



Delusion of Pregnancy – Case Series of Seven Patients

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Authors' contributions

This work was carried out in collaboration between all authors. Authors MSŠ, VB and MH contributed to the data collection. Author MSŠ substantial contributed to conception and design, revision of the results and making conclusions. Authors ZP, PBi and PBr contributed to the literature search and revised manuscript for important intellectual content and substantial contributed to conception and design. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Aim: The delusion of pregnancy involves neurophysiologic, endocrine, and traditional psychodynamic factors. This study investigated these factors in seven female patients with pregnancy delusions who were treated at the psychiatric ward within a period of 4 months.

Methods: Six patients were treated for schizophrenia (and two also for epilepsy) and one for organic psychosis. Medical history and clinical data were noted. Actual pregnancy was excluded. Prolactin levels in the blood were measured and records were maintained of patient therapy sessions.

Results: The delusion of pregnancy was more prevalent in psychiatric practice than previously thought. Hyperprolactinemia was identified as a possible biological cause of this condition in five of the patients.

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Conclusion: An integrative approach that considers psychodynamic and sociocultural factors must be adopted for etiological studies on the delusion of pregnancy, while individual differences must also be examined.

Keywords: Delusion of pregnancy; hyperprolactinemia; biological and psychodynamic approach.

1. INTRODUCTION

The delusion of pregnancy is a form of somatic/hypochondriac delusion that constitutes a nosologically non-specific symptom of schizophrenia, schizoaffective disorder, delusional or affective disorder, epilepsy, dementia, or other organic brain syndromes, and may also accompany hyponatremia, polydipsia, galactorrhea caused by medications, and infections of the urinary tract [1]. The delusional idea of pregnancy should not be mistaken for pseudocyesis, fake pregnancy, simulated pregnancy, or Couvad's syndrome [2].

The delusions of pregnancy in men is extremely rare and bizarre, and as such, is rarely mentioned in the literature. It was previously thought that such delusions were equally rare in women, but data now suggests otherwise [3]. There are reports of highly unusual cases of delusions of multiple pregnancies, recurrent delusions of pregnancy, the experience of labor and parturition, puppy pregnancy in humans, delusional pregnancy persisting over decades, and delusion of pregnancy during the postpartum period [4]. If two or more individuals present with the same delusion within a short period of time, the possibility of induced psychosis must be considered [5]. There is debate among researchers as to which model of delusional pregnancy—psychodynamic [3] or organic [6-8]—is more significant. The delusion of pregnancy is an etiologically heterogeneous phenomenon; it can be caused purely by organic factors without psychodynamic background or can appear in response to organic (endocrinological) changes and/or psychological factors. Additionally, the influence of the cultural environment as well as weaker cognitive abilities can also induce the emergence of these delusions [8]. Hyperprolactinemia resulting from antipsychotic medication has also been suggested as a possible organic cause in schizophrenic patients [2,6,7].

The current study analyzed the psychodynamic, psycho/socio/cultural, and biological-neuroendocrine models of delusional pregnancy in seven female patients.

2. PRESENTATION OF CASES

In a short period of time (within 4 months in 2012), seven female patients with the delusion of pregnancy were treated at the Integral Women's Ward of University Psychiatric Hospital Vrapče. The cases were not of induced psychosis. Actual pregnancy was excluded (urine pregnancy test) in all of the patients. Six were treated for schizophrenia (two also for epilepsy) and one for organic psychosis. Medical history and clinical data were noted. During the period of delusional pregnancy, prolactin (PRL) levels in the blood were measured and therapy sessions during the last month were recorded. Standard PRL values in women is 2.0–30.0 µg/l [9].

During our research the procedures were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 1983. All authors declare that written informed consent was obtained from the patients for publication of this case report.

2.1 Case 1

"A", a 49-year-old woman who was divorced after a marriage that had lasted for one year, was without children and lived with her parents. She had been treated for schizophrenia since her 20s and for epilepsy since 2003. Significantly, she had once had an abortion that she was emotionally unable to overcome. The predominant symptoms exhibited by the subject were bizarre thought content, derealization and depersonalization, cenesthetic and auditory hallucinations, and paranoid ideas directed towards her father. She was occasionally obsessed by the idea of being raped. In June 2011, the patient underwent hysterectomy and oophorectomy due to an ovarian abscess. During her last hospitalization, A had been obsessed by the delusional idea of being pregnant for three weeks, showing an objectively enlarged belly and feeling the baby's movements. The patient was receiving treatment with fluphenazine (3 × 5 mg), clozapine (3 × 100 mg), and carbamazepine

(2 × 400 mg), and had an elevated PRL level (49.8 µg/l).

