determine risk to the patient. Patients with high impulsivity present with behavioural disinhibition, attention deficits and lack of planning, making them more likely to be involved in risk taking activities such as driving recklessly, starting fights or shoplifting (Chamorro 2012).

The Barratt impulsiveness scale (BIS-11) represents a well established method of quantifying impulsivity (Strakowski 2010).

It is well established that impulsivity is a critically important aspect of both ADHD and bipolar disorder. However, impulsive behaviour shows different characteristics between the two conditions. For instance, non-planning impulsivity has been shown to be more specific to bipolar disorder than ADHD (Strakowski 2010), and patients suffering from bipolar disorder often present with suicidal ideation whereas those with ADHD do not (Pendergast 2014). Furthermore, patients with BD often seek pleasurable activities, a feature not shown in ADHD (McBurnett 1993; Evenden 1999). Additionally, bipolar patients often show much more severe cognitive impairment in terms of verbal memory and executive function (Passarotti 2010). Consequently, correct diagnosis between these conditions is vital for appropriate medical treatment and management (Pendergast 2014).

Whilst the difference show a clear distinction between the two conditions, it is of importance to investigate whether co-morbidity of these two conditions represents an increased risk to patients due to increased impulsivity.

The concept of co-morbidity between two psychiatric conditions is a growing area of interest within the field. Previous studies have investigated co-morbidity between these conditions (Strakowski 2010) and found that BIS-11 total scores were significantly higher in bipolar patients with a history of ADHD than control bipolar patients. Additionally, Biederman and colleagues (Biederman 1996) found that 11% of ADHD infants subsequently developed bipolar disorder.

In this article, we describe a case of a patient who had been diagnosed with both ADHD and bipolar disorder, and demonstrated highly impulsive behaviour.

CASE PRESENTATION

CC is a Caucasian 22-year-old boy, first presented to the ASPA Clinic (Assessment Single Point Access or initial psychiatric assessment) of the Bedford Hospital with previous diagnoses of ADHD and Autistic spectrum disorder, for an assessment of his mood disorder. His referral to ASPA was occasioned by the fact he had attempted to commit suicide because of low mood.

When he presented to the clinic he was euthymic.

He was a trainee mechanic and lived alone in an appropriate accommodation.

Previous assessments of CC carried out in another county regarding his Asperger/Autistic spectrum described several compulsive behaviours, including his insistence to wear socks which are assigned to that day, and watching films several hundred times in some cases. He was also reported to have stated he was "very rigid in his ways, and cannot tolerate changes to his routine", and that he "struggles to connect with the emotional state of other people". CC confirmed his rigidity and his needing to have things kept in order.

Regarding ADHD, CC described being difficult at school, and disruptive at home, sometimes digging holes in the garden when this was not expected.

On presentation to clinic, CC described symptoms of bipolar II disorder. He described getting highs and lows very regularly. His period of hypomania could last up to four days and consisted of him being very active and generally "hyper", and sleeping very little, napping for only 10-20 minutes. He also described being impulsive during these periods, spending money he didn't have, and becoming quite self destructive e.g. he pierced both of his ears.

His depressive episodes consisted of low mood, rated 1 out of 10, with little motivation to do anything. He described disturbed appetite, anhedonia, and reduced libido. Although he couldn't sleep well and was unable to get 8 hours, he reported that he could sleep more during his low periods than his high periods. At the same time, he said he could comfort eat during his low periods but also sometimes he was unable to eat anything at all. These depressive episodes could last up to 8 days at the longest.

He could not give us an exact point in his life when these low periods began, but it could have been when he was around 4-5 years of age.

The regular, rapid changes between highs and lows suggest a rapid cycling bipolar disorder. There are also instances where his periods of highs and lows changed during the day, which would lead us to expect that this patient experiences marked episodes of mixed affective states. He reported that his suicidal ideations tended to increase when in these mixed states.

