Re: Journal to Encourage Analysis by Sex/Ethnicity

The Journal now includes in its “Information for Authors” the statement that “clinical and epidemiological studies should be analyzed to see if there is an effect of sex or any of the major ethnic groups” (1). Good—such a statement has been long needed. In experimental carcinogenesis, differences between sexes in chemically induced tumor-site responses have been known for decades (2). It is interesting that, when there is a lack of concordance between sexes, strains, or species in tumor patterns that occur in long-term chemical carcinogenesis bioassays, the findings are often discounted. Some researchers also consider single-sex tumor responses to a chemical to be confounded, artifactual, or even spurious. In any event, as the debate goes, chemically induced sex- or strain-specific effects are considered to be irrelevant to potential human risks, even though workers or other people may be exposed to the same chemical or exposure circumstance. I believe that it makes little scientific or public health sense to say that chemically induced sex- or strain-specific effects are irrelevant to potential health risks of workers or other people exposed to the same chemical. Nevertheless, this reasoning has been accepted by various people and some regulatory agencies in the absence of a clear understanding of the mechanistic basis of the carcinogenic response.

Obviously, there are reasons for any sex-pattern differences in tumor responses that likely go beyond simply hormonal influences; however, as of now, other inferences, excepting chemically related carcinogenicity, have yet to be proposed or proven with any mechanistic certainty (3). As mentioned by McCann (4) in an accompanying news story in the Journal, “Although some differences are hormonally related, there are probably many more differences between the sexes that are caused by behavior rather than sex hormones.” Indeed, lifestyles and occupations play a major role in different cancer patterns in women and men but certainly not in laboratory animals. Clearly, male and female control and test animals used in research are treated exactly the same regarding experimental protocols; therefore, factors other than lifestyle and occupation must be involved when gender, strain, or species differences are observed. Thus far, these factors have not been elucidated satisfactorily (5).

Perhaps the fundamental explanation for gender variations in responses centers simply on the notion that the different hormonal milieus in male and female animals are the singular and sufficient difference for any sex-specific chemical carcinogenic effects. Yet we need to delve into other possible underlying scientific hypotheses more deeply (6, 7). Until then, we must also be more cautious in discounting the relevance to humans of experimental carcinogenesis findings simply because male and female laboratory animals have different tumor patterns after exposure to the same chemical. Otherwise, public health suffers. Clearly, female and male humans also exhibit different tumor patterns, and occupational studies that focus on males, as most of them do, are inadequate for judging environmental risks for females. Obviously, as the Journal now emphasizes, we need to better clarify and identify gender- and ethnicity-specific findings and mechanistic influences among humans.

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REFERENCES


NOTE

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