CASE REPORT

Catamenial psychosis in an adolescent girl

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SUMMARY

We report the case of an adolescent girl who was 14 years old at initial presentation. A shy, immature and timid individual, she began to have recurring, progressive episodes characterised by insomnia, paranoia, distorted thinking and mood instability with a mix of depressive and manic-like symptoms. An extensive medical work up was unrevealing. Her family noted a pattern that coincided with her menstrual cycle. An endocrine consult was obtained, and the diagnosis of catamenial psychosis was performed. After treatment with leuprolide, resulting in a shutdown of the hypothalamic-pituitary-ovarian axis, the patient's symptoms were resolved completely.

BACKGROUND

The first mention of menstrual psychosis was in France in 1850.^{1 2} Since then, estimates of the total number of cases of menstrual psychosis, of which catamenial psychosis is a specific subtype, are between 80 and 200.¹ Three confirmed cases of catamenial psychosis, with 30 possible cases, have been noted in the literature.¹

There are five different types of menstrual psychosis: premenstrual, catamenial, paramenstrual, mid-cycle and epochal. Classification of menstrual psychosis subtypes is based on the timing of the onset of symptoms during a woman's menstrual cycle. Unlike more common psychotic disorders, menstrual psychosis is characterised by a cyclical presentation of psychotic features with a return to baseline behaviour and function in between episodes. Sex hormone involvement is thought to be key in the explanation of the symptoms.¹⁻³

While there have been studies suggesting that sex hormones and their changing levels during menstruation can affect pre-existing psychiatric illness and lead to worsening symptoms and increased psychiatric hospitalisations, little is known about the specific role sex hormones play in psychiatric illness.^{4 5} Theories as to how the hypothalamic-pituitary-ovarian axis influences symptoms have been brought forth, with the consideration that the level of dysfunction may correlate with the severity of symptoms, but at this time much of what is found is largely theoretical or incomplete.^{3 5}

In current times, menstrual psychoses and their subtypes are a largely forgotten diagnosis. This case brings into discussion the role of hormonal involvement in women with psychotic illness, especially in those who are partially responsive or treatment-resistant to antipsychotic therapy. With the possibility of hypothalamic-pituitary-ovarian axis involvement in the role of psychosis, this case raises the possibility of hormone therapy as a primary treatment or augmentation in the treatment of females

who have persistent psychotic symptoms despite available pharmacotherapy for psychotic illness.

By making healthcare providers aware of this illness, we strive to expand the differential considerations in females who present with psychotic illness. We also highlight the possibility of initiating a broader array of therapeutic strategies that could lead to improved quality of life and possible complete remission of symptoms.

CASE PRESENTATION

A 14-year-old girl with a history of anxiety and a family history significant for a maternal grandmother and great uncle with bipolar disorder and a paternal aunt with depression presented with 'personality changes' and strange behaviour for 6–9 months. Her family observed her to be more gregarious, failing her classes and having trouble sleeping, all of which were unusual for her. The patient herself relayed that she had been 'really stressed out lately' and had been suffering from depressive symptoms for the past 2 weeks with anxiety symptoms notable since middle school.

At the initial psychiatric assessment, the patient was diagnosed with social anxiety, depression of an unspecified type and attention deficit hyperactivity disorder (ADHD), primarily of an inattentive type. She was started on fluvoxamine and alprazolam. After 1 week, she continued to have problems with insomnia and difficulty concentrating, and trazodone was added to her medications and alprazolam discontinued. Two weeks after starting medications the patient reported significant improvement in mood symptoms, but continued to have problems with attention. Bupropion was added to improve her ADHD symptoms while minimising anxiety risk.