2.2 Case 2

“B” was a 51-year-old woman suffering from hypopituitarism (and therefore had low levels of growth hormones and adrenocorticotrophic hormone) and hypothyroidism (that was under substitution), and was unmarried and without children. She had been treated for epilepsy since childhood, and also for organic psychosis for the last 12 years. She had been married for a short period of time before her husband left her. During treatment in 2003, B claimed she had been pregnant by several husbands who were famous media personalities.

During the most recent hospitalization, B claimed that she had to escape with her husband from her father and that she had borne 1,000 children. She was convinced that she had been pregnant and had prepared herself for the delivery, even imitating the delivery by making sounds and movements. After a short time, she would calm down, explaining that she had borne a child, but would then repeat the procedure; this behavior continued for 1 month. The patient was receiving treatment with risperidone (2 mg 1x1); paliperidone (50 mg every two weeks); methylphenobarbital (2 × 200 mg); and levothyroxine (50 mg 1x1). Her PRL level was elevated at 69.8 µg/l.

2.3 Case 3

“C”, a 40-year-old gypsy woman, had married at the age of 15 and became pregnant, but had miscarried. At 22 years old she gave birth to a son who was placed in a children’s home. She was unemployed and lived with her mother, and had been treated for schizophrenia for the last 11 years. During her first treatment in 2000, C was convinced that she was pregnant, and almost convinced the obstetrician of this until an ultrasound proved the contrary. During treatment in 2003, she claimed that she was in the 9th month of pregnancy and in the process of labor. For the past five years, she had been involved in an emotional relationship with her relative who died suddenly at the beginning of 2011.

During the last hospitalization, C claimed to have felt the baby’s movements, and demanded an emergency examination by an obstetrician and intervention for terminating the pregnancy because the delivery date had been exceeded by

more than 1 month. The patient was undergoing treatment for diabetes and hyperlipidemia. She also had an extremely large abdomen and had experienced amenorrhea for the last 2 years. The patient was receiving treatment with fluphenazine decanoate (25 mg), fluphenazine (3 × 2.5 mg), and promazine (3 × 100 mg), and had a PRL level in the normal range (16.3 µg/l).

2.4 Case 4

“D” was a 26-year-old never-married mother of a 2-year-old daughter who lived with her parents. The relationships within the family were disturbed, primarily because of her father’s alcoholism, who was aggressive towards her and her mother. D had been treated for schizophrenia since she was 17 years old. During the previous psychiatric treatment (in 2010), D became pregnant, which for a short time improved family relations. During the last few months of her pregnancy, she was treated in our ward, and from there was sent to the delivery room. D arrived for the most recent hospitalization preoccupied with the idea that social services wanted to take her daughter away and that her parents had never accepted her. For several days she claimed that she was again pregnant and that she would soon deliver; she arrived at the emergency room claiming that her amniotic sac had ruptured. The lower part of her pajamas was wet (possibly from urine or water). D was overweight at 102 kg, and was receiving treatment with risperidone (1 × 4 mg), paliperidone (37.5 mg ever 2 weeks), levomepromazine (1 × 50 mg), and promazine (2 × 50 mg). Her PRL level was elevated (128.9 µg/l).

2.5 Case 5

“E”, a 50-year-old woman in menopause, was a widow without children. She had been treated for schizophrenia since the age of 21. The patient was angry with her mother for not allowing her to get married, and obsessed by the idea that she had borne three children. She claimed that she had been pregnant over the last five years. During the most recent hospitalization, E contentedly claimed that she was pregnant, indicating her enlarged and distended abdomen (she was an extremely large woman). The patient was receiving treatment with haloperidol decanoate (100 mg), haloperidol (3 × 10 mg), levomepromazine (3 × 100 mg), and valproic acid (2 × 500 mg), and had elevated PRL (116.4 µg/l).

2.6 Case 6

“F” was a 43-year-old divorced woman without children and a retired journalist who was placed in a nursing home, having been treated for schizophrenia and epilepsy since she was 23 years old. She had been married for 5 months, but her husband had left her when he became aware of her illness. Soon afterwards she was remarried, and became pregnant several times, with each pregnancy terminating in a miscarriage. During one year (1998) she had four miscarriages even as late as the fifth month of pregnancy. After that, she was convinced that she had two children at home, and that after a premature delivery, they had been in the incubator and were taken away from her and placed in a children’s home. For the last 10 years, besides delusions of persecution and megalomania, F was convinced of constant pregnancy, refusing medication on the grounds that it would harm the baby. She had an asthenic constitution with a distended abdomen and had experienced amenorrhea for the previous two years. The patient was receiving treatment with haloperidol decanoate (50 mg), clozapine (3 × 100 mg), levomepromazine (3 × 100 mg), and valproic acid (3 × 500 mg). Her PRL level was elevated at 39.0 µg/l.

