

## Reconsideration of Periodic Psychosis of Adolescence

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The condition of periodic psychosis of adolescence based on the clinical features of recurrent depressive symptoms, sub-stupor, and psychotic symptoms whose features return to a normal state within 2 weeks with no residual symptoms has been often seen during adolescence. However, international recognition of periodic psychosis of adolescence is low and the condition is not recognized as an independent disease in ICD-10 or DSM-5. We presented a case report of a depressive episode central to periodic psychosis of adolescence in a 16-year old female. The symptoms presented in the case correspond to the DSM-5 classification of premenstrual dysphoric disorder. However, a diagnosis of periodic psychosis of adolescence was made due to the presence of clinical features of victim mentality, increased irritability, suicidal ideations, and changes in consciousness over short periods of time and sub-stupor. This report was focused on the medical treatment of the episode of periodic psychosis of adolescence with the aim of verifying its current significance.

**Key words:** adolescents, mood stabilizer, periodic psychosis of adolescence, premenstrual dysphoric disorder

### INTRODUCTION

Yamashita has proposed the condition of periodic psychosis of adolescence based on the presentation symptoms with clinical features of recurrent depressive symptoms, sub-stupor, and psychotic symptoms such as hallucinations and delusions, whose features return to a normal state within 2 weeks with no residual symptoms, with a circalunar rhythm (menstrual cycle) during adolescence [1]. On the other hand, Abe and colleagues has proposed the presence of a group characterized by recurrent near-monthly brief episodes of depressive symptoms and psychotic features independent of gender, lack of presentation of circalunar rhythm during a long-term period and episodes of affective disorder which do not disappear within 2 weeks among Yamashita's proposed periodic psychosis of adolescence [2].

Currently, international recognition of periodic psychosis of adolescence is low and the condition is not recognized as an independent disease in ICD-10 and DSM-5, with diagnostic criteria independently distributed across multiple categories [2]. Consequently, differential diagnosis and medical treatment in the clinic is often difficult and reports of such are limited.

We present a case report of a depressive episode central to periodic psychosis of adolescence in a 16-year old female. In this case report, we focused on the medical treatment of the episode of periodic psychosis of adolescence with the aim of verifying its current significance.

### CASE REPORT

A 16-year-old female was admitted to the psychiatric

outpatient clinic with a main complaint of premenstrual presentation of depressive moods. The patient's grandmother passed away after the patient entered high school, and from that same month, the patient experienced the appearance of depressed mood, reduced motivation, intense frustration and suicidal thoughts during the premenstrual period. These symptoms improved within a few days of the start of the menstrual flow. However, gradually the patient recognized the status of recurrence and resolution of the same symptoms during the menstrual cycle and underwent consultation.

The patient and mother were interviewed individually during the first medical examination, following confirmation of the current medical history. The patient said, "Every month before my menses, I become irritated and cut my hair. I feel like everyone at school is talking bad about me and I want to die. I do not remember it but I tried to jump from the window of my house. When my menses end, I feel better soon after, but I'm so scared of my menses each month. I don't want to go to school anymore."

The mother was then interviewed and information on the developmental history of the patient was collected. There were no abnormalities during pregnancy, childbirth, with language development or delays in physical development. Also, shyness and imitative behavior was observed during infancy, and the patient was able to interact well with other children at nursery school. During elementary and junior high school, the patient had many friends with grades in the upper range, and no collective behavioral problems. During the patient's time in high school, the grandmother passed and the patient's mood would become unstable

during the premenstrual period, and the patient would cling to her mother.

The initial examination of this patient identified psychiatric findings of depressed mood, reduced motivation, inhibition of thought, insomnia and malaise representative of a depressed state, in the last week before the start of the menstrual flow with improvement of all symptoms within a few days of the start of the menstrual flow and recurrence of the same symptoms at each menstrual cycle. Meanwhile, the patient had no symptoms of elevated mood, high self-esteem, decrease in need for sleep, increased rate of speech, flight of ideas, getting easily distracted, or increased interest in goals or activities. Additionally, there were no definitively abnormal findings in head CT examinations, electroencephalographic examinations or blood tests Cr0.55mg/dl, TSH 2.75  $\mu$ IU/ml, Free T3 3.93pg/ml, T4 8.79  $\mu$ g/dl. The total test IQ was 100 in WISC-IV. The patient had no episode of manic state and no family history of Bipolar disorder. Therefore, the current case would correspond to the DSM-5 diagnosis of premenstrual dysphoric disorder, however, clinical findings of victim mentality, enhanced hyperexcitability, suicidal ideation, changes in consciousness and sub-stupor were also observed in addition to the aforementioned psychiatric findings. Changes in consciousness and sub-stupor were always seen once for each episode and lasted about half a day. Also, eating and excretion were difficult to perform during sub-stupor. The above symptoms led to a diagnosis of periodic psychosis of adolescence.

