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Psoriatic arthritis disease activity during pregnancy and the first-year postpartum☆

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ABSTRACT

Objectives: To evaluate disease activity in the joints and skin during pregnancy and the first-year postpartum in patients with psoriatic arthritis (PsA).
Methods: Women with PsA who were pregnant between 1990 and 2015 with at least 1 clinic visit during pregnancy were identified from the Toronto PsA database. The course of joint and skin disease activity was defined by the following 5 states: improvement, worsening, stable low, stable high, or a mixed. As controls, 67 nonpregnant PsA women were identified and evaluated over a similar timeframe.
Results: Altogether, 29 PsA women with 42 pregnancies were identified. Of the 42 pregnancies, 40 (95%) resulted in normal live birth. Arthritis improved or was stable low activity in 24 (58.5%) of pregnancies. During the postpartum period, 21 (52.5%) had either improvement or stable low PsA activity, whereas 16 (40%) had either worsening or stable high disease activity. The skin activity during pregnancy either improved or stayed in a stable low state in 30 (88.2%), and in the postpartum period there was worsening in 15 (42.9%). A logistic regression analysis revealed a favourable skin disease course during the pregnancy period in the pregnant group compared to the control group (OR = 6.8, $p = 0.004$), but not in joint disease.
Conclusions: The outcome of pregnancy among patients with PsA is excellent. Arthritis activity trends toward a favourable course while the skin disease shows a favorable course during pregnancy. When compared to controls, pregnancy period has significant beneficial influence only on the skin but not on the joints in PsA.

Introduction

Psoriasis is a chronic inflammatory skin disease with a prevalence of 2–3% in the general population [1]. Psoriatic arthritis (PsA) is an inflammatory arthritis that develops in approximately one-third of patients with psoriasis [2]. PsA is a heterogeneous disease that can involve both the peripheral and axial skeleton, and extra skeletal structures [3].

Most studies in PsA demonstrate equal distribution between genders [3–5]. Although the disease can develop at any age, in most patients it usually appears between the 4th and 6th decades of life [6,7]. This population includes many women of childbearing age.

Most of the data on disease activity during pregnancy in rheumatic diseases derive from rheumatoid arthritis (RA). Several studies demonstrate improvement in the majority of pregnant RA patients [8–10]. However, most patients flare in the year following childbirth. In contrast to RA, it has been shown that most pregnant patients with ankylosing spondylitis continue with the same disease course without substantial change in disease activity [8,11–13].

The few studies evaluating psoriasis during pregnancy have shown improvement with subsequent postpartum flare [14,15]. To

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the best of our knowledge, the effect of pregnancy on disease activity in PsA was examined in only 1 small (15 patients) prospective study [16]. Most patients improved and 60% experienced complete remission.

The aim of our study was to evaluate the outcome of pregnancy and the course of PsA and psoriasis during pregnancy in a large prospective cohort of patients with PsA, and describe the different treatment strategies during this period.

Methods

Setting

The University of Toronto Psoriatic Arthritis Clinic has been following patients prospectively since 1978. Patients are entered into the cohort if they are diagnosed with PsA [17]. In total, 98% of the patients fulfill Classification Criteria for Psoriatic Arthritis (CASPAR) criteria [18]. Patients are assessed at 6–12 month intervals according to a standard protocol which includes a detailed clinical history (including information on pregnancy), physical examination, and laboratory evaluation. The protocol, completed by a physician, includes questions that assess the current medications and change in the medications during the interval between visits, including documentation of the specific start and stop dates. Radiographs are obtained at 2-year intervals and are scored according to the modified Steinbrocker method [19]. The collected information is stored in a computerized database.

Patient selection

The specific group of interest was pregnant women, followed between the years of 1990 and 2015, with at least one visit during pregnancy. Postpartum period was defined as the period up to 1 year following delivery. Overall, 6 follow-up visits were included: (1) last visit pre-pregnancy, (2) 1st trimester (0–13 week of gestation), (3) 2nd trimester (14–27 week of gestation), (4) 3rd trimester (28–42 week of gestation), (5) 1st visit postpartum (0–24 weeks after giving birth), and (6) 2nd visit postpartum (25–48 weeks after giving birth).

