Case Study

Jim, a 47-year-old farmer, was admitted to hospital with a history of fever, chills, rigors and weight loss. Jim had a history of melanosis coli, diagnosed at a screening colonoscopy three years prior, and was being treated for gastro-oesophageal reflux disease. An admission screening for sepsis was negative and Jim was reviewed by the surgical team, who ordered a CT scan of the abdomen. The CT scan showed a bowel perforation, which the team treated conservatively with triple antibiotic therapy (including gentamicin), intravenous fluids, close observation and keeping Jim nil by mouth. Jim showed significant improvement and was discharged from hospital 10 days later with a further two-week course of Augmentin and a booking for a colonoscopy.

Following discharge Jim found that he was having trouble with his vision and balance when he was out on the farm. Jim described the world as “bobbing up and down” and said he felt as though he was permanently unsteady. He found that he felt sick when he bent down, and when he turned his head quickly there was a lag before his eyes caught up. Jim was having difficulty working on the farm as he felt unsafe driving around the property on his own and was struggling to perform his duties.

Jim was referred to an ear, nose and throat (ENT) specialist, who found that there were catch-up ocular saccades after rapid rotatory (short arc) movements, and that Romberg’s test showed Jim to be clearly unsteady when sharpened. The ENT specialist did note that Jim’s hearing was essentially normal with a minimal high tone loss. In the opinion of the ENT surgeon the 10 days of gentamicin treatment had been sufficient to ablate most if not all of his peripheral vestibular apparatus. Jim was referred for a follow-up bithermal caloric ENG (electronystagmography) and balance exercises were provided.

Following Jim’s check-up with his general practitioner (GP), a claim was lodged for treatment injury on the basis that Jim’s bobbing oscillopsia was a characteristic feature of gentamicin ototoxicity. ACC accepted cover for vestibulotoxicity and was able to support Jim with his wages compensation and ongoing assessments.

Expert commentary

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- Bobbing oscillopsia is a characteristic feature of aminoglycoside ototoxicity. Gentamicin has a particular predisposition to damage the balance part of the inner ear, although it can cause cochleotoxicity (hearing loss and tinnitus). The effects are permanent and irreversible.
- Aminoglycoside ototoxicity is typically noticed during the recovery period following severe illness.
- Ototoxicity can occur even when considerable care has been taken with administration and monitoring.
- Risk factors include:
  - continuous or interrupted treatment for more than seven days, therefore treatment should not exceed seven days unless it is imperative
  - renal impairment
  - high fever
  - serious illness
  - concomitant use of other ototoxic agents such as platinum antineoplastics
- The use of alternative medications and obtaining advice from an infectious diseases specialist should be considered.
- Patients should be advised of the treatment risks and signs to report.
of the inner ear, although it can cause cochleotoxicity (hearing loss and tinnitus). The effects are permanent and irreversible.

- Jim was treated for 10 days, and the risk of developing ototoxicity significantly rises if treatment is continued for longer than seven days. Ototoxicity may be noticed during the period of treatment, but more typically is noticed during the recovery period following severe illness. The medications are slow to enter the inner ear, and also slow to diffuse out, so toxic side-effects are often not evident until after treatment has ceased. Ototoxicity can occur even when very considerable care has been taken with administration, and peak and trough levels are assiduously monitored throughout treatment.

- There is a known genetic predisposition to aminoglycoside ototoxicity.

- Aminoglycoside antibiotics have been used for decades, and are cheap to buy but expensive to use. Alternatives are available. The advice of an infectious diseases specialist in difficult cases may be helpful.

- Risk factors for the development of aminoglycoside ototoxicity include continuous or interrupted treatment for more than seven days (the longer the period of treatment, the greater the risk), renal impairment, high fever, serious illness, concomitant use of other ototoxic agents, e.g. platinum antineoplastics, and possibly pre-existing hearing loss. Medications such as loop diuretics (frusemide, ethacrynic acid), vancomycin and clindamycin, and possibly the cephalosporins, potentiate the ototoxic effect of aminoglycosides.

- Where possible, patients should be advised of the risk of potential damage. Advice should include immediate reporting of difficulty reading print (a feature of oscillopsia), noticed hearing loss or the onset of tinnitus. Treatment should be ceased immediately.

**Management**

- Standard dosing regimes are now once daily and usually undertaken with the assistance of the hospital pharmacist.

- Slow, intravenous infusion (30-60 minutes) of the medication diluted to 50-100ml is the safest method of administration. Rapid infusion of a single dose should be avoided.

- Peak and trough levels should be carefully monitored and kept within therapeutic limits. If it is necessary to continue treatment for longer than a few days, it is important to continue to monitor serum drug levels, and not assume that it is safe to continue the dosage regime because the peak and trough levels were initially satisfactory.

- Aminoglycosides impair renal function, and this results in a tendency for the serum levels to rise after a few days, unless dosage is appropriately adjusted.

- Treatment should not exceed seven days unless it is imperative.

**References**


**Claims information**

Between July 2005 and February 2012 ACC decided 79 claims relating to the use of gentamicin, with 45 being accepted. The most commonly accepted injuries were deafness/hearing loss, vestibular damage and toxicity. Babbling oscillopsia was present in four of the accepted claims.

The median client age group was 60-64 and men accounted for 55% of the accepted claims.

**How ACC can help your patients following treatment injury**

Many patients may not require assistance following their treatment injury. However, for those who need help and have an accepted ACC claim, a range of assistance is available, depending on the specific nature of the injury and the person’s circumstances. Help may include things like:

- contributions towards treatment costs
- weekly compensation for lost income (if there’s an inability to work because of the injury)
- help at home, with things like housekeeping and childcare.

No help can be given until a claim is accepted, so it’s important to lodge a claim for a treatment injury as soon as possible after the accident, with relevant clinical information attached. This will ensure ACC is able to investigate, make a decision and, if covered, help your patient with their recovery.

**Public Health Update**

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