Pregnancy Outcome in Idiopathic Inflammatory Myopathy Patients in a Multicenter Study

To the Editor:

Pregnancy in autoimmune diseases may be complicated for both the fetus and the mother. Polymyositis (PM) and dermatomyositis (DM) are autoimmune diseases that affect women more often than men, and can occur before childbearing years[1,2]. Complications during pregnancy were frequently reported in patients with PM/DM with active disease, whereas there seems to be a low risk for the fetus and mother in women with a well-controlled disease at time of conception[2,3,4,5,6,7,8,9,10].

Our aims were to assess the pregnancy outcome in myositis. Based on international collaboration, records for women with PM/DM who had been pregnant after the diagnosis of myositis were searched in 4 countries using the clinical databases of contributing hospitals. There were 23 women identified: Czech Republic (n = 8), Hungary (n = 9), Sweden (n = 5), and Poland (n = 1). All 23 women were white. Medical records were retrospectively reviewed using a standardized protocol.

Normal delivery was defined when a healthy newborn weighing > 2500 g was delivered after 37 weeks of pregnancy. Premature delivery was defined when the pregnancy ended between gestational weeks 24 and 37. Abortion was defined when the pregnancy ended before week 12. Intrauterine death was considered a late abortion between weeks 12 and 24.

Disease activity was measured before and during pregnancy, as well as after delivery based on elevation of serum muscle enzymes (creatine kinase and/or lactate dehydrogenase), proximal muscle weakness (using manual muscle strength testing), and presence of a characteristic skin rash in DM. Remission was defined as stable improvement or normalization of muscle strength and muscle enzymes, and the disappearance of skin rashes.

Serological profiles including anti-Jo1, PL-7, PL-12, EJ, OJ, SRP, PM-Scl, Ku, Mi-2, and U1-RNP autoantibodies were measured by ELISA, immunoblot, and immunoprecipitation. We used the Fisher's exact test and the logistic regression test for statistical analysis. The study was approved by the local ethics committees in each country.

In the study population, 10 women had PM, 10 had DM, and 3 had juvenile-onset DM. Among these 23 patients, 3 had an overlap syndrome with rheumatoid arthritis, systemic sclerosis, and systemic lupus erythematosus. One of the patients had antisynthetase syndrome (anti-Jo1 autoantibody positivity, alveolitis, and polyarthritis) before pregnancy, and her muscle weakness appeared after delivery. Clinical data at disease onset are presented in Figure 1. Myositis-specific autoantibodies were present in 10 women as follows: anti-Jo1 (n = 6), anti-Pm/Scl (n = 2), and anti-Mi-2 (n = 2). Other autoantibodies were also detected, such as anti-SSB (n = 1), antihiston (n = 1), anti-DNA (n = 2), and anticardiolipin (n = 5).

There were 33 pregnancies recorded in the 23 women after or at the time of onset of PM/DM (Table 1). We found 3 cases of pregnancy-induced myositis. Nineteen pregnancies ended in delivery of a healthy baby, without complications. Twelve of these pregnancies were conceived in remission. We used a low-dose corticosteroid treatment (8–12 mg) or no medication during pregnancy. Two patients with PM had flares after delivery; they needed methotrexate (MTX), azathioprine, and cyclosporine (CSA) treatment (Table 1). Six pregnancies were recognized during the active phase of the mother's disease, but the elevation of corticosteroid dosage was effective until delivery (mean dose was 24 mg/day), after which were started MTX, CSA, or chloroquine (Table 1). Mean duration of healthy pregnancy was 39.6 weeks (37–41 weeks) in cases conceived in remission and 37.5 weeks (37–38 weeks) in women with active disease. The mean weight of newborns was 2698 g (1680–3220 g) in women with active disease and 3353 g (2800–3930 g) in women with inactive disease.

We found complications in 14 pregnancies. These pregnancies ended between gestational weeks 7 and 31. Three pregnancies ended with intrauterine death, 6 with abortion (4 spontaneous and 2 induced), and 1 with extrauterine pregnancy. Four babies were born prematurely. Mean birth weight was 2350 g (1680–3220 g), and the delivery happened at gestational week 35.75 (35–36 weeks). To the best of our knowledge, these babies developed normally thereafter. The indications of induced abortions were the mother's serious disease activity or fetal malformation. In those cases, the mother needed immunosuppressant treatment. These 14 complicated pregnancies had been observed in 9 women (PM = 6, DM = 3). Three women had anti-Jo1 positivity, and anticardiolipin or anti-Pm/Scl autoantibodies were also detected in these cases. Seven women (PM = 5, DM = 2) needed immunosuppressive treatment before, during, or after pregnancy (Table 1). Two of these complicated cases were pregnancy-induced. One ended with spontaneous abortion and one with premature delivery; both mothers had persistent disease activity after delivery.

In our study, no severe maternal complications were reported. The fetal complications associated more frequently with PM than with DM (p = 0.0729). The relative risk of complicated pregnancy in PM is 1.923 (CI 95% 1041–3553). Besides the PM subset, the disease activity before or

