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MINIREVIEWS

Pseudocyesis, delusional pregnancy, and psychosis: The birth of a delusion

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Abstract

Both pseudocyesis and delusional pregnancy are said to be rare syndromes, but are reported frequently in developing countries. A distinction has been made between the two syndromes, but the line of demarcation is blurred. The aim of this paper is to review recent cases of pseudocyesis/delusional pregnancy in order to learn more about biopsychosocial antecedents. The recent world literature (2000-2014) on this subject (women only) was reviewed, making no distinction between pseudocyesis and delusional pregnancy. Eighty case histories were found, most of them originating in developing countries. Fifty patients had been given a diagnosis of psychosis, although criteria for making the diagnosis were not always clear. The psychological antecedents included ambivalence about pregnancy, relationship issues, and loss. Very frequently, pseudocyesis/delusional pregnancy occurred when a married couple was infertile and living in a pronatalist society. The infertility was attributed to the woman, which resulted in her experiencing substantial distress and discrimination. When antipsychotic medication was used to treat psychotic symptoms in these women, it led to high prolactin levels and apparent manifestations of pregnancy, such as amenorrhea and galactorrhea, thus reinforcing a false conviction of pregnancy. Developing the erroneous belief that one is pregnant is an understandable process, making the delusion of pregnancy a useful template against which to study the evolution of other, less explicable delusions.

Key words: Pseudocyesis; Delusional pregnancy; Infertility; Prolactin; Delusion

Core tip: It is usually impossible to distinguish between pseudocyesis and delusional pregnancy. Both occur primarily in developing countries, and especially where there is strong familial and cultural pressure on women to be fertile. The delusion starts in a climate of apprehension and develops when sensory perceptions are interpreted as signifying pregnancy, despite evidence to the contrary. Understanding this delusion can help to understand other, more unusual false beliefs.

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INTRODUCTION

It is not uncommon for women to believe that they are pregnant when they are not. In jest this has been called "jestation". But it ceases being a jest when the preoccupation with pregnancy becomes an over-valued idea or a delusion. In women suffering from psychosis, delusional pregnancy is not uncommon, especially since the advent of antipsychotic medications, which, by virtue of inhibiting dopamine secretion, raise prolactin levels to produce amenorrhea, breast swelling/tenderness, and ga-

lactorrhea-akin to the somatic experience of pregnancy[1]. Moreover, antipsychotic drugs are associated with considerable weight gain, distending the abdomen and adding to a misperception of pregnancy. Even when there has been no prior sexual activity, fantasy-prone women can find ways of convincing themselves that they are pregnant. They imagine the implantation occurring by magic or through the wizardry of advanced reproductive technology. Such was the case of a 17-year-old girl reported by Manoj[2], who believed she was carrying a "test tube baby". Cruzado describes a further case where the imagined pregnancy was a product of "artificial insemination" and two more cases where impregnation was believed to have occurred *via* telepathy[3].

Another example was a patient (now deceased) who attended the Women's Clinic for Psychosis in Toronto, Canada[4].

CASE ILLUSTRATION

AC, a single 60-year-old woman, suffered from schizophrenia since age 16. After several inpatient admissions, she was being treated with depot antipsychotic medication, and was living independently, never completely free, however, of auditory, olfactory, and somatic hallucinations, nor of delusional thinking. At different times in her life AC developed romantic fantasies about men she met, her latest fantasy involving her psychiatrist, Dr. J. She knew Dr. J. was a married man but allusions to him on TV convinced her that he reciprocated her interest. After she watched a wedding on TV, she was persuaded that she and Dr. J. were secretly married. She began wearing a wedding ring and to believe that she was pregnant.

When asked how she could be pregnant since she had never had sexual relations, she stated that the depot injection she received monthly (prescribed by Dr. J.) had successfully implanted Dr. J.'s seed in her body and that she would soon be giving birth to his child.

A distinction has been drawn between pseudocyesis, where signs of pregnancy are demonstrably present (abdominal swelling, menstrual disturbance, spotting, the report of quickening, breast tenderness and engorgement, weight gain, galactorrhea) and delusions of pregnancy, where there may be cessation of menstrual periods and abdominal distension, but no other outward signs[5]. The first is said to be a somatoform disorder while the second is a symptom of psychosis[6]. More recently, however, with the growing recognition that elevated prolactin levels can lead to many of the signs of pregnancy, the two conditions (pseudocyesis and delusional pregnancy) are conceptualized as occurring on a continuum, sometimes in women with no prior or subsequent psychiatric history, sometimes in the midst of a depressive or related illness, sometimes in women suffering from ongoing psychotic illness[3,7]. What has been written about pseudocyesis applies equally well to the psychodynamics of delusional pregnancy. It may also apply to a range of related delusions centering around procreation[8,9], from the conviction of having an intimate partner (when none in fact exists), of being pregnant (when one is demonstrably not), of not being pregnant when one indeed is[10], of wrongly insisting, when in pain for other reasons, that one is undergoing labor and delivery[11], to the false idea of being a parent, a potentially dangerous delusion that has been known to lead to the kidnapping of other people's children[12].