2.7 Case 7

“G” was a 48-year-old woman who had never married and was without children. She had been undergoing treatment for schizophrenia for the last 30 years. By the age of 30, she was promiscuous and had undergone four artificial abortions. On one occasion, she was hospitalized after self-inflicted injury to the vagina resulting from the conviction that she was pregnant. During the last treatment, G claimed to be pregnant, showing an objectively enlarged belly but without displaying any emotion. The delusion had persisted for three weeks. G was obese and exhibited hirsutism, and had a regular menstrual cycle. The patient was receiving treatment with quetiapine (1 × 300 mg), fluphenazine (3 × 2.5 mg), and valproic acid (3 × 500 mg). Her PRL level was in the normal range (16.4 µg/l).

3. DISCUSSION

It is unlikely that delusions (especially those of pregnancy) can be explained by a single etiological factor [3]. Some researchers emphasize the role of psychodynamic factors

[3,10] and others of organic factors [5-8]; however, there is general agreement on the need for an integrative approach to studying the etiology of these delusions [1,3,4,8,11].

Two of the seven patients had delivered a baby in their lifetime (C and D); two had a history of abortion—one during a late stage of pregnancy (F), and the other having experienced a traumatic abortion after which she had not had any children (A)—and three had never delivered a baby (B, E, and G). For some patients, symptoms of menopause or amenorrhea may have spurred the delusions, which varied in duration as well as intensity. For example, two patients had permanent delusions that had lasted more than 10 years (E and F), and two had experienced delusions intermittently throughout their lifetime (B and C). In the case of B, the idea was so intense that she repeatedly imitated the act of delivery, whereas for E, the delusion of pregnancy was chronic, thus explaining her weak affective engagement. It was concluded that each of the examined cases must be considered individually, taking into account psychodynamic, psychosocial, and biological aspects of the delusion of pregnancy phenomenon. According to Manoj et al. [8], delusions of pregnancy can be triggered purely by organic factors without psychodynamic background, or they can develop as an adaptation to stress induced by organic (e.g. endocrine) and/or psychological factors. Moreover, deficits of cognitive processing or the cultural environment can also influence the emergence of delusions [8].

3.1 Psychodynamic Model

The delusions could be interpreted from a psychodynamic perspective in most of the examined cases: for instance, A had an abortion that she had not approved as well as a recent hysterectomy; B desired an emotional relationship but also suffered from hypopituitarism and feelings of abandonment and disappointment; C had experienced the loss of an object (i.e., the recent death of a partner); D and E felt the protective effects of pregnancy and recognition of environment; and F had experienced multiple miscarriages at later stages of pregnancy, and was mourning the loss of her unborn children. For A, B, E, and F, pregnancy represented the realization of a long-held desire. For D, it was likely triggered by the recollection of a real, recent pregnancy, when she left to the delivery room from the psychiatric ward, as well as the need to draw attention to herself (possibly

through simulation because the lower part of pajamas was wet due to urine or water). For D, ambivalence about role as a mother seems to be a further underlying psychological factor. Difficulties with identification with her mother, who could not protect her from her aggressive father, can be a source of ambivalence with the mother role.

Traditional psychoanalytic interpretations have evoked wish-fulfillment and the protective role of delusions. Pregnancy represents a state of undisturbed union of the mother and her child that can bring happiness and eliminate loneliness, and therefore represents suitable grounds for the appearance of delusional ideas [1]. Fantasies of pregnancy occur more frequently in women with subconscious conflicts and feelings of guilt or ambivalence towards pregnancy [10].

3.2 Cognitive Model

Recent neurocognitive models attempting to explain the phenomenon of delusional pregnancy (and somatic delusions in general) have been classified into deficit and motivational categories. The former interprets delusions as a consequence of cognitive dysfunctions and perceptual abnormalities, while in the latter, delusions are viewed as an attempt to reduce unbearable pressure and anxiety. One of the most widely accepted deficit models emphasizes the significance of two factors. Disturbed sensory perception is the "first factor", which together with cognitive deficit influences the content of the upcoming delusions. An additional "second factor" is necessary to explain how unusual assumption end up in delusions. Cognitive models are not sufficient to explain the appearance and persistence of delusions, but when integrated with motivational aspects they can provide more detailed and individualized approaches to understanding delusions as the fulfillment of an unrealized desire [12]. Levy et al. [13] used the theory of abductive inference to clarify relationship between hyperprolactinemia and delusion of pregnancy; the "first factor" is abnormal data and the "second factor" is the cognitive process (abductive inference). In the delusion of pregnancy, abnormal data is the hyperprolactinemia, signal of gestation without pregnancy. Pregnancy or no pregnancy hypotheses in order to explain this signal are then produced which at the end leads in delusion of pregnancy [14]. Penta et al. [14] emphasize that amelioration of delusion of pregnancy did not

ensure from hyperprolactinemia normalization, but was mostly due to cognitive restructuring of distorted thinking.

