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Menstrual psychosis

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In this report, we explore a case of symptoms consistent with menstrual psychosis. In order to do this, a review of the literature relating to this topic was conducted and a report was written. This is a case of a previously well adolescent female who experienced psychotic symptoms in the pre-menstrual phase of her cycle and became well soon after her menstrual period began. These episodes were prevented by aripiprazole, but recurred once medication was withdrawn. We conclude that psychosis in some women may have a relationship with the menstrual cycle. In women presenting with psychosis, it may be appropriate to note menstrual variation in symptoms. This could have a potential role in individualisation of treatment for women with psychotic disorders.

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Introduction

Menstrual psychosis is a little-known disorder, with between 80 and 280 recorded cases worldwide (Brockington, 2005, 2011). The symptoms are similar to those of bipolar disorder (Brockington, 2011). Classification is based on the timing of psychotic symptoms in the menstrual cycle [premenstrual, catamenial (during menstruation), paramenstrual (before and during menstruation), mid-cycle and epochal (lasting for one complete cycle)] (Fernando *et al*. 2014).

A diagnosis requires (Brockington, 2005, 2011)

(1) Acute onset against a background of normality,
(2) Brief duration,
(3) Full recovery,
(4) Psychotic or manic symptoms,
(5) Circa-mensual periodicity (following a pattern that repeats approximately on a monthly basis).

Antipsychotics are more effective at shortening than preventing episodes, and hormonal treatments such as sex hormones, clomiphene or thyroid hormone may have a preventative role. The condition usually presents in anovulatory or otherwise abnormal cycles. The neural defect that would predispose an individual to developing menstrual psychosis is proposed to originate in the hypothalamus (Brockington, 2011).

Menstrual psychosis occurs most commonly in phases of the menstrual cycle where oestrogen levels are low (luteal phase). Episodes are more common at times close to menarche, childbirth and menopause. Episodes of menstrual psychosis may occur in some women with bipolar affective disorder or precede an eventual diagnosis of bipolar affective disorder.

Case report

XX first presented to her local A & E at age 13 (2012) in an acute confusional state. Her symptoms started in the week leading up to her presentation. She had had similar symptoms to a lesser extent twice in the preceding months.

On the first occasion, she merely seemed 'out of sorts' to her close family members for about a week, and was indecisive and anxious. Her parents thought that this may have been in the week before she first menstruated. Her symptoms resolved spontaneously within days of the onset of her menstrual period. The next episode occurred 3 months later (likely before her second menstrual period) on a holiday abroad, when she showered late at night and complained of itchy skin, was worried that she or her father would get skin cancer, believed people knew who she was because she was acting strangely, thought policemen were after her because she might have done something wrong and sang excessively at a karaoke night. This also resolved after approximately 2 weeks (during the menstrual phase of her cycle).

Three weeks later, XX had a more severe episode, whereby she developed excessive energy levels, became convinced that she was pregnant, became disoriented in time and did not know how old she was and believed murders reported on television were committed by her. She became suspicious of food and drinks, and continued to deteriorate after

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hospital admission, sometimes stating that she was a shadow or a ghost. These symptoms also occurred during the late luteal phase of her menstrual cycle.

Medical investigations including EEG, full blood work-up (including anti-NMDA receptor antibodies, luteal phase Luteinising Hormone and Follicle Stimulating Hormone, and Thyroid Function Tests) detected no abnormality. There were no oligoclonal bands on lumbar puncture. Her MRI brain revealed a 2.5 cm cyst on her left basal ganglia and a 1 cm lesion in her thalamus which were of uncertain significance. (A repeat MRI brain in 2013 and again in 2017 revealed that the lesions were unchanged and likely insignificant to her presentation.) A drug screen was negative and XX reported no drug or alcohol abuse. Prior to this, XX had been well other than mild asthma. She had not recently been taking steroids or inhalers.

Developmentally, XX had experienced no significant difficulties other than soiling in childhood, which resolved before the age of 4. She lived with her parents and had two sisters. She was doing well in secondary school and liked by her teachers and peers alike. Her family history was significant for panic disorder in her father, and a maternal aunt had developed Post-Traumatic Stress Disorder symptoms after an armed robbery. There was no family history of psychosis or pre-menstrual dysphoric disorder.

At the time she was first seen by CAMHS (after admission to the paediatric ward during the luteal phase of her cycle), XX was too disorientated to provide a coherent history and she was pacing the paediatric ward in her underwear. She alternated between seeming annoyed and demonstrating inappropriate levels of affection. She believed the consultant to be a boy in her class. She had no thoughts of self-harm or suicidal ideation. Objectively, her mood was distressed. Delusional misidentification, delusions of reference and paranoid delusional beliefs were noted. Regarding her speech, there was latency in response, though the rate was appropriate. She lacked insight into her condition and was wary of treatment.

