EDITORIALS

Induced Abortion and Breast Cancer: More Scientific Data Are Needed

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Despite intense study, the causes of breast cancer remain elusive (1). Reproductive factors are clearly of importance, but the nature of their influence on risk is complex and under continuous reassessment. It has been difficult to disentangle their effects because they are highly correlated and imperfect surrogates for unidentified underlying causal factors and because they are weakly related to the risk of breast cancer. A typical difference in risk (50%) is small in epidemiologic terms and severely challenges our ability to distinguish if it reflects cause and effect or if it simply reflects bias.

Women who have borne children early in reproductive life have a lower risk of breast cancer—at least in later life—than women who have never had a child (2,3). Based largely on animal models, it has been proposed that pregnancies that go to term protect against breast cancer because differentiation of breast stem cells occurs late in pregnancy, making them less susceptible to carcinogens; an interrupted pregnancy might not confer protection or might even increase risk because there will have been proliferation of breast cells without the protective effect of subsequent differentiation (4).

In this issue of the Journal, Daling et al. (5) present the results of an interview-based case-control study of women younger than 45 years. They compared 845 women with breast cancer with 961 women from the general population. Women who reported one or more induced abortions appeared to have a greater risk of breast cancer than women who had been pregnant but never had an abortion; the increase was estimated to be 50%. Risk was not influenced by the number of abortions or by whether the abortion preceded or followed a term pregnancy. Risk estimates varied in subgroups defined according to the age of the woman at the time of the abortion, the length of gestation, lactation in subsequent pregnancies, and family history of breast cancer, but these differences in risk were not statistically significant. Spontaneous abortion was not associated with an increase.

Some results were consistent with predictions from the animal model but not others. For example, a striking inconsistency with the model was the finding that risk estimates did not vary if the induced abortion preceded or followed a term pregnancy; that finding is also inconsistent with much of the human data on completed pregnancies (2). The animal model offers no insight as to whether induced and spontaneous abortions have differing effects on risk. Human data on hormonal and other changes that occur during the course of completed and interrupted pregnancies are scanty (6).

The study of Daling et al. was large, population-based, and carefully designed and conducted, but limitations are inevitable. A major concern, especially because the observed effect was small, is the possibility of reporting bias. The reproductive lives of the study participants occurred mostly after the legalization of abortion, but induced abortions are still emotionally charged for many women and they are generally underreported (7). Women with breast cancer, a serious illness, were more willing than the healthy control women to participate. If they were also more willing to report induced abortions (8), this would have contributed to the observed association. Reassurance that reporting bias does not explain the results will come only when confirmatory findings are provided by case-control studies based on complete records of abortions or by follow-up studies in which abortions are recorded before the occurrence of breast cancer. Another concern is the possibility of confounding. Women with induced abortions had less favorable risk profiles—in terms of parity, age at first term-pregnancy, and lactation—than women with spontaneous abortions. Allowance was made in the statistical analysis for confounding factors. For small effects, however, the possibility that residual confounding distorted the results is difficult to rule out.

Many of the earlier studies that reported on abortion and breast cancer had serious shortcomings, including problems of selection and reporting bias, failure to control for confounding factors, and grouping together of induced and spontaneous abortions (2,9). The results from even the better studies are conflicting, suggesting favorable, unfavorable, or no effect of induced abortion on the risk of breast cancer. In fact, the first study (10) to report an increase in the risk of breast cancer for young women with incomplete pregnancies—a doubling in risk both for induced and for spontaneous abortion—failed to find any evidence of an increase when the study was continued and a further set of cases and controls was included (11). Furthermore,
studies in which induced abortion has been associated with increased risk have provided conflicting results about the circumstances, such as the timing of the abortion in relation to a first term-pregnancy. Evidence concerning spontaneous abortion is also inconsistent (2).

What are we to conclude? When a variety of studies with different designs tend to give similar results and when these results are consistent with other observations—that is, when there is a coherent body of knowledge—then an inference about cause and effect becomes more tenable. A plausible biologic mechanism to explain the results is also helpful. While the findings of Daling et al. (5) add to the limited evidence that induced abortion increases the risk of breast cancer, neither a coherent body of knowledge nor a convincing biologic mechanism has been established.

All the evidence to date refers to surgically induced abortions. Should RU486 or other agents be approved as abortifacients in the United States, future studies will need to consider these types of abortion separately from surgical ones. RU486, for example, is a progesterone antagonist considered to have a potential role in the treatment, and perhaps even in the prevention, of hormone-related diseases, including breast cancer (12,13).

The intensity of emotion concerning both abortion and breast cancer virtually guarantees that the results reported by Daling et al. will receive widespread publicity. The findings will indeed provide leads to the scientific community for further research. However, the overall results as well as the particulars are far from conclusive, and it is difficult to see how they will be informative to the public. Whatever future results show, the decision to continue or terminate an unplanned pregnancy will still need to be based on a balanced consideration of the entire range of relevant issues—personal ethical considerations, the desire for a child, the ability to care for it, and the total health implications of continued pregnancy versus induced abortion.

References

Note
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Beat the Smokeless Habit

Game Plan for Success

Smokeless tobacco represents a serious health risk. Beat the Smokeless Habit: Game Plan for Success provides the facts about smokeless tobacco and a nine-step plan for quitting. Baseball stars comment on their experiences with quitting and how the sport and smokeless tobacco have been historically linked.

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