Treatment was started with single-agent administration of lithium carbonate. The dosage of lithium carbonate was gradually increased 800 mg/day (blood concentration 0.52 mEq/L), and after that, the patient maintained remission for more than two years.

## DISCUSSION

The symptoms presented in the case correspond to the DSM-5 classification of premenstrual dysphoric disorder. However, a diagnosis of periodic psychosis of adolescence was made due to the presence of clinical features of victim mentality, increased irritability, suicidal ideations, and changes in consciousness over short periods of time and sub-stupor. Also, we have observed success with the use of lithium carbonate, which has been previously reported to prevent the recurrence of episodes [2, 3]. In the current case, it was important that symptoms of periodic psychosis of adolescence disorder such as mood symptoms, changes in consciousness and sub-stupor, unexplained by a diagnosis of premenstrual dysphoric disorder, were treated and such lithium carbonate was suggested as an effective treatment modality.

The diagnostic concept of periodic psychosis of adolescence in this case was proposed by Yamashita about 25 years ago, but is it still useful? The concept and diagnostic criteria of periodic psychosis of adolescence advocated by Yamashita are confirmed, and the diagnostic significance as well as the diagnosis of the current case and treatment are investigated in the current disease. Yamashita mentions the following regarding the concept of periodic psychosis of adolescence. That is, it is a condition in which physical disorders are observed during the menstrual cycle in adolescent

females, consequent with a lack of changes observed in electroencephalogram examination, and from the slightest degree, there are frequent presentations of psychotic symptoms including hallucinations and delusions resulting in disorders of consciousness and changes in emotions and behavior followed by a return to the original state of health [1]. Diagnostic criteria of periodic psychosis of adolescence is shown in Table. The authors originally made this Table according to the book written by Yamashita [1].

It has been reported that psychotic symptoms such as hallucinations and delusions are more often exhibited in mood disorders in childhood and puberty [4, 5]. In addition to each type of physical symptom accompanying the circalunar rhythm (menstrual cycle), the clinical presentation of periodic psychosis of adolescence is characterized by behavioral suppression consequent to a state of sub-stupor, agitation/hyperactivity, confused state as a result of psychotic symptoms such as hallucinations and delusions. If periodic psychosis of adolescence are not taken into consideration, diagnoses of mood disorders, schizophrenia or premenstrual dysphoric disorder will be made. In particular, if a diagnosis of schizophrenia or premenstrual dysphoric disorder is made, there are large differences from the current diagnosis in pharmaceutical treatment and prognosis. Therefore, the diagnosis of periodic psychosis of adolescence is clinically of significance under the condition of no current recognition of periodic psychosis of adolescence as an independent disease by the ICD-10 and DSM-5.

In the current case, a recurrent depressed state, characterized by a depressed mood, reduced motivation, inhibition of thought, insomnia and fatigue were observed during the last week before the beginning of menstruation with recovery within a few days after the start of the menstrual flow which, if diagnosed according to DSM-5 and ICD-10, would correspond to premenstrual dysphoric disorder, but the symptoms were attributed to another repetitive mood disorder. However, in the current case, in addition to the aforementioned psychiatric findings, other symptoms were observed, including harmful thoughts, increased irritability, suicidal ideations, changes in consciousness, and sub-stupor, which cannot be explained by the centralized definition of premenstrual dysphoric disorder. Shivakumar *et al.* reports the case of Bipolar disorder with the worsening depression or manic state preceding menstruation [6]. However, the patient had no episodes of manic state during the course of outpatient visits, and therefore, was not able to be diagnosed as Bipolar disorder until then. As there were almost no incongruities between the current case and Yamashita's presentation of its clinical features, a diagnosis of periodic psychosis of adolescence was made. There have been previous reports of cases of clinical illnesses similar to periodic psychosis of adolescence termed schizophrenia type psychosis accompanying menstruation [7], periodic psychosis associated with menstruation [8], and menstrual psychosis [9]. Additionally, in Japan, Abe and colleagues have proposed that the periodic psychosis of adolescence includes a group characterized by the near-monthly recurrence of episodes of affective psychosis which do not persist for 2 weeks and are not associated with the menstrual cycle [2]. Episodes may

