New treatment helps avoid deafness in child chemotherapy patients

June 21 2018, by Kathryn Powley

An international trial has found that a medicine commonly used to treat poisoning is effective in reducing deafness in children receiving chemotherapy for cancer.

University of Melbourne and Royal Children's Hospital paediatric oncologist Professor Michael Sullivan was international vice chair of the study, results of which are published in today's *New England Journal of Medicine*.

Professor Sullivan said the trial focused on Cisplatin, a potent chemotherapy used to treat cancer in children.

"Cisplatin is a strong, highly effective cancer chemotherapy drug for the treatment of some types of childhood cancer," Professor Sullivan said.

"But in very young children, Cisplatin can cause severe and permanent hearing loss that can affect the development of speech and language and need hearing aids."

Professor Sullivan said the chemotherapy drug gets into a child's inner ears and damages tiny hair cells which enable hearing.

The international clinical trial led by Professor Peppy Brock from the Great Ormond Street Children's Hospital London, involved 116 children at 52 cancer centres in 12 countries including the UK, Europe, the USA, Australia and New Zealand. It tested whether a drug called sodium

thiosulfate (STS) could prevent or reduce the severity of hearing loss in children with primary liver cancer, also known as hepatoblastoma, who were treated with Cisplatin.

The study showed that STS administered six hours after Cisplatin could reduce the severity of hearing loss without affecting the chance of cure for the cancer.

Of participants who did not receive STS, 66 per cent suffered hearing loss, compared with 33 per cent of those who received STS.

Professor Sullivan said STS, which is a chemical anti-oxidant used to treat accidental cyanide poisoning, protects the hair cells in the inner ear.

"The overall cure rate for hepatoblastoma in this trial was excellent, with 96 per cent of children disease free at 3 years, and hearing loss was halved," Professor Sullivan said.

"This trial shows we can achieve very high cure rates for some types of childhood cancer while reducing the long-term side effects of chemotherapy. STS is now available, and we have begun using it at the Royal Children's Hospital in Melbourne," he said.

More information: Penelope R. Brock et al. Sodium Thiosulfate for Protection from Cisplatin-Induced Hearing Loss, *New England Journal of Medicine* (2018). DOI: 10.1056/NEJMoa1801109

Provided by University of Melbourne