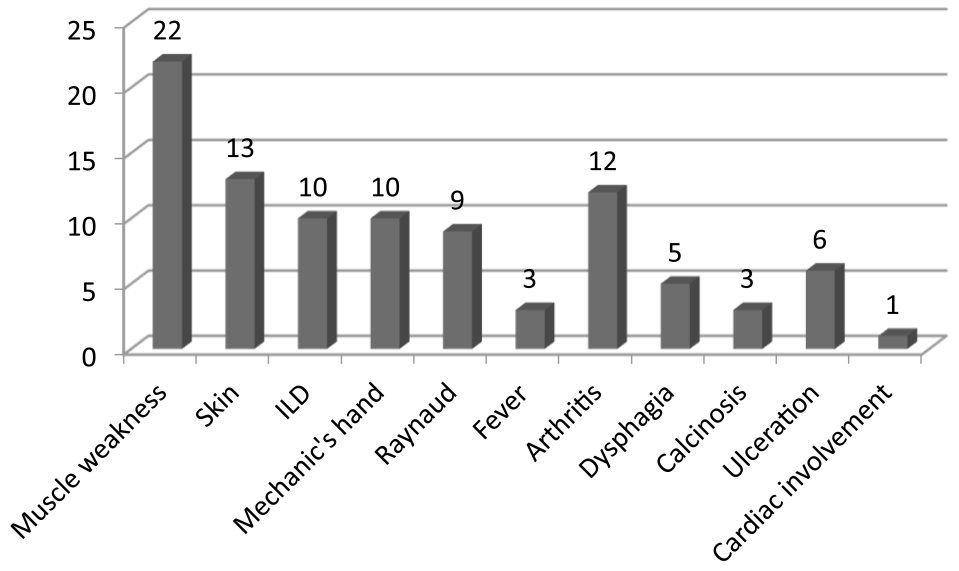

Figure 1. Clinical data at disease onset. Numbers indicate number of women with each condition. "Skin" refers to skin rashes

Table 1. Main data about the pregnancies.

Patient	Subset	Age at Pregnancy, Yrs	Pregnancy Outcome	Disease at Conception	Baby's Sex	Weight, g	Delivery at Week	Disease After Delivery	Treatment Before Pregnancy	Treatment During Pregnancy	Treatment After Pregnancy
1	PM	25	Abortion (induced)	Active	—	—	8	Active	CS + CYC + AZA	CS + CYC + AZA	CS + CYC + AZA
		26	IU death	Active	—	—	15	Active	CS + AZA	CS + AZA	CS + CSA
		27	Healthy	Active	Boy	2700	38	Remission	CS + CSA (CSA stopped when pregnancy was recognized)	CS	CS + CSA
2	PM	20	Immature-section	Active	Boy	1680	34	Remission	CS + CSA	CS	CS
		22	Abortion	Inactive	—	—	7	Remission	CS	CS	CS
3	PM	24	Abortion	Active	—	—	6	Active	CS	CS	CS
		25	Extrauterine	Active	—	—	10	Active	CS	CS	CS + MTX
4	DM	32	Healthy	Inactive	Girl	3200	40	Remission	CS	CS	CS
5	DM	31	Healthy	Inactive	Girl	3000	40	Remission	CS	CS	CS
6	DM	35	Healthy	Inactive	Boy	3800	40	Remission	CS	Nothing	Nothing
7	DM	37	Premature-section	Pregnancy-induced	Girl	2200	36	Active	Nothing	CS	CS + MTX
		31	Healthy	Inactive	Girl	3005	40	Remission	CS	CS	CS
8	DM	31	Abortion	Inactive	—	—	8	Remission	CS	CS	CS
9	DM	40	Healthy	Inactive	Girl	2800	41	Remission	CS	Nothing	Nothing
10	PM-ASS	24	IU death	Active	—	—	16	Active	CS	CS	CS + MTX
			Premature	Active	Girl	2300	36	Remission	CS + MTX	CS	CS + MTX
11	DM/RA	31	Healthy	Pregnancy-induced	Boy	3500	41	Active	Nothing	CS	CS
12	DM	36	Abortion	Pregnancy-induced	—	—	11	Remission	Nothing	Nothing	CS
13	PM	36	IU death	Active	—	—	23	Active	CS + MTX	CS	CS
		37	Abortion (induced)	Active	—	—	31	Active	CS + MMF	CS	CS + MMF
14	JDM	32	Healthy	Inactive	Boy	3670	41	Remission	CS	Nothing	Nothing
15	DM/SLE	30	Healthy	Active	Girl	2680	37	Active	CS	CS	CS
		32	Healthy	Active	Boy	2660	38	Active	CS	CS	CS + chloroquine
16	PM	25	Healthy	Inactive	Girl	3520	41	Active	CS	CS	CS + MTX + CSA
17	PM/SSC	25	Healthy	Inactive	Girl	3560	41	Active	CS	CS	CS + AZA + CSA
18	DM	26	Healthy	Inactive	Twin girls	3020, 2830	41	Remission	Nothing	Nothing	Nothing
19	PM	24	Healthy	Active	Boy	2600	37	Active	CS	CS	CS + MTX
20	JDM	26	Healthy	Inactive	Girl	3540	41	Remission	CS	CS	CS
		28	Healthy	Inactive	Boy	3620	41	Remission	CS	CS	CS
21	PM	27	Healthy	Active	Girl	2550	37	Active	CS	CS	CS
		30	Healthy	Active	Girl	3000	38	Active	CS	CS	CS + MTX
22	PM	25	Premature	Active	Boy	3220	36	Active	CS	CS	CS
23	DM	26	Healthy	Inactive	Girl	3930	41	Remission	CS	CS	CS

PM: polymyositis; DM: dermatomyositis; ASS: antisynthetase syndrome; RA: rheumatoid arthritis; JDM: juvenile dermatomyositis; SSC: systemic sclerosis; SLE: systemic lupus erythematosus; IU: intrauterine; CS: corticosteroid; CYC: cyclophosphamide; AZA: azathioprine; CSA: cyclosporine; MTX: methotrexate; MMF: mycophenolate mofetil.

during the pregnancy and the presence of autoantibodies seem to be risk factors for complications. Logistic regression analysis proved that high pregnancy risk is associated with joint involvement (OR 7.5, p = 0.032, 95% CI 1.19–47.77) and anti-Jo1 positivity (OR 8.9, p = 0.023, 95% CI 1.34–58.88).

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