In the past, CC had been involved in 4 attempts at suicide. These include buying coal to poison himself with carbon monoxide, ordering chloroform online, considering to jump off a high building and considering jumping in front of a train. The first two episodes seem to be planned with intent, including a suicide note left to warn people of the effects of chloroform. The later two seemed to have been impulsive incidents. His protective factor in the past was his girlfriend but they had broken up at the time of the assessment so he had no protective factor at that moment.

CC denied auditory hallucinations or delusions.

CC also seemed to have social phobia because he reported to become very anxious in a crowd; despite this, he denied having any panic attacks.

As for his past medical history, he reported to have asthma as a child, but he had not used an inhaler for years. Furthermore, he is allergic to Amoxicillin. No relevant family psychiatric history was reported but there were issues in his developmental history. In fact, his father left when his mother became pregnant and when he tried to contact his father many years later, he pretended that he didn't know him. His mother used to work for many hours during the day so he said that "he brought himself up".

He reported to have one older brother, one older sister and a younger sister but he had bad relationships with them.

As for the forensic history, he has been given a caution for attempting to steal a pushbike when he was 13 years old and also received probation for the attempted suicide by walking on a rail track.

CC denied smoking, using illicit substances and reported drinking only rarely.

When CC presented to the clinic, he has been given the MDQ (Mood Disorder Questionnaire) that was positive for bipolar disorder and the PHQ-9 (Patient Health Questionnaire-9) that recorded the fact that he had previously been depressed within two weeks.

As for risk assessment, CC was believed to be quite seriously at risk because he had a number of features which could make him more likely to become suicidal, namely his mixed state features, his rapid cycling and his social phobia within the clinical presentation of ADHD in comorbidity with bipolar II disorder.

Consequently, we decided first of all to optimise his mood stabilising regime. In fact, prior to clinic, CCs GP had queried bipolar disorder and started Depakote 250mg twice a day. He was additionally started on Aripiprazole 5mg/day. He was also organised a care co-ordinator, who gave him CBT, because of the degree of risk; furthermore, he was referred to the Autism Service and to the Maudsley Hospital in order to re-evaluate and treat his Adult ADHD.

CC was seen 4 times in clinic over the following 11 weeks, during which time his Depakote was stopped, and his Apriprazole was increased to 30mg/ day. He stopped taking Depakote himself due to reported drowsiness. He reported that he was slightly agitated because of Aripiprazole at the beginning; furthermore he said that he continued to experience mood instability. Therefore, we decided to add Lamotrigine 25 mg, a dose that should be increased.

Given the situation, the patient had been transferred to the Recovery Team as he would need long-term care.

DISCUSSION

This case raises interesting questions regarding the compound effect of psychiatric co-morbidities with features of impulsivity as a risk factor for suicide.

Both ADHD and bipolar disorder express features of impulsivity which is well documented (Nandagopal 2011, Chamorro 2012, Dawson 2014) and key neuro-

logical differences have been shown in the brains of these patients when compared to healthy controls (Passarotti 2010). The concept of having two or more simultaneous psychiatric conditions is an increasingly recognised concept in the field of psychiatry, and is important clinically for management and prognosis.

Impulsivity is a widely recognised aspect of bipolar disorder, and is shown to be a predictor of the time it takes to reach euthymia (Dawson 2014) and as an independent risk factor for suicide (Rihmer 2010). Previous studies have investigated the aspects of impulsivity throughout the course of bipolar disorder, and demonstrated elevated BIS in all phases of illness, although manic phases are well known to be a particular risk (Strakowski 2010).

Impulsivity is also a cardinal feature of ADHD, and is critical for diagnosis (Nandagopal 2011, Chamorro 2012).

Clinically however, there are core differences in the expression of impulsivity between these disorders. For instance, BD patients may be impulsive to seek pleasurable activities, whilst ADHD patients often seek stimulation of any kind, not restricted to pleasurable activities (McBurnett 1993, Evenden 1999, Holmes 2009).

It has been demonstrated that ADHD and impulsivity alone are both risk factor for the development of BD (Faedda 2014), which explains some of the similarities between these conditions.