She did well until the following month, when she wandered away from home and was found by her family in a neighbour's yard in a confused state. The next morning, the family awoke to find the kitchen destroyed and the patient covered in food and wearing a Halloween mask. On interview, the patient appeared distracted and disorganised with poor recollection of the events that occurred. At that time the patient appeared delirious and concern of an organic cause for symptoms was raised. Her primary care physician was consulted and the patient was admitted for medical evaluation with metabolic, neurological, infectious disease and rheumatological work ups to rule out possible causes of symptoms. No direct cause of symptoms was discovered, but the possibility of meningococcal meningitis was considered and the patient was treated with a course of antibiotics.

Following this admission and medical treatment, the patient was reported to be doing well and

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dropped out of psychiatric follow-up. Seven months after her hospitalisation, the patient was seen again for psychiatric follow-up after an episode where she disappeared from her summer camp and was found to be swimming naked in a lake at 2:30. The parents believed the cause of symptoms to be organic in nature, and went to an out of state facility for a second extensive work up. As with the first medical work up, the second assessment could not identify a direct medical aetiology for the patient's episodes. The patient was tried on a course of antibiotics, but unlike her first hospitalisation, her second treatment course did not result in improvement of symptoms. The second medical team relayed to her family their diagnostic impression of a primary psychiatric condition as cause for symptoms.

Over time, the family recognised that these episodes coincided with the patient's menses. Endocrinology was consulted and the possibility of catamenial psychosis was considered. The patient was started on levonorgestrel/ethinyl oestradiol at that time. She did well for 2 months, but then had her most severe episode characterised by paranoia, delusions, disordered thinking and enuresis.

After this episode, leuprolide was added to her oral contraceptive, with sertraline and clonidine for anxiety and insomnia. The patient did well on this regimen for many months, experiencing only a mild resurgence of symptoms on two occasions coincident with breakthrough bleeding.

After 18 months of baseline function, leuprolide was discontinued. The patient continued on a combination of oral contraceptives and fluoxetine. The patient and her family reported a year later that she continued to do well.

INVESTIGATIONS AND DIFFERENTIAL DIAGNOSIS

The patient was hospitalised twice, with her first hospitalisation during an acute psychotic episode, and her second hospitalisation following a severe psychotic episode. Both times an extensive medical work up exploring metabolic, neurologic, infectious disease, and rheumatologic causes for her symptoms was conducted. In retrospect, one of the few areas not assessed during either of these work ups was an endocrine source of symptoms. Her initial medical work up yielded positive IgG titres for meningococcal infection. She received azithromycin at that time for possible meningitis, which appeared to result in a resolution of symptoms.

On her second hospitalisation, work up yielded inconclusive results. Neurology initiated treatment with azithromycin, but this time no improvement in symptoms was noted. In hindsight, the resolution of symptoms during her first trial of antibiotics was most likely coincidental, with the patient's natural return to baseline following her most recent episode.

The family, still unwilling to accept a psychiatric diagnosis as the primary cause for symptoms, refused treatment with a neuroleptic, and the patient experienced her worst episode approximately 3 months after her second medical evaluation. The family began documenting the patient's episodes in detail and observed over time that her episodes seemed to coincide with the onset of her menstrual cycle.

It was at this point an endocrinology consult was obtained, and the consideration of a rare disorder called catamenial psychosis was brought forth. Endocrinology started the patient on a levonorgestrel/ethinyl oestradiol combination oral contraceptive. She continued to have mild episodes of psychosis and mood changes with breakthrough bleeding on her combination oral contraceptive, which resulted in endocrinology adding leuprolide to her medications. With the addition of leuprolide,

psychotic symptoms resolved completely with only residual features of ADHD and anxiety at baseline.

Her final diagnoses were catamenial psychosis, ADHD of an inattentive type and generalised anxiety disorder.

DIFFERENTIAL DIAGNOSIS

On initial exam, the patient's diagnosis included social anxiety, depression of an unspecified type and ADHD, primarily of an inattentive type. Her differential included schizophreniform disorder, schizophrenia, schizoaffective disorder and bipolar disorder.