Controls

This group included nonpregnant women with PsA who were below the age of 40 years and were followed during the same timeframe as the pregnant group. We matched the year of inclusion (within 5 years) of each nonpregnant control to that of a pregnant patient and 1 or 2 controls were identified for each pregnant patient. The mean of follow-up time for the control group was 2.4 years. In order to match to the pregnancy and postpregnancy period, the 1st visit was defined as the baseline visit (corresponding to the 1st pre-pregnancy visit), the 2nd and 3rd were defined as the 1st year of follow-up (corresponding to the pregnancy period), and the last 4th and 5th were defined as the 2nd year (corresponding to the postpregnancy year).

Outcome

The arthritis and skin activity states during pregnancy were defined based on a comparison between the active (tender or swollen) joint count and psoriatic area severity index (PASI) during pregnancy to the last pre-pregnancy visit. The arthritis and skin activity states during the postpartum period were defined based on a comparison between the active joints count and PASI during the postpartum period to the last pregnancy visit. PsA activity was arbitrarily defined by 5 states: (1) improvement (defined as a decrease of at least 2 active joints), (2) worsening (defined as an increase of at least 2 active joints), (3) stable low (defined as 0 or 1 active joint and not satisfying states 1 or 2), (4) stable high (defined as ≥ 2 active joints and not satisfying states 1 or 2), or (5) mixed—combination of improvement and worsening throughout the period. Skin activity was defined by 5 states: (1) improvement [defined as a reduction of at least 2 in the psoriatic area severity index (PASI) score], (2) worsening (defined as an increase of at least 2 in the PASI, (3) stable low (PASI < 2 and not satisfying states 1 or 2), (4) stable high (PASI ≥ 2 and not satisfying states 1 or 2), or (5) mixed—combination of improvement and worsening. The improvement and stable low were clustered in a favorable category and worsening and stable high in an unfavorable category.

The rationale for choosing these disease activity states were based on the definitions of the minimal disease activity (MDA) in PsA [20]. Accordingly, stable low joint activity was defined as ≤ 1. The definition of joints improvement or worsening as at least a change in 2 joints ensured that a patient in the stable low who has this change will not continue to be counted as stable low. Based on the same MDA principle, stable low skin disease activity was defined as PASI < 2 and improvement or worsening as a change of at least 2.

Statistical analysis

Descriptive statistics were performed. Logistic regression was used to analyze whether the pregnancy and the postpartum period were associated with favorable activity (compared to unfavorable/mixed activity) for both the joints and skin. The variables that were controlled for this analysis included the following: age, disease duration, active joint count at 1st inclusion visit, and treatment with either DMARDs, biologic drugs, or both. In addition, a sensitivity analysis of multinomial logistic regression (comparing each outcome to the others: favorable, unfavorable, and mixed activity) was performed.

Results

Baseline characteristics and pregnancy outcome

Altogether, 29 women with 42 pregnancies were identified (Table 1). The mean (s.d.) age at the beginning of pregnancy was 33.8 (4.6) years. The majority of these women (19) had 1 pregnancy, while 7 had 2 pregnancies and 3 had 3 pregnancies. The majority (86%) of pregnancies occurred after the year 2000. Of these 42 pregnancies, 10 had 3 visits (1 in each trimester) during pregnancy, 8 had 2 visits (in different trimester), and 24 had 1 visit during pregnancy (9 in the 1st, 12 in the 2nd, and 3 in the 3rd trimester). The median visit week at each trimester was 8, 20, and 32.5, correspondingly. In total, 41 pregnancies had pre-pregnancy

Table 1
Baseline characteristics and pregnancy outcome

Characteristic	Mean ± SD
Age (yr)	33.8 ± 4.6
PsA duration (yr)	12 ± 7.4
Psoriasis duration (yr)	19 ± 8.9
Active joint count	4.8 ± 9.8
Damaged joint count	6.3 ± 11.2
Modified Steinbrocker score	2.3 ± 5
Pregnancy outcome	
Live birth, *n* (%)	40 (95)
Miscarriage, *n* (%)	2 (5)