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PREGNANCY AND LEUKEMIA

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March 5, 1970

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SUMMARY

Comparison of birth rates and sex ratios for leukemia mortality from Japan, the United States, and Latin America suggests that pregnancy promotes or induces leukemia.

The advantage of women over men with respect to leukemia declines during woman's fertile period. This note suggests an association between birth rates and decline of the advantage. Figure 1 shows age-specific birth rates for Japan in 1948 and 1954, for the United States in 1957, and for Latin America in 1951-1960.¹ The last is an approximate average annual rate calculated from incomplete data for Chile, Colombia, Mexico, and Venezuela. The birth rates for Japan, 1948, and Latin America are relatively high for women over 25 years old, and those for Japan, 1954, and the United States are relatively low for those women. Figure 2 shows the average annual ratio, M/F, of male to female rates of death from leukemia for Japan, 1953-1955,² and for Latin America, 1959-1965.³ Again the rates for Latin America are approximate, having been calculated from incomplete data for Chile, Colombia, Mexico, and Venezuela. Both sex ratios of Fig. 2 show that the decline in female advantage ends at age group 55-65. Figure 3 shows M/F for Japan, 1959-1961,² and for the United States, 1960-1964.³ Here the decline in female advantage (excluding people over 75 years old) ends at age group 35-45. Thus for the places and times considered, high rates of birth to women over 25 years old are associated with a decline in the female advantage through age group 55-65, and relatively low rates of birth to women over 25 years old are associated with a decline in the female advantage only through age group 35-45. The latter association is valid also for recent experience of Canada^{1,4} and of England and Wales.^{1,5,6}

The sex ratios tend to emphasize purely sexual differences and to minimize differences of both time and place in diagnosis, treatment, recording, and other factors. Insofar as the use of sex ratios allows the comparison of the disparate populations considered, the foregoing association of birth rates with decline in the female advantage suggests a causal relation between pregnancy and leukemia mortality or between pregnancy and the promotion or induction of leukemia.

Examination of Japanese data for 1947-1961 reveals that the change from late to early end of the decline in female advantage occurred about 1955-1956, approximately 6 years after a great reduction in Japanese birth rates.⁷

This suggests that if pregnancy influences leukemia mortality, then middle-aged pregnancy is most influential and acts with a 6-year delay. Examination of morphological data from Japan, 1958-1964, and from England and Wales, 1961-1964, suggests that if pregnancy influences leukemia mortality, then it does so through the chronic forms, myeloid in Japan and lymphatic in England and Wales.⁷

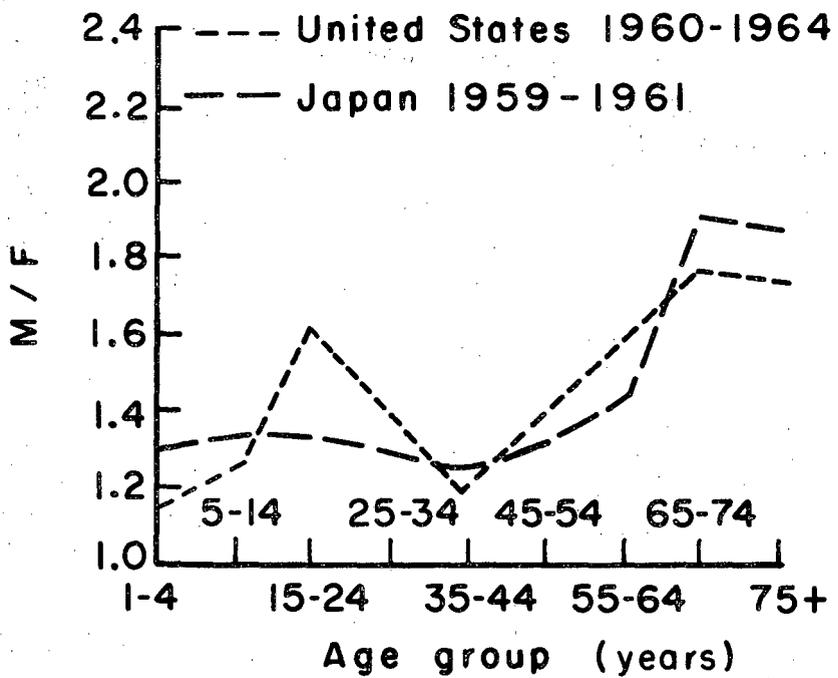
These hinted relations well may be connected with the known association between maternal age and childhood leukemia.⁸

