Royal Australasian College of Surgeons
Australian and New Zealand Audits of Surgical Mortality

ANZASM Case of the Month
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(case selected by the ANZASM Committee for your information)

Preoperative hyperkalaemia secondary to known renal failure likely contributed to sudden death after inguinal hernia repair

General Surgery

Case Summary

An 85-year-old man underwent a laparoscopic bilateral inguinal hernia repair in a private hospital. The operation was uneventful. His postoperative course was also uneventful until 19:00 the following day when he complained of chest pain. While being assessed, he collapsed, prompting a medical emergency team (MET) call. He was noted to be very acidotic ('not compatible with survival'), with potassium during the MET attendance at 6.3 mmol/L. He could not be resuscitated and subsequently died.

Although the notes state it was unclear if this was an acute coronary event or a pulmonary embolus, the former seems far more likely.

Discussion

Without the surgeon's private notes, the preoperative assessment of this 85-year-old patient is not fully known. However, the assessment seems to have been inadequate to the extent that it contributed to, if not caused, the death of the patient.

Two issues must be considered. The first, is whether an 85-year-old man needed an inguinal hernia repair. Despite the patient dying following a minor elective operation, the surgeon made no comment regarding neither the indication for surgery nor any discussion around consent. The second issue is that the patient was known to have preoperative renal failure with significant hyperkalaemia. This does not appear to have been noted or managed.

The surgeon states that the patient had been assessed by his usual physician 5 months prior to surgery. No details of that assessment or of any bloods taken at the time were provided. The nursing admission notes dated the day of surgery make no mention of any blood tests. The preoperative anaesthetic record, also dated the day of surgery, does not refer to any blood tests

but does document the chronic renal failure and type 2 diabetes.

The hospital notes provide results from blood tests taken 3 weeks earlier, 7 days earlier and at the time of resuscitation, being urea 14.9, 15.5 and 20.9 mmol/L, respectively, (normal 2.5–7.8 mmol/L); creatinine 153, 157 and 286 µmol/L, respectively, (normal 59–104 µmol/L); potassium 5.3, 5.95 and 6.3 mmol/L, respectively, (normal 3.7–5.1 mmol/L); haemoglobin 123, 115 and 63 g/L, respectively, (normal 135–175 g/L); and glomerular filtration rate 35, 34 and 17 ml/min/1.73m^2, respectively, (normal >90 ml/min/1.73m^2).

It is not clear who ordered the blood tests taken 7 days prior to surgery. There is no record that either the surgeon, anaesthetist or admitting nurse were aware of the preoperative hyperkalaemia of 5.95 mmol/L.

It seems very likely that the patient's immediate preoperative potassium would have been ≥6 mmol/L, which would be a contraindication for elective surgery. The likely cause of sudden death was a cardiac event secondary to hyperkalaemia.

Clinical Lessons

To perform a minor elective operation on a patient known to have renal failure, who had significant hyperkalaemia revealed in blood tests taken 7 days prior, must be considered a preventable adverse event that caused an arrest resulting in death. It is disappointing that the surgeon completing the surgical case form did not note this: it shows a lack of due diligence.

Normally, hyperkalaemia of 5.95 mmol/L would need to be actively managed and would elicit a prompt from the laboratory to contact the ordering clinician. One wonders if that happened, and if not, why not? If it did occur, who responded and how? Somewhere there was a failure of communication regarding the significant hyperkalaemia. This lack of communication must also be considered a preventable adverse event that at least contributed to this patient's death.

The surgeon was encouraged to share their feedback on this case with the anaesthetist, the clinician who ordered the blood test 7 days prior to surgery, the laboratory, the patient's usual physician and the hospital.

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