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Different infusion durations for preventing platinum-induced hearing loss in children with cancer

Authors: van As JW, van den Berg H, van Dalen EC

Review question

We reviewed the evidence of the effects of different durations of platinum infusion to prevent hearing loss or tinnitus, or both, in children with cancer. We also looked at anti-tumour efficacy, adverse effects other than hearing loss and quality of life.

Background

Platinum-based chemotherapy, including cisplatin, carboplatin or oxaliplatin, or a combination of these, is used to treat different types of childhood cancer. Unfortunately, one of the most important adverse effects of platinum chemotherapy is hearing loss. This can occur not only during treatment but also years after the end of treatment. Although it is not life-threatening, the loss of hearing, especially during the first three years of life, may lead to difficulties with school performance and psychosocial functioning. Therefore, prevention of platinum-induced hearing loss is very important and might improve the quality of life of children undergoing cancer treatment and those who have survived treatment with platinum-based chemotherapy.

Study characteristics

The evidence is current to March 2018.

We found one study (91 participants) comparing a continuous cisplatin infusion with a one-hour cisplatin bolus infusion in children with neuroblastoma. For the continuous infusion, cisplatin was administered on days one

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to five of the treatment cycle but it is not clear if the infusion duration was a total of five days. Only results from shortly after induction therapy were available.

Key results

At the moment there is no evidence showing that the use of a different cisplatin infusion duration prevents hearing loss or adversely affects tumour response and adverse effects. No data were available for the other outcomes of interest (i.e. tinnitus, overall survival, event-free survival and quality of life) or for other (combinations of) infusion durations or other platinum analogues. We need more high-quality research before definite conclusions can be made about the usefulness of different platinum infusion durations to prevent hearing loss in children with cancer.

Quality of the evidence

The quality of the evidence was low.

Ketorolac for short-term pain after surgery in children

Authors: McNicol ED, Rowe E, Cooper TE

Bottom line

There is no good evidence from studies to support or reject the suggestion that ketorolac is beneficial, or that it is associated with serious side effects in treating children's pain after surgery.

Background

Children are at risk of experiencing pain in the short term after surgery. Nonsteroidal anti-inflammatory drugs (NSAIDs, e.g. aspirin) can reduce moderate to severe pain without many of the side effects associated with opioids (drugs like morphine). However, NSAIDs may cause bleeding and injury to the kidneys and gut. Ketorolac is an NSAID that can be given by injection into a vein, which may be useful when patients are not able to take medicines by mouth. Despite the fact that ketorolac has not been approved for use in children by many government agencies, it is often used after surgery, because of a lack of alternative options.

Study characteristics

In November 2017, we searched for clinical trials where ketorolac was used to treat pain after surgery in children. We found 13 studies, enrolling 920 children, that met our requirements for the review. The studies were quite different in their design, the dose of ketorolac, the timing (during or after surgery) and number of doses given, the type of surgery, and to what ketorolac was compared (either a placebo (a dummy treatment, such as a bag of fluid) or another drug).

Key findings

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There was not enough information for a statistical analysis of the assessments in which we were most interested, that is, the number of children with at least 50% pain relief; or the average pain intensity (a measure of a patient's pain that asks the patient to rate how much pain they have, often on a scale of 0 for 'no pain' to 10 for 'worst pain imaginable'). Four studies individually reported that ketorolac was better at reducing pain intensity than placebo, but the studies were small and had various design issues. There was more information for other assessments, such as the number of children who needed rescue medication (additional pain medication that is given if the study medication is not helping the person's pain sufficiently), and how much of this rescue medication was used. Fewer children needed rescue medication in the ketorolac group than those who received placebo, although the result was not statistically different. During the four hours after they received study medications, children receiving ketorolac needed slightly less rescue pain medication than those who had received placebo. There was not enough information about ketorolac in direct comparisons with other medications.

There was also not enough information in the studies for us to make a good assessment of side effects and serious side effects when ketorolac was used in this setting. Serious side effects in those receiving ketorolac included bleeding, but it didn't occur often enough for us to make any firm conclusions. Very few children dropped out of the studies because of side effects. This is normal in studies where participants are only in the study for a short period of time.

Quality of the evidence

We rated the quality of the evidence as very low, due to methodological issues with many of the studies, differences in study designs, and low overall numbers of children enrolled. Very low-quality evidence means that we are very uncertain about the results.

Is vitamin D an effective and safe addition to antibiotics to treat children with acute pneumonia?

Authors: Das RR, Singh M, Naik SS

Review question

We wanted to find out if vitamin D helps children with acute pneumonia who are also receiving antibiotic treatment get better faster.

Background

Pneumonia is an acute lower respiratory tract infection that affects the lungs. Treatment for pneumonia includes antibiotics, providing supplementary oxygen to air that is breathed in through a mask, and other supportive therapies. Vitamin D boosts immune defences and reduces excessive inflammation, effects that may help children recover from an acute episode of pneumonia.

Search date

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The evidence is current to 28 July 2017.

Study characteristics

We included seven studies involving a total of 1529 children (780 with pneumonia (4 studies) and 749 with severe or very severe pneumonia (3 studies)) aged under 5 years from low-income countries. In four studies, a single large dose of vitamin D was used either when the child joined the study or within 24 hours of admission to hospital; in two studies, vitamin D was used for five days; and in one study, vitamin D was used for two days. One study excluded children whose vitamin D levels were normal. One study reported the cause of children's pneumonia.

Study funding sources

One study was funded by the New Zealand Aid Corporation; one was funded by an institutional grant; and five studies were unfunded.

Key results

We are uncertain as to whether vitamin D has an important effect on outcomes due to the very-low quality of the evidence. Vitamin D may slightly decrease the time taken to get better from acute pneumonia (by 60 minutes) and the risk of death, and Vitamin D may increase the length of time in hospital (by 30 minutes) and the time taken for fever to resolve (by 90 minutes). However, there was no significant difference between groups for these outcomes. No major adverse events were reported.

Quality of the evidence

The quality of the evidence was very low, except for time to resolution of acute illness, which we assessed as low quality. We identified problems with the study methods and reporting, resulting in lack of precision in the included studies.

If you have any questions or comments with regard to the above document please feel free to contact me.

Kind regards

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