

# Recurrent Psychotic Episodes with a Near-monthly Cycle

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## Abstract

A 12-year-old girl presented to the mental health service for an abrupt onset of mental changes characterised by hearing voices and being paranoid. She appeared preoccupied and her mood was labile. There was no family history of mental illness, and no organic causes were identified. These symptoms subsided spontaneously in a week. However, she experienced 3 other similar psychotic episodes afterwards which happened in a near-monthly cycle. Her level of functioning was normal between these episodes. Throughout the course of the illness, it was noted that these mental state changes might be related to the menstrual cycle. In this case we discuss the recurrent periodic psychoses in adolescents and the important differential diagnoses to be considered, including menstrual psychosis, a rare and less well-understood clinical entity.

**Key words:** Adolescent; Psychotic disorders; Recurrence

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## Introduction

There have been many case reports of adolescents who present with recurrent psychotic episodes — the clinical symptoms range from stupor to psychomotor excitement, and they are usually accompanied by delusions or hallucinations. These episodes usually subside within 2 weeks but are often repeated. It has been observed that there is a tendency for these patients to repeat the same symptoms in a near-monthly cycle. These periodic psychoses of puberty have been reported to occur below the age of 20 years and comprise predominantly affective symptoms and paranoid symptoms.<sup>1</sup> These recurrent brief psychotic episodes in adolescents appear to be manifestations of affective illness and may be treated or prevented as such.<sup>2</sup> We present a young adolescent girl with periodic psychotic episodes to illustrate the important clinical diagnoses to be considered in these cases.

## Case History

A 12-year-old Form 1 girl who lived with her parents and younger brother first presented to mental health services on 24 February 2014 with an abrupt onset of mental state

changes preceded by interpersonal conflicts. She complained of hearing voices that asked her not to study at school and not to read messages on her mobile phone. She felt as if people on the streets were staring at her, and she believed her classmates were talking behind her back. She did not sleep well and she appeared to be tired with poor concentration. She became increasingly preoccupied and did not speak a word all day long at school. She felt guilty about reading cartoon pornography on the Internet more than a year ago and believed the police would soon come and catch her. She was also anxious about people knowing that she had previously read pornography. She denied any suicidal ideas. She was brought to the emergency department because of her poor mental state and admitted to the paediatric unit for organic work-up on her mental state changes.

With regard to her medical history, she was born full term by normal spontaneous delivery with no perinatal problems. She had achieved normal developmental milestones and was prescribed no long-term medications. Her age at menarche was 11 years and she had no family history of mental illness.

Organic work-up including full blood count, liver and renal function tests, thyroid function test, ceruloplasmin and serum copper levels, urine toxicology, computed tomographic scan of the brain, and electroencephalography were all unremarkable.

Her mental state improved gradually after admission. By the time she was seen by psychiatrist, which was about a week after her onset of mental state changes, all psychotic symptoms had subsided without any psychiatric treatment. The provisional psychiatric diagnosis was acute and transient psychotic disorder according to the ICD-10 criteria. Details of the diagnostic criteria are shown in Table 1.<sup>3</sup> She was not prescribed any medication at that time and an outpatient psychiatric appointment was arranged to

**Table 1. Diagnostic criteria for acute and transient psychotic disorders (F23) according to the ICD-10.<sup>3</sup>**

G1	There is acute onset of delusions, hallucinations, incomprehensible or incoherent speech, or any combination of these. The time interval between the first appearance of any psychotic symptoms and the presentation of the fully developed disorder should not exceed 2 weeks
G2	If transient states of perplexity, misidentification, or impairment of attention and concentration are present, they do not fulfil the criteria for organically caused clouding of consciousness as specified for delirium (F05), criterion A
G3	The disorder does not meet the symptomatic criteria for manic episode (F30), depressive episode (F32), or recurrent depressive disorder (F33)
G4	There is insufficient of recent psychoactive substance use to fulfil the criteria for intoxication (F1x.0), harmful use (F1x.1), dependence (F1x.2), or unchanged use of alcohol or drug in amounts or with the frequency to which the individual is accustomed does not necessarily rule out the use of F23; this must be decided by clinical judgement and requirements of the research project in question
G5	Most commonly used exclusion clause. There must be no organic mental disorder (F00-F09) or serious metabolic disturbances affecting the central nervous system (this does not include childbirth)

monitor her mental state following discharge.

She resumed school regularly after the first episode of psychosis. Her mental state deteriorated suddenly again on 14 March 2014, about 3 weeks after the first episode. She presented with similar symptomatology characterised by increased perplexity, not responding to others, and feeling guilty about having watched pornography before. Again she firmly believed that people around her, even strangers, knew that she had read pornography. Symptoms subsided spontaneously after a week, approximately 2 days after commencement of risperidone 0.5 mg/day.

The third episode started on 12 April 2014 after she was terrified by witnessing a classmate having a convulsion while on a school trip. She had a similar presentation that included perplexity, irrelevant speech, poor sleep, and a reduced oral intake since she believed the water to be poisonous. She also refused medication as she believed the drug resulted in abnormal hair growth on her arms (physical examination excluded any such abnormal hair growth). She returned to her pre-morbid mental state after a week and risperidone was increased to 1 mg/day.

The fourth episode started on 11 May 2014 with no apparent stressor. She presented with sudden onset of perplexity and ideas of reference. Symptoms subsided after a week. A paediatrician was consulted about the need for any further organic work-up. Magnetic resonance imaging of the brain was arranged and the paediatrician suggested metabolic screening tests be done during the acute phase of mental state changes in the future. Risperidone was increased to 1.5 mg/day. It was noted that the patient started menstruation soon after admission. Unfortunately, there was a lack of information about previous menstrual cycles so any connection with onset of these psychotic episodes could not be determined.

