Younger Children on Chemotherapy Are at Greater Risk for Hearing Loss

A higher dose of cisplatin and combination with other medications influence the development of hearing loss.

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Younger children on cisplatin chemotherapy for their cancer are more likely to experience hearing loss than older children. Higher doses of the drug, additional chemotherapy and longer periods of antibiotic use contribute to the development of cisplatin-induced hearing loss, according to results published in Cancer.

“This is significant as even a moderate loss of hearing can impact social development in children, particularly when it occurs during a peak time of language acquisition,” Bruce Carleton, PharmD, of the University of British Columbia in Vancouver, said in a press release.

Cisplatin is a platinum-based chemotherapy drug used to treat a variety of cancers. Ear damage resulting in impaired hearing and balance problems is a common side effect of cisplatin. Based on previous research, more than half of children treated with cisplatin experience hearing loss. How the drug affects hearing loss is uncertain, but cisplatin is possibly toxic to the still-developing structures of the inner ear in young children.

Carleton and his colleagues explored the development of cisplatin-induced hearing loss in children with cancer. The team used retrospective data on 368 children for whom a total of 2,052 audiological assessments were carried out.

All participants were taken off cisplatin therapy within three years of treatment initiation. During this period, the team examined the impact of various clinical factors on cisplatin-induced hearing loss.

Across the entire study population, cisplatin-induced hearing loss occurred in 28% of children during the first six months of therapy, rising to 41% by the first year and 60% by the third year.

But the risk of hearing loss varied according to age. Three years after therapy initiation, some 75% of children ages 5 or younger developed cisplatin-induced hearing loss. This proportion increased greatly from 27% at three months to 61% at one year. In children older than 5 years, 9% experienced hearing loss at three months, 19% at six months, 27% at one year and 48% at three

years.

The development of cisplatin-induced hearing loss was independently linked to several factors, including high cisplatin doses, being 5 years old or younger at treatment initiation, simultaneous use of the chemotherapy drug vincristine and longer periods of concurrent antibiotic therapy.

“These results emphasize the need for audiological monitoring with each cycle of cisplatin treatment,” Carleton said. “Further investigation is needed to illuminate why younger children are more vulnerable to hearing loss and how best to protect hearing while administering this lifesaving therapy.”

Click here to read the study abstract in Cancer.

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