

Medical Update Memo

January 29, 2010

Interferon-gamma-producing T cells, pregnancy, and postpartum relapses of multiple sclerosis.

Summary

It is well known that in women with MS, the relapse rate decreases during pregnancy and can increase after delivery. The authors of this study propose that this increase of the relapse rate after pregnancy may be related to an immunological process (reflected by the decline in a specific type of immune cell) which starts during late pregnancy. They also suggest that this process can be interrupted by lactational amenorrhea (physiological suppression of menstruation while nursing) induced by exclusive breastfeeding. *Arch Neurol.* 2010 Jan;67(1):51-7

Details

The objective of the study was to determine whether fluctuations in functional T-cell subsets can explain why multiple sclerosis (MS) relapses decline during pregnancy and increase in the postpartum period. Twenty-six pregnant women with MS and 24 age-matched, pregnant controls were prospectively followed. Structured interviews were conducted and peripheral blood mononuclear cells were collected during each trimester and at 2, 4, 6, 9, and 12 months post partum.

Sixteen functional cell types, including interferon-gamma (IFN-gamma)- and tumor necrosis factor-producing T-cell subsets, were measured using multicolor flow cytometry. Since these cell types may also fluctuate with pregnancy, lactational amenorrhea, or MS treatment, the data were analyzed taking into account these factors.

Fifteen women with MS (58%) had relapses during the postpartum year. CD4(+)IFN-gamma-producing cells fluctuated with MS relapses, declining during pregnancy in women with MS ($P < .001$) and continuing to decline after parturition in women with

relapses ($P = .001$), yet rising or remaining stable in women with nonrelapsing MS or healthy pregnant women. Lactational amenorrhea was associated with a rise in CD4(+)IFN-gamma-producing cells in women with MS ($P = .009$). In contrast, CD4(+) tumor necrosis factor-producing cells decreased during lactational amenorrhea in all groups of women and, once this was taken into account, obscured any relationship to MS relapses. CD8(+)IFN-gamma-producing cells were elevated in women with MS throughout the study ($P < .001$) but did not fluctuate with relapses.

The findings suggest that a decline in circulating CD4(+)IFN-gamma-producing cells leads to postpartum MS relapses. Findings also suggest that the decline in these cells may begin during late pregnancy and that lactational amenorrhea induced by exclusive breastfeeding may be able to interrupt this process.

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