In an effort to better understand the birth of delusions in general, the aim of this review is to focus on psychological, biological, and sociocultural antecedents as described in modern case reports of pseudocyesis.

The pertinent literature (Google Scholar, Pub Med databases) after the year 2000 was searched with the following terms: pseudocyesis, delusion of pregnancy, false/imaginary/phantom/pseudo/spurious pregnancy. All languages were included. Delusional pregnancy occurring in men or in species other than human was excluded. All the papers consisted of case reports except two[7,13], which used case control study designs.

EPIDEMIOLOGY

The case of AC described above from the Women with Psychosis Clinic is the 80th instance of delusional pregnancy/pseudocyesis reported since 2000, the 50th in whom the delusion emerged in the context of a prior psychotic illness. Although diagnosis is not always clear in the published reports, this suggests that, in most cases described in recent years, the affected women suffer from a concomitant psychotic illness. In the past, pseudocyesis has been reported as rare but, in developing countries, India[14] or sub-Saharan Africa[15], it is considered fairly common. It has a reported occurrence rate in Africa of 1 in every 344 pregnancies[16]. Over a period of 5 years, of 486 women with abdominal distension in Ghana who came for sonography thinking they might be pregnant, three were diagnosed with pseudocyesis (of the others, almost half had fibroids, 10% had a benign ovarian tumor, 10% had cancer of the cervix with ascites; about 7% suffered only from obesity)[17]. In Nigeria[18], five out of 242 women who came for sonography for gynecological complaints referable to the lower abdomen were diagnosed with pseudocyesis. Out of 3200 women presenting for infertility treatment in a teaching hospital in Sudan over a five-year period, 20 were diagnosed with pseudocyesis[19].

Though once said to occur only 1-6 times per 22000 births in the West[20], Moselhy *et al*[21] reported in 2000 that they ascertained three cases in a six month period on an acute psychiatric ward in Birmingham, United Kingdom.

The majority of cases of pseudocyesis are described in reproductive age women and 80% of the affected women are said to be married.

PHENOMENOLOGY

Delusional pregnancy can present as a monothematic de-

lusion[22,23] or, more commonly, in association with other delusions (polythematic delusions). Delusional pregnancy has presented in conjunction with Clerambeault's syndrome, as in the case of AC, or with Capgras syndrome[24]. It can present as a form of couvade syndrome, a "copy cat pregnancy" when a loved (and/or envied) intimate becomes pregnant[25-27]. It can be transient or long lasting, corrigible (or not) by demonstrated evidence, education, cognitive behavioral therapy, or psychopharmaceutical agents. It can be primary or appear in the context of medical conditions that cause abdominal distension such as fibroids[28], urinary retention[29], polydipsia[30], metabolic syndrome[31], tubal cyst[32] or abdominal pain such as cholecystitis[11]. Sonographs have picked up a number of additional potential causes of abdominal distension that can accompany pseudocyesis[33], such as abdominal neoplasm or enlarged liver. Neurological conditions can be associated with this delusion as, for instance, frontotemporal lobar degeneration[34,35]. Endocrine disturbance such as hypothyroidism can present as pseudocyesis[27]. It has been associated with the postpartum state[36], with premature menopause[37] and with high progesterone levels[38]. Most especially, pseudocyesis has been tied to hyperprolactinemia because elevated prolactin levels lead to many of the symptoms of pregnancy[1]. Hyperprolactinemia can result from psychological stress, especially the stress that accompanies a psychotic episode, independent of antipsychotic medication[39]. Prolactin levels can be raised by many organic conditions and by nipple stimulation as well as by drugs such as estrogens, antidepressants, antihypertensives, protease inhibitors, opiates, benzodiazepines, cimetidine, and dopamine blockers[40].

Antipsychotic drugs are all dopamine blockers and all raise prolactin level to some degree, some more than others, in a dose dependent fashion[41]. This means that women suffering from psychosis who are being treated with these agents often perceive body changes that they may associate with pregnancy[1]. This has been reported in several of the cases published since 2000[42-47]. Ahuja and Moorehead[13] describe six cases of pseudocyesis. Four of the six had been pregnant before and likened their current experience of high prolactin levels to the feeling they had during past pregnancies. In all six of these patients, the ideas/delusions of pregnancy disappeared soon after a change to a relatively prolactin-sparing antipsychotic.