In summary, the patient presented to the mental health service at the age of 12 years. She experienced 4 brief psychotic episodes from which she made a complete

recovery after a week. These episodes happened in a near-monthly cycle. Her level of functioning was normal in between. She had no family history of mental illness. Acute infections, metabolic disorders, and intoxication were excluded. Results of the investigations are summarised in Table 2. Her last psychotic episode was in May 2014, and she has been maintained on risperidone 1.5 mg/day since then with stable mental state.

## Discussion

Recurrent episodes of psychotic features in adolescents have been the subject of clinical discussion for decades. Different cases have been reported worldwide in Germany, America, and Japan.<sup>1,2,4-6</sup>

Important clinical differential diagnoses include metabolic disorders, especially in patients who present with periodic changes to mental state. Hereditary metabolic disorders (HMD) are rare but important causes of psychiatric disorders among adolescents and these include Wilson's disease, remethylation disorders, and porphyria.<sup>7</sup> Some HMD can elicit psychiatric signs years before other more specific organic signs appear.<sup>8</sup> The diagnosis of the disease at the 'psychiatric' stage corresponds to a relatively early physical / organic phase when timely treatment can help prevent the occurrence of irreversible outcomes.<sup>9</sup> Although HMD that present purely with psychiatric symptoms are very difficult to diagnose, it is important for psychiatrists to be aware of these possible differential diagnoses.

Another rare but clinically important differential diagnosis, especially in girls who present with mental state changes on a near-monthly basis, is menstrual psychosis. The connection between menstruation and psychological disorder was first observed in the 18th century although this concept was not universally accepted and there remains scepticism about such a diagnosis.<sup>10</sup> Menstrual psychosis has the following characteristics: (1) acute onset against

**Table 2. Investigation results.**

	Results	Reference range
<b>Baseline investigations</b>		
Blood test		
Full blood count	Normal	
Liver and renal function test	Normal	
Thyroid function	Normal	
Calcium (adjusted) and phosphate	Normal	
Ceruloplasmin and serum copper	Normal	
Urine analysis		
Urine toxicology	Negative	
Imaging studies		
Computed tomography of brain	Normal	
Magnetic resonance imaging of brain	Normal	
Electroencephalography (during the acute episode)	Normal	
<b>Other investigations</b>		
Plasma ammonia ( $\mu\text{mol/L}$ )	14.3	< 48.0
Plasma urate (mmol/L)	0.32	0.17-0.36
Plasma lactate (mmol/L)	1.3	0.7-2.1
Venous blood gases	Normal	
Urine porphyrins	No excess	
Urine urobilinogen	Normal	
Carnitine analysis for inborn metabolic disease		
Serum-free carnitine ( $\mu\text{mol/L}$ )	37.4	19.3-53.9
Serum acylcarnitines pattern	No abnormal pattern detected	
Biochemical investigation for inherited metabolic disease		
Urine reducing substances	Negative	
Urine glucose	Negative	
Urine ketone	Positive	
Urine glycosaminoglycan ( $\mu\text{mol/L}$ )	56.8	
Urinary glycosaminoglycan / creatinine ratio	4.9	< 5.3
Gas chromatographic analysis of urinary organic acids	Slight increase in ketone bodies	
Plasma amino acids ( $\mu\text{mol/L}$ )		
Alanine	413	152-547
Allo-isoleucine	5	0-5
Arginine	108	10-140
Argininosuccinic acid	2	0-8
Asparagine	63	23-112
Aspartic acid	7	0-24
Citrulline	22	1-46
Cystathionine	< 2	0-3
Glutamic acid	43	5-150
Glutamine	512	254-823
Glycine	272	127-341
Histidine	87	41-125
Isoleucine	95	22-107
Leucine	154	49-216
Lysine	203	48-284
Methionine	37	7-47
Ornithine	64	10-163
Phenylalanine	60	26-91
Serine	163	69-187
Threonine	164	35-226
Tryptophan	60	0-79
Tyrosine	70	24-115
Valine	318	74-321

a background of normality, (2) brief duration with fully recovery, (3) psychotic features: confusion, delusions, hallucinations, stupor, mutism, or a manic syndrome, and (4) a circa-menstrual (approximately monthly) periodicity, in rhythm with the menstrual cycle.<sup>10</sup> The key to diagnosis is identification of the periodic recurrent psychotic episodes in relation to menstrual cycle. It requires accurate dating of both the menstrual period and the onset of the psychotic episode for at least several episodes in order to establish the connection. This explains why, among the case reports worldwide, there are only about 80 cases with substantial evidence of a diagnosis of menstrual psychosis while more than 200 reported cases can only be accepted as ‘possible’ cases.<sup>11</sup>

The description of clinical symptoms in case reports of menstrual psychosis are also compatible with bipolar disorder, and it has been suggested that menstrual psychosis belongs to the family of manic depressive psychosis with menstruation as one of the triggers for the bipolar episodes. Indeed, psychotic symptoms are common in prepubertal major depressive disorder and adolescent mania.<sup>12,13</sup> There are also case reports of manic depressive disorder showing a near-monthly rhythm of recurrence. It is therefore suggested that both psychotic features and near-monthly rhythms could be characteristics manifested by some adolescents with affective disorder.

Taking into account of all these, although the clinical symptoms described in this case are compatible with the diagnosis of acute and transient psychotic disorders, given the variable presentations of psychiatric symptoms in adolescents, longitudinal observations on the course of the illness would be of paramount importance.

## Declaration

The author has disclosed no conflicts of interest.

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