An integrative model that includes sensory perception based on physical changes, cognitive deficit, and a strong motivational aspect can explain the phenomenon in at least A, C and D patients examined in this study. Bodily changes and sensations (intestinal dilatation, increase body weight and large abdomen with amenorrhea) can all be associated with the emergence of delusional pregnancy. They paid increased attention to body changes and reported abdominal and pelvic sensations. They regarded these physical signs as anomalous. Sensory experience together with cognitive biases typically present in those prone to psychosis reinforced the generation of false hypothesis of pregnancy. An error in probabilistic reasoning ("second factor") led to delusion.

3.3 Sociocultural Factors

Sociocultural factors must also be considered in the assessment of delusions [15]. In Christian cultures, pregnancy is regarded as a blessed state that invites respect and acknowledgement which may find its roots in the fertility cult of archaic folks; as such, pregnancy can have a protective influence and provide a means of avoiding confrontation [1]. Indeed, this type of sentiment was expressed by patients D and E and especially in the case C (gypsy woman). The rural gypsies have preserved many aspects of their archaic matriarchal culture, where fertility strongly influences women's evaluation and appraisal. This is even more evident in the case of rural West Bengal area, where detailed phenomenological analysis revealed the special cultural background of the bizarre delusions [1].

3.4 Biological, Neuroendocrine, and Pharmacological Factors

An increase in PRL level induced by antipsychotic drugs may be responsible for the appearance of delusions, particularly in women who had previously demonstrated psychosis and who were ambivalent towards pregnancy [1].

In one study of 12 patients with antipsychotic-induced hyperprolactinemia, six had thoughts of being pregnant that were temporally associated with high PRL concentrations. After switching to a medication that was less likely to cause an

elevation in PRL level, the idea/delusion of pregnancy disappeared [7]. In another report, hyperprolactinemia caused by risperidone was associated with the delusion of pregnancy, and substituting the antipsychotic medication with another also resulted in the disappearance of the delusions, which subsequently returned when the patient was given risperidone [6]. Another study of delusional pregnancies in five long-term schizophrenic patients resistant to the therapy found that hyperprolactinemia caused by antipsychotics can lead to galactorrhea and intestinal dilatation, which may evoke the desire for and maintain convictions of pregnancy [2]. On the other hand, women with such delusions have significantly higher levels of hostility, treatment resistance, and typically require higher dosages of antipsychotics [10]. Thus, delusions may simply be one aspect of the patient's condition, and are not necessarily caused by antipsychotic-induced hyperprolactinemia.

Of the seven patients in this study, none had galactorrhea, but five had higher than normal levels of PRL; the highest value was observed in D, despite the psychodynamic model of delusion being highly applicable to this patient. Hyperprolactinemia was also detected in E and F, both of who had permanent delusions of pregnancy but who were also receiving higher dosages of antipsychotics—as was A—for a long period of time. Elevated PRL was also detected in B, in whom the delusions were most intense; however, it should be noted that this patient also exhibited endocrinological dysfunction (hypopituitarism and hypothyroidism).

Actual physiological changes would not be expected in cases of delusional pregnancy; however, they are often observed in a mild form [7,16]. For instance, in our patients, bodily changes such as an enlarged belly and amenorrhea contributed to patients' belief of pregnancy; the contribution of a metabolic syndrome caused by antipsychotics to the delusion of pregnancy has also been remarked upon by others [17,18]. Patients may also use manipulation to avoid medications by claiming pregnancy, as was F.

A limitation of this study is that the blood test for PRL was not administered after the delusions had ceased. Future studies will investigate whether the PRL value is altered by administration of different antipsychotics, and whether this affects the appearance and/or persistence of the delusions.

4. CONCLUSION

Seven cases of delusion of pregnancy—which is more common than was previously thought—were investigated in the context of psychodynamic, psycho/socio/cultural, and biological-neuroendocrine models. Although hyperprolactinemia was observed in five of the patients, other factors and individual differences cannot be excluded as possible causes; indeed, biological, psychodynamic, and sociocultural factors must all be considered when analyzing the phenomenology and course of illness.

ETHICAL APPROVAL

The study was approved by The Ethics Committee of The University Psychiatric Hospital Vrapče. During our research the procedures were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 1983. All authors hereby declare that written informed consent was obtained from the patients for publication of this case report. The copy of the written consent is available for review by the Editorial office of this journal.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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