During her medical work up, the possibility of a meningococcal meningitis or encephalitis was taken into consideration and the patient was treated with a course of antibiotics. The patient appeared to improve after antibiotics, but was hospitalised again 7 months later for similar symptoms. Following her second admission and medical evaluation, she was again treated for meningitis, but symptoms failed to resolve on a second trial of antibiotics.

As she continued to have symptoms on therapeutic dosages of antidepressant and anxiolytic medications, the diagnoses of a psychotic disorder or a bipolar disorder were taken into further consideration. The family was able to document the timing of the patient's episodes in great detail, and after noticing a coincidence with her menses, an endocrinology evaluation resulted in the diagnosis of catamenial psychosis.

TREATMENT

Treatment for our patient coincided with the most likely diagnosis as the case evolved. Initially, based on our diagnoses of social anxiety, unspecified depression and ADHD of an inattentive type, the patient was treated with fluvoxamine and alprazolam. As reported, her anxiety symptoms improved but she continued to struggle with symptoms of inattention and insomnia, and bupropion and trazodone were added to her medications.

After the patient's first hospitalisation, all of her medications were stopped and she was given a course of antibiotics, which correlated with a period of improvement. When a second round of antibiotics did not result in improvement, an antipsychotic was considered.

The family obtained an endocrinology evaluation where the diagnosis of catamenial psychosis was considered. The patient was placed on levonorgestrel/ethinyl oestradiol with the intention of suppressing menses at the level of the anterior pituitary. The patient continued to experience bleeding and had her most severe episode of psychotic behaviour 2 months after being placed on oral contraceptives. At that time leuprolide, a GnRH (gonadotropin releasing hormone) analogue that works at the level of the hypothalamus, was added to the levonorgestrel/ethinyl oestradiol. This combination resulted in complete suppression of the patient's menses as well as psychotic symptoms.

It is unknown why the patient continued to experience breakthrough bleeding while on the oral contraceptive, but the consideration of addressing the patient's hormonal function from a multilevel approach was important in the suppression of her menses and resolution of her symptoms. After suppression of psychotic symptoms, she was treated with sertraline for residual anxiety symptoms and clonidine for insomnia.

After 18 months of baseline function, leuprolide was discontinued and she was maintained on oral contraceptive. She continued to have anxious symptoms despite being on therapeutic doses of sertraline, and was switched to fluoxetine, which resulted in improvement of symptoms.

OUTCOME, FOLLOW-UP AND PATIENT'S PERSPECTIVE

Three years after her initial presentation, the patient is doing well and reports that she has not had a resurgence of symptoms. She uses fluoxetine for generalised anxiety and clonidine for insomnia and continues to be on an oral contraceptive; her family says she is doing well in school and interacting with peers without difficulty. She is involved with her school drama team, and plans to graduate from high school and attend college to pursue creative writing.

With the exception of worsening anxiety in anticipatory situations, the patient and her family feel she is 'back to normal' and are relieved that she is able to function in her day to day life without much difficulty. In relation to the previous 3 years, the patient has a vague recollection of her symptoms, but when she views videos of her behaviour, she becomes "embarrassed... because that's not who I am at all. It was like I wasn't even there". She continues to follow-up with endocrinology and psychiatry intermittently.

DISCUSSION

A review of the literature documents the rates of menstrual psychosis anywhere from 1 in 1000 to 29 in 1000 female inpatient psychiatric admissions.² This is inconsistent with the 80 confirmed and 200 possible patients documented by Brockington in 2005, and brings to light the difficulty of effectively confirming a diagnosis of menstrual psychosis in patients due in part to its rarity and its similarities to other psychiatric illnesses.¹ Co-occurring psychiatric illnesses and lack of knowledge of how the hypothalamic-pituitary-ovarian axis influences psychotic and mood symptoms all illustrate the complexity of mental illness in women's health.³

Recent randomised control studies have shown the possible benefit of oestrogen therapy in women with diagnosed schizophrenia and schizoaffective disorder.⁶ Along with menstrual psychosis, cyclical presentation of psychosis has also been documented in patients with diabetes and seizure disorder.² Further research to understand the role of hormones in psychotic illness is warranted.