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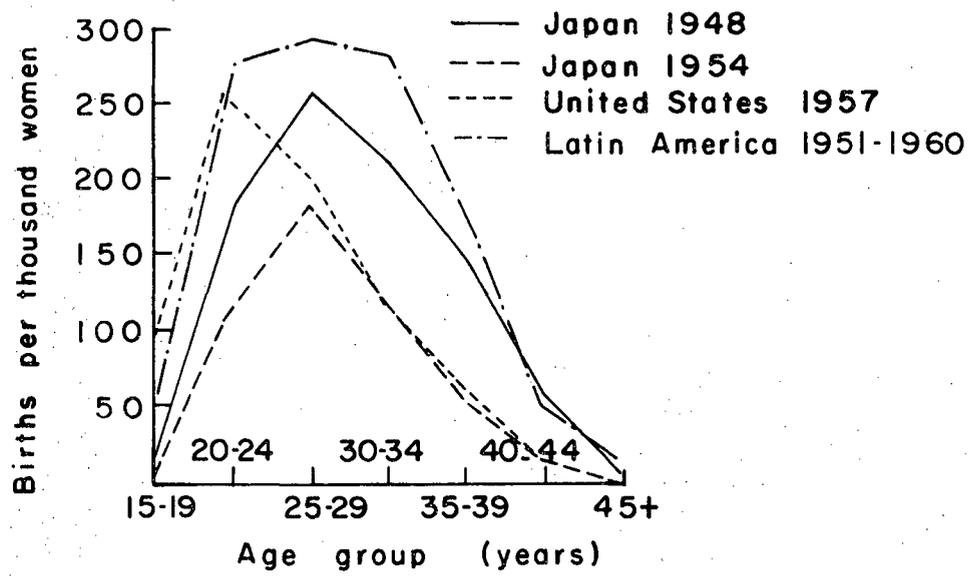
Titles for Figures

- Fig. 1. Annual age-specific birth rates for Japan, 1948 and 1954, United States, 1957, and Latin America (Chile, Colombia, Mexico, and Venezuela), 1951-1960 (average, approximate).
- Fig. 2. Age-specific sex ratio, M/F, of male to female average annual rates of leukemia mortality for Japan, 1953-1955, and for Latin America (Chile, Colombia, Mexico, and Venezuela), 1959-1965 (approximate).
- Fig. 3. Age-specific sex ratio, M/F, of male to female average annual rates of leukemia mortality for Japan, 1959-1961, and for United States, 1960-1964.



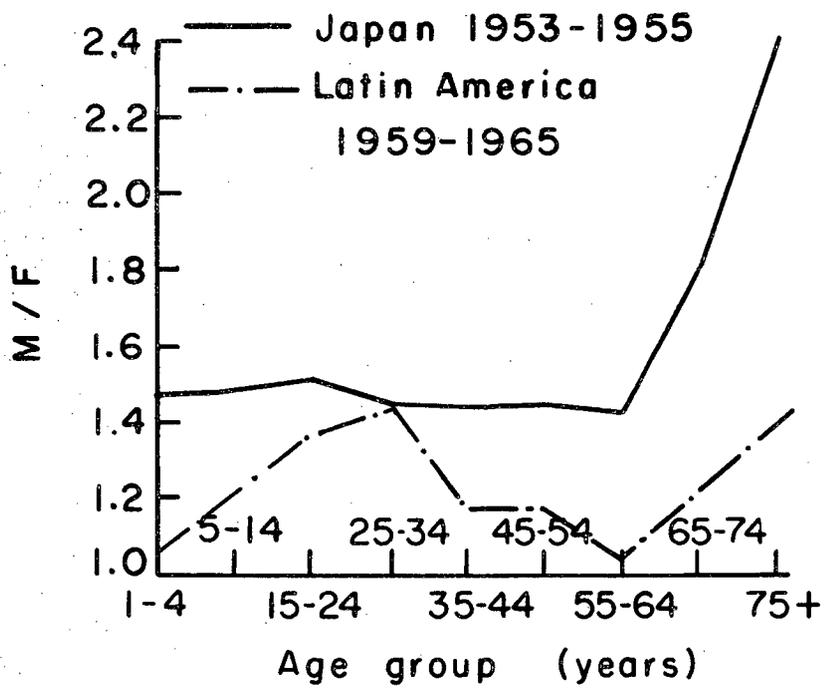
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Fig. 3



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Fig. 1



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Fig. 2

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