Am J Med. 2005 Aug;118(8):899-906.

Male microchimerism in women without sons: quantitative assessment and correlation with pregnancy history.

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Abstract

PURPOSE: Fetal microchimerism, derived from fetal cells that persist after pregnancy, is usually evaluated by tests for male microchimerism in women who gave birth to sons. We investigated male microchimerism in women without sons and examined correlation with prior pregnancy history. Immunologic consequences of microchimerism are unknown. We studied healthy women and women with rheumatoid arthritis (RA).

METHODS: Y-chromosome-specific real-time quantitative polymerase chain reaction was used to test peripheral blood mononuclear cells of 120 women (49 healthy and 71 with RA). Results were expressed as the number of male cells that would be equivalent to the total amount of male DNA detected within a sample containing the equivalent of 100000 female cells.

RESULTS: Male microchimerism was found in 21% of women overall. Healthy women and women with RA did not significantly differ (24% vs 18%). Results ranged from the DNA equivalent of 0 to 20.7 male cells per 100000 female cells. Women were categorized into 4 groups according to pregnancy history. Group A had only daughters (n = 26), Group B had spontaneous abortions (n = 23), Group C had induced abortions (n = 23), and Group D were nulligravid (n = 48). Male microchimerism prevalence was significantly greater in Group C than other groups (8%, 22%, 57%, 10%, respectively). Levels were also significantly higher in the induced abortion group.

CONCLUSIONS: Male microchimerism was not infrequent in women without sons. Besides known pregnancies, other possible sources of male microchimerism include unrecognized spontaneous abortion, vanished male twin, an older brother transferred by the maternal circulation, or sexual intercourse. Male microchimerism was significantly more frequent and levels were higher in women with induced abortion than in women with other pregnancy histories. Further studies are needed to determine specific origins of male microchimerism in women.

PMID: 16084184 DOI: 10.1016/j.amjmed.2005.03.037

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