Patient attributions-reasons given when confronted with the fact that blood tests and sonography were negative despite their own certainty that they were pregnant-vary according to cultural tradition and degree of patient education or sophistication. Absence of a fetus on sonography was explained by one patient by the probability that the fetus had migrated from her uterus to her back where he/she was hidden from view by bone and muscle[32]. A patient described by El Ouazzani[30] who had had six separate episodes of delusional pregnancy explained the pregnancies and the failure to confirm on possession by the devil. One of Dalfallah's patients[19], one of three wives in a polygamous marriage, attributed both her original infertility and her current "invisible" pregnancy to the envy of her husband's other wives and the witchcraft they exerted. Ruzanna and Marhani's patient[48] explained the apparent "loss" of her pregnancy by calling upon the Malay tradition of orang bunian, evil spirits taking possession of developing fetuses.

PSYCHOLOGICAL ANTECEDENTS

According to both Koic[49] and Ibekwe[15], pseudopregnancy always occurs in the context of a simultaneous wish and fear of pregnancy, *e.g.*, emotional conflict, stress, and ambivalence. It should be noted, as an aside, that anticipation and fear will substantially raise prolactin levels in many women, thus mimicking signs of pregnancy[50]. When there is pressure to conceive and simultaneous fear of pregnancy, the ground is laid for this form of delusion. Ambivalence may arise when a pregnancy, though unwanted, is seen as a possible means of recapturing a wayward lover, as illustrated in the case of the 15-year-old girl reported by Skrabic[51]. For women who live in societies where womanhood is defined by motherhood, as described in Dafallah[19], pregnancy, however problematic the circumstances, may still be wished for. In societies where women are rated by the number of their sons[14], a woman with only daughters will zealously pursue pregnancy, but ambivalently, fearing the birth of another girl. Simon[36] describe pseudocyesis among the Roma in rural Hungary where there is strong social pressure to become pregnant as soon as possible after marriage. At the same time, there is a high rate of maternal death during labor and delivery, making women ambivalent about pregnancy.

It was impossible to ascertain, in most of the case histories, whether the women described were infertile. Infertility, whether due to lack of a partner, menopause, gynecologic problems, prior sterilization, or concomitant illness, heightens the wish for pregnancy, while its very impossibility can fuel magical fantasies[15]. The timing of emergence of the delusion often coincides with the early stages of menopause[5,30,49,52,53], inferring that infertility plays a triggering role. Sometimes the timing suggests that the delusional pregnancy serves to compensate not only for the loss of fertility, but for loss in general. In the report by Marusic, the patient came to hospital a year after the death of her father, delusionally convinced that she was about to deliver a baby[46]. In Grover[44] a 46-year-old woman developed a psychosis two months after the death of an only son. The psychosis was treated with antipsychotic drugs, resulting in hyperprolactinemia and weight gain. Still on her medication, on the first anniversary of her son's death, the patient became convinced (falsely) that she was pregnant, that she felt fetal movements, and that the new baby was a male.

Some authors have suggested other related antecedents to the delusion of pregnancy such as social isolation, so that a baby becomes a hoped-for companion[54]. Ibekwe[15] has suggested that women's perception of their inherent powerlessness in a patriarchal society leads to

the development of pseudocyesis. Women in many developing countries, cannot compensate for lack of children, as can women in the West, by succeeding in a career, or making money in business or going out to war. Being pregnant (and gaining status thereby) is their one source of power.

In fact, because pregnancy is a highly respected state and women are treated especially well during this time by their spouses, in-laws, and society in general, giving up the pregnant state may be psychologically difficult. Simon *et al*[36] describe two cases where a delusional pregnancy occurred shortly after delivery, during the postpartum period, and seemed to be motivated by the wish to continue to be treated as if pregnant. Pregnancy confers advantages. In Muslim cultures, a husband cannot divorce his wife while she is pregnant[55]. In some religious traditions, pregnancy and breast-feeding absolve women from unwanted sexual activity[56].

From the results of their series of cases, Rosch *et al*[7] conclude that false pregnancy can be an unconscious adaptive strategy to guard against loss of a relationship. This view is seconded by Ibekwe[15] whose case describes an imagined pregnancy that brought the patient personal fulfillment, stability to her marriage and newfound acceptance from her in-laws. Ibekwe suggests that the delusion solved the dilemma faced by this infertile woman in a culture (Nigeria) that places immense value on children not only because procreation is religiously mandated, but also because it is economically necessary for survival and generational continuity. In sub-Saharan Africa, infertility is said to affect one third of all couples[57], is always blamed on the woman, and leads to discrimination and abuse[58]. In developing countries, violence against infertile women is reported to occur in 10 to 60 percent of instances[59,60].

