Women Are at Greater Risk for Cancer Treatment Side Effects

Compared with men, women had a 34% greater likelihood of adverse events, especially if they received immunotherapy.

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Women are more likely than men to experience adverse events related to chemotherapy, targeted therapy or immunotherapy for cancer, according to study results published in the Journal of Clinical Oncology.

While women's greater propensity for experiencing side effects due to chemotherapy is well known, there has been little research on adverse events related to other types of cancer treatment. So Joseph Unger, PhD, of the Fred Hutchinson Cancer Research Center in Seattle, and colleagues set out to analyze these sex-based differences.

Using data from the SWOG Cancer Research Network, Unger's team assessed treatment-related adverse events in Phase II and III clinical trials that took place between July 1980 and June 2019. They chose to exclude sex-specific and sex-dominant cancers, such as prostate cancer and breast cancer, as well as sex-specific side effects.

The analysis included a total of 23,296 participants from 202 different trials: 8,838 women (38%) and 14,458 men (62%). About a third were ages 65 or older, and most were white. The most common types of cancer were gastrointestinal (26%), lung (21%) and leukemia (12%). Three quarters (17,417 people) received cytotoxic chemotherapy, 3,560 received targeted therapy and 2,319 received immunotherapy.

The researchers took into account 13 categories of symptomatic adverse events and 14 categories of objectively measured events, including changes in lab values. They paid particular attention to hematologic events, such as low blood cell counts. Altogether, they evaluated 274,688 adverse events. Nearly two thirds of participants (65%) experienced at least one such event.

Overall, women experienced more side effects compared with men. Women were at greater risk than men for symptomatic adverse events (33% versus 28%, respectively) and hematologic events (45% versus 39%). They were also more likely to experience five or more adverse events.

What's more, women had a 34% greater risk for severe adverse events compared with men, including a 49% increased risk among those who received immunotherapy. Women had an

increased risk for severe symptomatic events across all treatment types, especially for immunotherapy (a 66% higher risk). And women were 25% more likely to experience the most severe adverse events.

Women who received chemotherapy or immunotherapy were more likely than men to experience severe hematologic adverse events, and this appeared to drive the overall difference. No statistically significant sex differences were found in the risk for nonhematologic events.

Why women are more adversely affected by cancer therapies remains to be determined. Differences in dosage in relation to body size, drug metabolism in the body, adherence and symptom perception may be among the reasons. Women and men also have some differences in immune response, with women being more likely to develop autoimmune conditions.

“Our findings suggest that underlying mechanisms may result in generalized worse toxicity outcomes for women, with or without corresponding survival improvements or detriments,” wrote the authors. “A better understanding of the nature of the underlying mechanisms could potentially lead to interventions or delivery modifications to reduce toxicity in women (in particular). In such cases, cancer treatment may then be able to be simultaneously modified or augmented, with the ultimate goal of extending therapeutic benefits.”

Click here to read the study in the Journal of Clinical Oncology.
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