CISPLATIN-INDUCED OTOTOXICITY

WHAT IS OTOTOXICITY?

The 5-year survival rate for childhood cancers due to major treatment advances is now 85% or higher.1 Cisplatin-based therapy is an indispensable component of treatment for pediatric solid-tumor cancers; however, an unfortunate side effect of cisplatin-based chemotherapy is irreversible ototoxicity (or hearing loss). Ototoxicity is caused by irreversible damage to hair cells in the cochlea. This damage is generally dose-dependent, bilateral (affecting both ears), and can be progressive.2,3,4

From the very first treatment cycle, pediatric patients can suffer cisplatin-induced ototoxicity that may progressively worsen even after treatment ends.5

WHO DOES IT AFFECT?

Approximately 5,000 children (≤18 years) are diagnosed with a solid tumor and eligible for treatment with a platinum-based chemotherapy every year in the United States, and a similar number in Europe. Approximately 70% of these patients (~3,500 in the US) are diagnosed with non-metastatic, localized disease.6

HOW IS IT TREATED?

Previously, intervention only occurred after hearing loss had been detected, and does not return normal hearing.

The most common management strategy is the use of lifelong hearing aids, which do not completely reverse hearing loss and require replacements every 3-5 years and may also require amplification technology.4,7

Some children receive difficult to manage cochlear (inner ear) implants, which remain suboptimal in the direct recovery of hearing function and may also require replacement during an individual’s lifetime.8

Annual incidence of pediatric solid tumor cases eligible for platinum-based therapy in both U.S. and EU markets

10,000+ patients

Studies have shown that hearing loss has a profound impact on children’s learning and development at all ages

Despite recommendations, many pediatric cancer patients are not consistently monitored for hearing loss. Only 45% of patients have been documented to require hearing aids.12

Parents report children with hearing loss being held back a grade, problems with reading, math, attention and need for special education twice as often.12

Nearly 1 in 5 (18%) considered at-risk for hearing loss do not have hearing tests during follow-up.13

More than half (57%) of patients do not have full audiological monitoring before, during, and after treatment.13

Hearing loss is associated with lower IQ, phonetic decoding, and reading comprehension.12

Those with serious hearing loss are at an increased risk of not marrying, not graduating from high school, not living independently and unemployment.12

The cost of cisplatin-induced ototoxicity

Most insurance plans don’t cover hearing aids and a pair of hearing aids can cost around $6,000.9

A recent study within the Canadian health system estimated the total present value lifetime costs in the range of $445,000 to $560,000 for patients with severe hearing loss, measured until the age of 64.10

In addition to the financial costs, ototoxicity takes a significant psychosocial and developmental toll on pediatric patients.11

REFERENCES