XX was admitted to the regional CAMHS inpatient unit where she was commenced on aripiprazole, titrated upwards to 7.5 mg daily. She admitted to having auditory hallucinations at the time, but subsequently stabilised within days. Given the cyclical nature of her symptoms, she remained in hospital for 3 weeks. She integrated well into the inpatient school programme and only complained of occasional unusual thoughts while waking up from dreams (during the menstrual phase of her cycle). She was discharged in stable condition 6 weeks later and continued on aripiprazole. XX was functionally well and attended her own school.

Aripiprazole was discontinued by the treating consultant after 14 months (2014) and XX suffered a brief psychotic episode pre-menstrually in 2015. She became paranoid regarding others judging her negatively, and this was possibly precipitated by alcohol intoxication (but continued into the menstrual phase of her cycle once the intoxication had resolved). She was treated as an outpatient and it was advised that she remain on aripiprazole for another 12 months afterwards.

After this period, XX had two similar episodes of mild suspicion and disinhibition, which were periodically treated with aripiprazole and settled quickly after her menstrual period had started.

In 2017, XX had another episode that began during the luteal phase, but did not resolve soon after her menstrual period. She presented with marked grandiosity and disinhibition. She was singing and playing music, and believed that people in the music industry were stealing her song ideas. She had other grandiose beliefs, including the idea that she was a famous actress, and that she could be the president of the USA. XX was playing the ukulele for her treating team and wearing brightly coloured make-up (which was out of character). XX was irritable, but not aggressive.

Risperidone was commenced but XX did not settle in the community. She was again admitted to the CAMHS inpatient unit.

While lithium therapy was initiated, XX's risperidone dose was increased to 6 mg (from 3 mg). XX recovered well and she was discharged on 800 mg of lithium citrate and 1 mg of risperidone.

The risperidone dose was slowly reduced as XX's lithium dose reached a therapeutic level. Her symptoms were well controlled at the time of discharge, and the inpatient team felt it would be reasonable to progress to lithium monotherapy in the coming months. Her diagnosis on discharge was bipolar affective disorder.

Discussion

Menstrual psychosis is a rare disorder and some psychiatrists may not be familiar with it (Zanzonico & Vergne, 2015). It is believed to be caused by increased dopamine sensitivity during low oestrogen phases of the menstrual cycle. As in the case above, episodes are common around menarche. Other episodes may present around the time of childbirth (Che, 2016; Grünewald *et al*. 2012). Oestrogen is a modulator of tyrosine hydroxylase (which limits the rate of noradrenaline and dopamine synthesis). It is hypothesised that in the brains of women who are vulnerable to menstrual psychosis, the low oestrogen and therefore increased dopamine levels during certain parts of a menstrual cycle precipitate psychotic symptoms. Another study demonstrated that the D2 dopamine receptors of monkeys are 12% more sensitive during the low oestrogen (luteal)

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phase of the menstrual cycle. There is a recorded case involving a patient with a destroyed pituitary gland, who developed symptoms after stopping hormone replacement therapy. This would support the idea of a hypothalamic origin (Brockington, 2011).

In the case of XX, aripiprazole had appeared to prevent further psychotic episodes until her eventual diagnosis emerged. In light of the common symptoms between Bipolar Affective Disorder and menstrual psychosis (grandiosity and lability) and Professor Ian Brockington's papers supporting the concept that premenstrual psychosis is, indeed, a bipolar spectrum disorder, one diagnosis does not necessarily rule out the other. It is, however, inconsistent with prior descriptions of menstrual psychosis that aripiprazole appeared to reduce the frequency of XX's psychotic episodes.

The primary limitation of this case is its retrospective nature. It was not possible to record the exact date in XX's menstrual cycle that symptoms emerged. This case does, however, grant us the opportunity to examine cyclical patterns in other young women who present with similar symptomatology from an early stage in their presentation.

Conclusion

Menstrual psychosis is a lesser known and possibly under-recognised condition. Accurate tracking of psychotic episodes and prompt management of the disorder has the potential to vastly improve a patient's quality of life. Vigilance is required when assessing female patients of childbearing age presenting with psychosis, keeping in mind menstrual psychosis as a differential diagnosis (Zanzonico & Vergne, 2015).

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Conflict of interest

EA, DC, CP and ER have no conflicts of interest to disclose.

Ethical standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. The authors assert that ethical approval for publication of this case report was not required by their local Ethics Committee. Informed consent was obtained from the adolescent and her parents to submit this case report.

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