Study Offers Insights on Health Problems Among Young Adult Cancer Survivors

These survivors are more likely to develop high cholesterol, high blood pressure, diabetes, thyroid disorder and other chronic conditions.

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Cancer survivors who were diagnosed as adolescents and young adults (AYAs) are more likely to develop a wide range of chronic health problems than their peers who did not have cancer, a large new study shows.

The study also found links between specific types of cancer treatment and the risk of developing certain health problems in AYA cancer survivors. Adolescents and young adults are defined as those ranging from ages 15 to 39.

“Cancer survivors are generally at higher risk for developing serious health conditions because of the treatments they received,” said study leader Chun Chao, PhD, of Kaiser Permanente Southern California.

But whereas researchers know a great deal about the late effects of cancer and its treatments in adult survivors of childhood cancer, they know much less about late effects in survivors of AYA cancer, Chao noted. “Historically, AYA cancer survivors have been a left-behind and understudied group,” she said.

“This study is a bit of a wake-up call regarding how we care for AYA cancer survivors,” said Ashley Wilder Smith, PhD, MPH, chief of NCI’s Outcomes Research Branch, who was not involved with the research.

“It’s important that AYA cancer survivors are followed up carefully; that there is coordination of their care between oncologists, primary care doctors, and other specialists; and that these survivors continue to get the appropriate health screening,” Smith said.

The new study, published July 16 in the Journal of Clinical Oncology, used data from the electronic medical records of more than 90,000 Kaiser Permanente members to compare the risk of developing 26 different health conditions among survivors of AYA cancer and a matched group of people without cancer. The conditions included heart failure, heart attack, stroke, diabetes,

hearing loss, and chronic kidney and liver disease.

An ‘In-Between’ Group

More than 70,000 adolescents and young adults in the United States are diagnosed with cancer each year, and the incidence of cancer in this age group has been rising in recent decades. The number of US survivors of AYA cancer is estimated at more than 633,000 and is expected to grow.

An important distinction between AYA cancer survivors and survivors of either childhood or adult cancer, Smith said, is that often “there is no specific medical ‘home’ for AYAs, such as a designated medical facility or oncologists who specialize in treating this ‘in-between’ population.”

Although some AYAs develop cancers that typically occur in children, such as leukemia and osteosarcoma, others have cancers more common in older adults, such as breast and colon cancer. As a consequence, AYAs are treated by pediatric oncologists or oncologists who primarily treat older adults, Smith said.

Furthermore, she noted, young adults are often in transition in their lives and tend to move around more, so they may not have a primary care doctor or a regular place they go to for medical care.

In addition, “AYAs have lower enrollment in clinical trials compared with people treated for cancer in childhood or older adulthood,” said Emily Tonorezos, MD, MPH, director of NCI’s Office of Cancer Survivorship. “One of the many reasons why this is important is that there may be other differences in treatment response or toxicity unique to this population that we have not yet uncovered.”

Prone to a Wide Range of Health Problems

Chao and her colleagues analyzed the electronic medical records of 6,778 survivors of AYA cancer who had been diagnosed during 2000 to 2012. The team compared information in these medical records with that in the records of 87,737 other Kaiser Permanent members, matched by age and sex, in the same time frame who did not have a history of cancer (comparison group).

AYA survivors in the study were racially and ethnically diverse, with most being either non-Hispanic White or Hispanic. The average follow-up time of survivors was about 6 years after cancer diagnosis, with follow-up times in the study ranging from 2 to 15 years.

Overall, the risk of developing any of the 26 health conditions was about 50% higher among AYA cancer survivors than in the comparison group. After 10 years, 40% of AYA cancer survivors had developed two or more of these conditions, compared with only 20% of people in the group with no history of cancer.

The most common health problems were similar among AYA cancer survivors and the comparison group, and included high cholesterol, high blood pressure, diabetes, and thyroid disorders. However, the risk of these problems was higher among cancer survivors.

The conditions for which risk was increased the most among survivors of AYA cancer were avascular necrosis, osteoporosis, joint replacement surgery, stroke, premature ovarian failure, and heart failure or a type of heart damage called cardiomyopathy. In some cases, however, these conditions were still rare.

In addition, Chao said, “We found that having a certain treatment history [such as a particular type and dose of chemotherapy or radiation therapy] increased the risk of certain chronic health problems compared with the risk among AYA cancer survivors who did not get that treatment.”

For example, survivors who had been exposed to the highest doses of chemotherapy drugs known as platinum agents and received high doses of radiation therapy to the head had 15 times the risk of hearing loss than survivors who had not received those treatments. And those treated with the breast cancer drug trastuzumab (Herceptin) had about three times the risk of heart failure or cardiomyopathy compared with those who had not had that treatment.

Study participants were all members of Kaiser Permanente who had access to medical care. Given that fact, Smith noted, it’s possible that the risk of chronic health problems is higher among survivors of AYA cancers in the United States as a whole, as uninsured and underinsured young people may receive less preventive care or delayed care.

Developing Age-Specific Survivorship Guidelines

Current survivorship guidelines for people who were treated for cancer as AYAs are heavily based on data from long-term studies of childhood cancer survivors, but in many ways the two groups are not comparable, Chao said.

“So, our data will help inform the development of age-specific guidelines to care for AYA cancer survivors and help manage their risks of long-term health problems,” she continued.

And, Smith said, because AYA survivors are at risk of multiple late effects, “coordination by health care providers across different types of specialties will be needed” for these patients.

The study had some limitations, the authors acknowledged. Because follow-up time was limited, late-occurring health problems in survivors of AYA cancer may have been missed. In addition, the study lacked comprehensive data on survivors’ lifestyle factors such as smoking, alcohol use, and exercise.

Nevertheless, Chao said, the results suggest that people who had cancer as AYAs should be counseled on the importance of leading a healthy lifestyle, which could lower their risk of some long-term health problems, such as diabetes and heart disease.

“Adolescents are more at risk for risky behavior choices, but as they face a cancer diagnosis there’s an opportunity to intervene and either prevent or stop [those risky behaviors] and promote better lifestyle choices,” Smith agreed.

“One big focus in the cancer field now is what kind of approaches will help lower the risk of long-

term health problems in survivors, and that still needs to be answered for AYA cancer survivors," Chao said.

Smith noted that she hasn't seen another AYA cancer survivor study of this kind that included such a large number of survivors with a well-matched control group, was able to capture new health problems as they were diagnosed, and included so many types of cancer as well as so many other health conditions.

In addition, she said, the study "has much more in-depth information" about the types and doses of chemotherapy and radiation therapy survivors' received.

As a result, she concluded, "I anticipate that this study will be referenced quite a lot in the coming years because it captures so much."

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