At this time, the gold standard of therapy for true menstrual psychosis involves suppression of menses, either pharmacologically with hormones or hormonal analogues, menopause, pregnancy, or removal of ovaries, regardless of the subtype that presents.¹ Antipsychotics and antidepressants have been reported to be helpful during acute psychotic states in menstrual psychoses, but have not been documented as successful monotherapy in prevention of further episodes in the treatment of menstrual psychoses.²

Other discussed alternative therapies for menstrual psychosis include thyroid hormone therapy, electroconvulsive therapy and mood stabilisers.^{1 2} Efficacy of these treatments has been inconsistent in the literature; consequently, utilisation of these alternatives is indicated only when hormonal treatment has failed or only resulted in a partial response. Finally, the patient's medical history should be taken into consideration when using alternative therapies as cyclical psychoses may coincide with underlying medical problems such as diabetes or seizure disorder that may be poorly controlled.

At this time, much of what is known about menstrual psychosis and the treatment of its symptoms has been gathered from trial and error, with many cases diagnosed retrospectively. While it appears a rare illness, menstrual psychosis should be considered in the differential diagnosis in women of childbearing age with a difficult to treat psychotic illness, and further research may help elucidate the mechanisms underlying this presentation as well as give insights into the aetiology of more traditional psychotic presentations.

Learning points

- ▶ Catamenial psychosis is a subtype of menstrual psychoses. Menstrual psychoses can be differentiated from more common psychotic disorders by the cyclical presentation of symptoms with a return to baseline function in between episodes of psychosis.^{1 2} These periods of baseline function can be difficult to recognise in patients with underlying psychiatric illnesses and can make the presentation of a clear timeline of symptomatology difficult to ascertain.
- ▶ Treatment for menstrual psychosis involves suppression of menses. Currently, oestrogen and progesterone modulating therapies are regarded as the most effective treatment, and to date there has been differentiation in the treatment based on the timing of symptoms within a woman's cycle.^{1 2} Traditional therapies for mood and psychotic disorders can help to augment therapy and can be useful in acute psychosis, but do not appear effective as a single therapy for preventing future episodes.²
- ▶ While the incidence of menstrual psychosis is rare, with catamenial psychosis yielding even fewer identified cases, clinicians should consider the diagnosis in female patients who do not appear to respond to traditional therapies for psychosis or those who present with a cyclical presentation of psychotic symptoms. If clinicians are alert to the possible diagnosis of catamenial psychosis, then they can more effectively diagnose and begin therapy, leading to a significantly improved quality of life, and even the possibility of a complete resolution of symptoms.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Brockington I. Menstrual psychosis. *World Psychiatry* 2005;4:9–17.
- 2 Brockington IF. Menstrual psychosis: a bipolar disorder with a link to the hypothalamus. *Curr Psychiatry Rep* 2011;13:193–7.
- 3 Sheinfeld H, Gal M, Bunzel ME, et al. The etiology of some menstrual disorders: a gynecological and psychiatric issue. *Health Care Women Int* 2007;28:817–27.
- 4 Lande RG, Karamchandani V. Chronic mental illness and the menstrual cycle. *J Am Osteopath Assoc* 2002;102:655–9.
- 5 Rapkin AJ, Akopians AL. Pathophysiology of premenstrual syndrome and premenstrual dysphoric disorder. *Menopause Int* 2012;18:52–9.
- 6 Kulkarni J, Gavrilidis E, Wang W, et al. Estradiol for treatment-resistant schizophrenia: a large-scale randomized-controlled trial in women of child-bearing age. *Mol Psychiatry* 2014.

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