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Hearing Loss in Childhood Cancer Survivors: Looking beyond Platinum Compounds and Cranial Radiation

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To the Editor:

Many childhood cancer patients receive ototoxic treatments that lead to auditory complications. Hearing loss occurs in about 10% of childhood cancer survivors overall [1] and can result in neurocognitive deficits and educational, social, and behavioural problems and thus strongly affect quality of life. Treatments known to induce hearing loss are platinum chemotherapy, cranial radiation, and surgery of the auditory system.[2] However, prevalence estimates of hearing loss following cisplatin exposure vary widely, suggesting that additional risk factors play a role. For instance, drugs used to treat complications of cancer treatment, such as aminoglycoside antibiotics and loop diuretics may cause auditory damage.[2] Other antineoplastic agents, such as the neurotoxic vinca alkaloids, have also been suspected to be ototoxic but evidence is limited.[3]

Moke and colleagues[4] studied cisplatin-induced hearing loss in 1481 children, adolescents, and young adults, the largest cohort ever investigated using audiology data from 16 clinical sites. Every second patient developed moderate or severe hearing loss during follow-up. Those treated with higher fractionated cisplatin doses were at greater risk, even after adjustment for cumulative doses. An encouraging finding is that they did not find evidence suggesting that dose reductions and moderate or severe hearing loss is associated with survival. An important novel finding is also the strong association between hearing loss and vincristine exposure, which they found. The study design does not allow to investigate whether vincristine is independently associated with hearing loss, or only in combination with cisplatin.

This highlights a major weakness of published studies on risk factors for hearing loss after cancer therapy. Most studies were small, retrospective, and included only patients treated with platinum chemotherapy or cranial radiation. This makes it difficult to identify other treatment-

related risk factors. Population-based studies assessing self-reported hearing by questionnaires suggest that also cancer survivors who had no platinum chemotherapy or cranial radiation have more hearing problems than siblings.[1] Hearing tests are non-invasive, cheap, and easy to perform – in fact every child is tested several times during childhood for screening purposes. This leads us to suggest that future studies should have broader inclusion criteria and offer hearing tests to all cancer survivors treated with chemotherapy, not only to those who received drugs already known to be ototoxic.[5] Only a more generous approach will make it possible to detect new risk factors in the continuously evolving landscape of cancer treatments.

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