Menstrual cycle, menopause and pregnancy in patients with multiple sclerosis. How do these affect the symptoms of disease?

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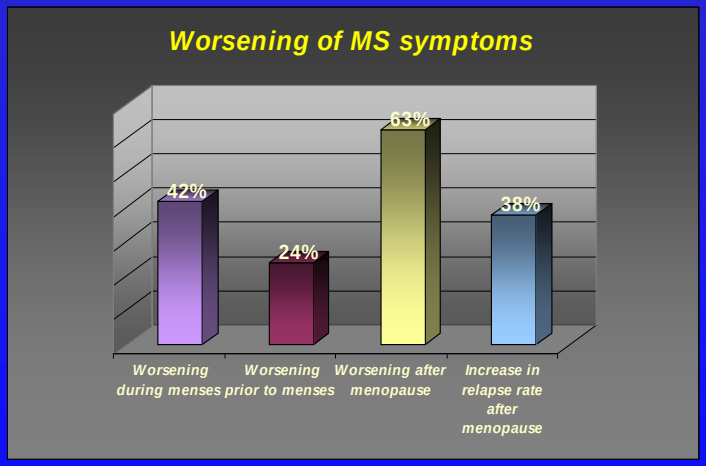
Background: There is evidence supporting the pathogenic influence of sex hormones on immune system activity in Multiple Sclerosis (MS). Changes in sex steroid levels affect the Th-1/Th-2 lymphocyte balance which may explain why MS activity changes between different phases of the menstrual cycle, pregnancy and menopause. Pregnant patients with MS show a significant decrease in the rate of relapse followed by a significant increase during the first 3 months postpartum.

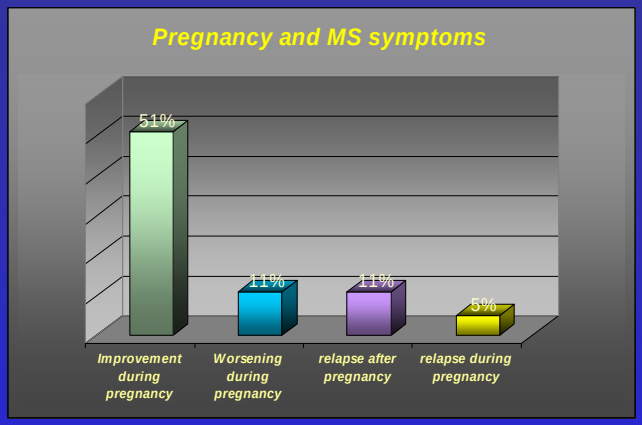
Objective: To document clinical changes in MS symptoms during the menstrual cycle, menopause and pregnancy.

Methods: Prospective questionnaire based study for women with MS aged 18 to 65. Age, MS type, date of diagnosis and initiation of symptoms, parity, menstrual and contraceptive history were documented. Changes in MS symptoms during menstrual period, pregnancies, menopause or with the use of hormone therapy were assessed. We differentiated MS symptoms from symptoms of premenstrual syndrome. Patients with hysterectomy, amenorrhea or postmenopausal onset of MS were excluded.

Table 1. Demographics	
Total MS patients	100
Relapsing Remitting MS	93%
Secondary progressive MS	7%
Mean age	40
Caucasian	69%
African American	15%
Hispanic	14%
Other	2%

Results: A total of 100 patients were included. Demographic characteristics are displayed in table 1. Worsening of symptoms during menses was reported in 42% of our patients; 24% also had worsening prior to the menstrual period. 35 patients had at least one pregnancy after their MS diagnosis, of these 51% reported improvement of symptoms during pregnancy, 4 patients described worsening of symptoms during pregnancy, 11% had a relapse in a 12 month period after delivery and 2 patients had a relapse during pregnancy. In our menopausal group of patients (n =16), 63% had worsening after menopause and 38% had increase in their number of clinical relapses after menopause.





Conclusions: There are several factors that suggest that female hormones play an important role in MS.

1. As has been described in previous studies, we found a decrease in symptoms and relapse rate during pregnancy, which could be explained by the shift toward humoral immunity that occurs during pregnancy.

2. The present and previous studies have also reported a cyclic worsening of MS symptoms in the premenstrual period in patients with RRMS. Before menstrual bleeding there is a sharp decline in circulating levels of estradiol, progesterone and inhibin. Progesterone appears to decrease NA+/K- ATPase activity and could therefore mimic effects obtained by potassium channel blockers. A sudden decrease in progesterone levels may abolish this effect and thereby worsen preexisting symptoms.

3. Patients with MS have also described worsening of symptoms after menopause. In our study this finding does not seem to be related to the disease duration. Hormone replacement may have therapeutic implications in the future.

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