**Table** Diagnostic Criteria<sup>[1]</sup>

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- A. The psychosis occurs periodically in adolescent girls. The first onset is usually in their early teens, and rarely at the beginning of their twenties.
- B. The duration of disturbed phases is between one and three weeks; as a rule not more than one month.
- C. The symptoms become distinct in a day or two and also subside quickly, or are replaced by some other symptoms.
- D. The symptoms appear repeatedly every month or at rather long intervals. The number of phases is from several to more than ten.
- E. Most phases are sequentially related to menses. In most cases, the symptoms begin to appear between 10 days prior to, or a few days after, the beginning of menstrual period. Sometimes they may occur regularly in girls before menarche. Even those who exhibit symptoms usually in accordance with menses may sometimes fall into a disturbed phase without correlation to menses.
- F. At least one of the following three features is present during a disturbed phase:
- (1) Behavioral inhabitation that reaches semi-stupor or stupor
  - (2) Unprovoked excitement or hyperactivity
  - (3) Floating, fragmentary or transient hallucinations and delusions, or those with definite ideas of reference and persecution.
- G. At least two of the following four features are present during a disturbed phase:
- (1) Persistent or fluctuating anxiety, fear or irritability
  - (2) Reduced ability of thinking and understanding (The patient may have difficulty judging, determining or even doing simple daily routines.)
  - (3) Impaired recollection of the events in the disturbed phase
  - (4) Somatic symptoms such as insomnia, poor appetite, facial flushing or headache, etc.
- H. Once a disturbed phase is over, the patient becomes perfectly healthy without any residual symptoms.
- I. The long-term outcome is favorable. The illness seldom recurs after 30 years of age.
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continue to recur after the age of 20 years in some cases, while in others they may become bipolar disorder [2].

As reported in the literature, including Yamashita's report, the effectiveness of antipsychotics in the treatment of periodic psychosis of adolescence is poor [1] and there are reports that sub-stupor, observed in the current case, is alleviated by sulpiride [1]. There are also reports that carbamazepine [10] and valproic acid [11] prevented recurrence of symptoms. However, most common case reports of periodic psychosis of adolescence involve treatment with lithium carbonate, with reports of ineffectiveness [12], and there are some reports of prevention for recurrent symptoms where lithium carbonate was used as a part of a treatment regimen [2, 3]. The advantage of pharmaceutical treatment with lithium carbonate is not only the preventative effect on the symptoms of the disease, but also the ability to prevent disease symptoms, even with intermittent use. In effect, with anticipation of the recurrence of symptoms from one cycle to the next, the drug can be taken orally from one week prior to one week post the estimated date, allowing for the possible reduction in side effects such as dry mouth and abnormalities in thyroid function, a quite rational approach [3, 13]. As the presentation of disease symptoms was periodical in nature, corresponding to the menstrual cycle, lithium carbonate was successfully chosen for pharmaceutical treatment. Consequently, lithium carbonate can be the first drug of choice for periodic psychosis of adoles-

cence in the future.

In the current case, we reconfirmed the effectiveness of single administration of lithium carbonate, the clinical presentation and diagnostic significance of periodic psychosis of adolescence in a 16-year-old female with the main medical presentation of recurrent depressive symptoms. There is a need for further investigation of the diagnostic significance and pharmaceutical treatment of periodic psychosis of adolescence in cases, where a diagnosis of premenstrual dysphoric disorder is inadequate, and the topic is still a major issue in the field of child and adolescent psychiatry today.

#### CONFLICT OF INTEREST

Yuki Takahashi had no conflict of interest.

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