Study identifies risk of chemotherapy related hospitalization for early-stage breast cancer patients
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Oncologists now have a new understanding of the toxicity levels of specific chemotherapy regimens used for women with early stage breast cancer, according to research from The University of Texas MD Anderson Cancer Center.

The retrospective study, published in the Journal of Clinical Oncology, used large population-based data to compare the risk of hospitalization for six common chemotherapy regimens. Reasons for hospitalization included infection, fever, anemia, dehydration, neutropenia (low white blood cell count), thrombocytopenia (low blood platelets) and delirium.

"The novelty of our study is that we were able to identify and delineate between different chemotherapy regimens in early-stage breast cancer using claims data, considered as real-world and non-clinical trial information," said Carlos Barcenas, M.D., assistant professor, Breast Medical Oncology and corresponding author.

There have been several prior publications in the health services research field addressing chemotherapy toxicity using claims data, but they don't outline specific chemotherapy regimens, Barcenas explained.

"The difficulty in the methodology is that most of these regimens are composed of several agents and have specific cycling times. The chemotherapy regimens have usually been referred to as "anthracycline" or "taxane-based," Barcenas said. "By characterizing subsets of patients at greatest risk for developing toxicities and adverse side-effects, clinicians may be able to select more tolerable treatments."

Researchers combined data from the Surveillance, Epidemiology and End Results (SEER) registry, compiled by the National Cancer Institute, and the Texas Cancer Registry to identify 3,567 patients ages 65 and older being treated for early stage breast cancer between 2003 and 2007. Additional data from Marketscan, a nation-wide employment claims database, identified 9,327 patients younger than 65 years of age with early stage disease.

Patients were then categorized into groups according to the chemotherapy regimens they received including:

- Docetaxel and cyclophosphamide cycled every three weeks (TC)
- Doxorubicin and cyclophosphamide cycled every three weeks (AC)
- Docetaxel, doxorubicin and cyclophosphamide cycled every three weeks (TAC)
- Doxorubicin and cyclophosphamide cycled every three weeks, followed or preceded by docetaxel cycled every three weeks (AC+T)
- Doxorubicin and cyclophosphamide cycled every two weeks, followed or preceded by paclitaxel cycled every two weeks (ddAC+P)
- Doxorubicin and cyclophosphamide cycled every three weeks followed or preceded by weekly paclitaxel (AC+wP)

Among patients younger than 65 years of age, the hospitalization rates ranged from 6.2 percent (ddAC+P) to 10 percent (TAC). In patients older than 65, rates ranged from 12.7 percent (TC) to 24.2 percent (TAC).

"Our findings demonstrate that TAC and AC+T were associated with the highest risk of hospitalization in patients younger than age 65," Barcenas said. "And for older patients all regimens, aside from ddAC+P, were associated with a higher
risk of hospitalization compared to the regimen TC."

Barcenas notes these findings need to be taken with the consideration of potential biases where less aggressive regimens may have been offered to patients who are frailer.

Additionally, Barcenas said that findings showed that the use of the regimen TC has significantly increased over time, without any current evidence from clinical trials that this regimen is non-inferior to antracycline and taxane-based chemotherapy regimens.

The authors note several limitations exist with retrospective claims data research, including the inability to adjust for other clinical factors such as co-morbidities and therapy responses. Also, hospitalization data often underrepresents chemotherapy toxicities as mild events are usually managed in the outpatient setting.

Additional research is necessary to validate the study methodology. The most important question is which of these treatments is most effective for patients. It is likely that many of these regimens are similar in effectiveness and this study will help guide treatment by allowing physicians to pick the least toxic therapies, Barcenas said.

Provided by University of Texas M. D. Anderson Cancer Center


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