EFFECTS OF CULTURE

Although perceived infertility is not always at the heart of delusional pregnancy[61], it contributes, more so in some social contexts than in others[62]. Infertility can cause extreme levels of distress[63,64], especially in developing countries where childlessness is never an acceptable option for married women, and where infertility treatments are often not available. Even where they are financially available, Islamic law forbids sperm and ova donations, as well as surrogacy[65]. Adoptions are also forbidden in most interpretations of Islamic law[66] because preservation of hereditary lineage is important. Infertility, though often caused by the male partner, is attributed, almost always in developing countries, to the woman[61]. A childless woman is viewed as a failure and is rejected by her husband and his family, as described in ethnographic studies carried out in the countries where pseudocyesis appears to be relatively commonplace[67-70].

Pronatalism, the belief that a woman's social value is linked to her production of children is strong in developing countries[71]. Only the presence of children gives a woman the right to share in her husband's property in sub-Saharan Africa. Infertility can be just cause for divorce or, in polygamous societies, justification for the husband taking another, more fertile wife[55,61]. The paradox is that infertility is relatively common in these same countries because of the prevalence of genital infection spread by unprotected sexual contact and because of unsanitary obstetric practices. To make matters worse, infant mortality is also high in many of these regions, partly because of the popularity of consanguineous marriages[72]. This translates into pressure on couples to give birth to as many children as possible, to insure against loss. In some traditional societies, the pressure to produce children is experienced as coming not only from family members but also, importantly, from dead ancestors who may feel wronged by the lack of descendants, and take revenge[73].

The role of cultural factors is evident in the identifications that women sometimes make when they develop a delusional pregnancy. The best illustration of this is in Battacharyya and Chaturvedi[6] who describe a woman from Bangalore India who believed that, in a previous birth, she had been the wife of the Hindu god Lord Rama and was now pregnant by him. In Hindu legend, Rama and his wife Sita are the personifications of ideal love, but are destined to be separated from each other. Furthermore, Sita (like the woman in question) gives birth to her twin sons when she is alone.

Where it is commonplace to believe that magic and evil spirits can cause disease, the distinction between a belief and a delusion can be easily blurred, as in Saudi Arabia, for instance, where many believe that pregnancy does not require sexual contact, but can be induced by spirits[55].

BIRTH OF A DELUSION

The delusion of pregnancy, as exemplified by the 80 cases reported since 2000, illustrates the circumstances of birth and development of a delusion. According to Conrad[74], the first stage, which he called "das trema" is a general feeling of non-specific apprehension. This can be a result of familial and societal pressures or personal aspirations to become pregnant despite obstacles such as infertility, old age, spinsterhood, ill health, poor marital relationship, or inadequate socioeconomic conditions. The general apprehension during this first stage may follow the loss of a child, or loss of status, or loss of a love relationship. The second stage of delusion formation is a sensory perception, such as weight gain, or vaginal spotting, or abdominal movement, or frequency of urination. The same sensory perception may have occurred many times before but, this time around, as the person searches for what it might mean, it suddenly acquires extraordinary significance. This is the third stage, where meaning is attached to an otherwise neutral sensation. The meaning, seemingly of surreal importance so urgent is its message, appears "out of the blue" ("Ah, I must be pregnant!")[75]. It feels convincingly true because, in one fell swoop, it resolves the difficult dilemmas with which the woman has

been struggling ("How can I live without my son?" "How can I be a woman if I'm infertile?" "How can I hold on to a man who is no longer interested?" "How can I avoid sex and still be a wife?")[76]. How a person then deals with this momentous information depends on personal factors (health, education, reasoning ability, cognitive biases) and on situational factors (family, socioeconomics, culture, religion). Such factors may serve to dispel the delusion for want of evidence and plausibility or they may serve to reinforce it by recalling traditional beliefs and fictional accounts[77].

FUTURE DIRECTIONS

A better understanding of pseudocyesis/delusional pregnancy requires experimental study designs. Antecedents, onsets, and diagnoses could be compared in (1) women and men with this condition[78]; (2) fertile[61] and infertile women; and (3) pseudocyesis and other monothematic delusions such as Capgras syndrome or Cotard syndrome[79]. It may also prove interesting to compare, on the same variables, women who delusionally deny pregnancy[10] with those who delusionally insist, against all evidence, that they are pregnant. Such careful comparisons will shed more light on this and other delusional conditions.

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