It is of clinical interest to investigate whether patients who are co-morbid for BD and ADHD have higher impulsivity, as this may put them at increased risk of dangerous risk-taking behaviour, including suicide. As mentioned above, during experiments investigating motor response inhibition Passarotti and colleagues (Passarotti 2010) demonstrated impairment in the modulation of response inhibition in paediatric BD group compared to healthy controls; they reported reduced activation in both ventrolateral (VLPFC) and dorsolateral (DLPFC) prefrontal cortex, and increased bilateral caudate activation in ADHD groups, and decreased activation in left VLPFC, at the junction of inferior and middle frontal gyri, and in right anterior cingulate cortex (ACC). It should be questioned as to whether patients with ADHD co-morbid with BD diagnoses demonstrate even more pronounced neurological demonstrations of response inhibition.

This case would certainly support this hypothesis. CC fit the diagnostic criteria for both ADHD and BD II, and demonstrated highly impulsive, dangerous behaviour. It was of critical importance to manage these features, as in the context of a high suicide risk, as demonstrated by previous attempts, impulsive tendencies would further increase the risk of suicide. Management of impulsivity is recognised as important in each of these conditions; as discussed by Dawson and colleagues (Dawson 2014), patients with BD exhibit better treatment response with better impulse control. It could be argued therefore, that it may be prudent to identify these patients with co-morbidities of conditions with impulsive features, as they may require additional management steps to control higher impulsivity levels.

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References

1. *Biederman J, Faraone S, Mick E, Wozniak J, Chen L, Ouellette C, et al.: Attention-deficit hyperactivity disorder and juvenile mania: an overlooked comorbidity? J Am Acad Child Adolesc Psychiatry 1996; 35:997-1008.*
2. *Chamberlain SR & Sahakian BJ: The neuropsychiatry of impulsivity. Current Opinion in Psychiatry 2007; 20:255–61.*
3. *Chamorro J, Bernardi S, Potenza MN, Grant JE, Marsh R, Wang Sand et al.: Impulsivity in the general population: A national study. J Psychiatr Res. 2012 August; 46: 994–1001. doi:10.1016/j.jpsychires.2012.04.023.*
4. *Dawson EL, Shear PK, Howe SR, Adler CM, DelBello MP, Fleck DE et al.: Impulsivity predicts time to reach euthymia in adults with bipolar disorder. Bipolar Disord. 2014; 16:846-56.*
5. *Evenden J: Impulsivity: A discussion of clinical and experimental findings. J Psychopharmacol 1999; 13:180–192.*
6. *McBurnett K, Lahey BB & Pfiffner LJ: Diagnosis of attention deficit disorders in DSM-IV: Scientific basis and implications for education. Except Child 1993; 60:108–117.*
7. *Nandagopal JJ, Fleck DE, Adler CM, Mills NP, Strakowski SM & DelBello MP: Impulsivity in Adolescents with Bipolar Disorder and/or Attention-Deficit/Hyperactivity Disorder and Healthy Controls as Measured by the Barratt Impulsiveness Scale. Journal of child and adolescent psychopharmacology 2011; 21:465–468.*
8. *Passarotti AM, Sweeney JA & Pavuluri MN: Neural correlates of response inhibition in Pediatric Bipolar Disorder and Attention Deficit Hyperactivity Disorder. Psychiatry Res 2010; 181:36–43.*
9. *Rihmer Z & Benazzi F: Impact on suicidality of the borderline personality traits impulsivity and affective instability. Ann Clin Psychiatry 2010; 22:121-8.*
10. *Strakowski SM, Fleck DE, DelBello MP, Adler CM, Shear PK, Kotwal R et al.: Impulsivity across the course of bipolar disorder. Bipolar Disord 2010; 12:285–297.*
11. *Pendergast L, Youngstrom EA, Merkitch KG, Moore KA, Black C, Abramson L et al.: Differentiating Bipolar Disorder from Unipolar Depression and ADHD: The Utility of the General Behavior Inventory. Psychol Assess 2014; 26:195–206.*

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