RCS
ADVANCING SURGICAL STANDARDS

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coress feedback

This series of cases illustrates a variety of adverse events with different causes. Poor communication and handovers remain a perennial problem. Risks of unmarked fluids in interventional areas with potential for inadvertent and inappropriate administration are highlighted, as is the risk of failure to recognise and act swiftly in cases of caustic ingestion injury.

We are grateful to those who have provided the material for these reports. The online reporting form is on our website (www.coress.org.uk), which also includes all previous Feedback reports. Published cases will be acknowledged by a 'Certificate of Contribution', which may be included in the contributor's record of continuing professional development.

Delayed management of alkali ingestion (Ref 192)

As the on-call ENT registrar, the medical SHO on the medical assessment unit referred a patient to me who had ingested a small volume of hydrogen peroxide. He requested rightly that I perform a flexible nasendoscopy to assess for upper airway oedema or burns. The patient was stable with no voice change or stridor. Examination was reassuringly unremarkable.

On review of her notes, it became clear that the patient had been admitted to the hospital many hours previously. She had drunk the bleach at 3pm and attended the emergency department around 4pm, being triaged as urgent. However, she was not seen until hours later, in the minor injuries unit by an emergency nurse practitioner. Although it was recognised that she needed to be admitted, the potential seriousness of the situation was not noted. Information from the Toxbase® database suggested QT monitoring but no electrocardiography (ECG) was performed. The patient was referred to the medical team for admission but no one attended the emergency department to review her. A doctor did not assess her until 2.30am, when she arrived on the medical assessment unit, and underwent airway assessment and ECG.

Thankfully, the patient remained stable but ingestion of a toxic alkaline substance has the potential to cause acute airway compromise and patients need urgent ENT examination in the emergency department, not 12 hours later. She had been allowed to eat and drink before medical review despite risk of upper gastrointestinal perforation. She was discharged the next day after an oesophagogastroduodenoscopy had been performed. The emergency department was contacted to implement measures to prevent this incident from recurring.

Reporter's comments

Ingestion of alkali is a serious incident and should be treated as a priority. An appropriate member of staff should assess patients triaged as urgent. Specialist review should be sought in the emergency department. Airway assessment and ECG are indicated.

CORESS comments

This case illustrates problems of communication in poor handovers and failure of clinicians to take ownership of the patient.

Button batteries are another potential cause of caustic injuries to the oesophagus caused by sodium hydroxide, produced as a result of electrical discharge from the battery. Over the last few years, a significant number of these cases have occurred and as a result, NHS England has issued a Patient Safety Alert (http://www.england.nhs.uk/wp-content/uploads/2014/12/psa-button-batteries.pdf).

Day-case hernia repair antibiotic anaphylaxis (Ref 194)

A 72-year-old patient was admitted for day-case repair of a symptomatic right inguinal hernia under local anaesthesia. Past medical history included total knee replacement for osteoarthritis, severe chronic obstructive pulmonary disease and home oxygen therapy, with exercise tolerance limited to 15 yards. He had been advised previously not to have general anaesthesia.

In theatre, the patient was monitored and intravenous (IV) access was secured. The surgeon performed an initial ilioinguinal block with 1% lidocaine with adrenaline and requested that antibiotic prophylaxis be administered. Co-amoxiclav (1.2g IV) was administered by the anaesthetist. Within 60 seconds, the patient developed a cough that progressed rapidly to a wheeze and then severe shortness of breath with cyanosis. Initial treatment was undertaken with oxygen and salbutamol nebulisers but he quickly became unresponsive, and required intubation and ventilation.

The patient was treated for presumed anaphylactic shock with adrenaline, hydrocortisone, magnesium sulphate and chlorphenamine. Arterial blood sampling confirmed respiratory failure with acidosis (on 100% FiO_2, pH 7.10, pCO_2 11.1kPa, pO_2 7.1kPa, O_2 saturation 75%, lactate 7.0mmol/l, bicarbonate 18.2mmol/l). The operation was abandoned and the patient was transferred to the intensive care unit, where he required an adrenalin infusion overnight. He was

extubated at 24 hours, returned to the ward and was discharged within 48 hours, making a full recovery.

In the outpatient clinic, at preoperative assessment and during the theatre surgical safety checklist, the patient denied any penicillin allergy. However, careful retrospective review of his notes and interviews with family members suggested an episode 12 months previously when he was admitted to the emergency department with a sudden onset of a generalised rash, facial swelling, wheeze and cough after his general practitioner commenced him on amoxicillin for community acquired pneumonia. The symptoms at that time had started immediately after administration of a dose of amoxicillin, and improved with prednisolone and salbutamol. Despite this, the patient was not warned about the possibility of allergy and did not have any allergy testing, resulting in him being ignorant of the condition. Subsequent blood test findings included positive mast cell tryptase and raised immunoglobulin following the event. He is now aware of his allergy status and wears an alert bracelet.

Reporter's comments

Patients' knowledge of their medical history can be unreliable. It is advisable to be prepared: IV access is useful whenever a patient is undergoing a significant interventional procedure, even under local anaesthesia. Finally, our interventions are undertaken with good intentions but, as in this case, can lead to harm. The current evidence base does not support antibiotic prophylaxis in groin hernia repair.

CORESS comments

The problem here was that there is no clear evidence that it was recognised that the patient had a drug allergy. Furthermore, rather than a cursory query about drug allergies, it may be more useful to ask the patient: 'Have you ever had any adverse reaction to a drug you've been given?'

A Cochrane meta-analysis from 2012 showed that there are insufficient data overall to demonstrate a clear advantage of antibiotic prophylaxis in hernia repair.[1] However, it illustrated a classic problem in evidence-based medicine where a lack of evidence in support of an intervention may be interpreted as a reason not to implement it.

Reference

1. Sanchez-Manuel FJ, Lozano-García J, Seco-Gil JL. Antibiotic prophylaxis for hernia repair. *Cochrane Database Syst Rev* 2012; **2**: CD003769.

Slippery departure (Ref 195)

During a routine laparoscopic appendicectomy, the operating table was tilted, and the patient, a 70kg man, slid to the floor. Laparoscopic instruments were pulled out as he fell but the ports remained in situ. The patient was transferred, with full spinal protection, back to the operating table and the procedure was completed without further event. There was no intra-abdominal injury as a result of the fall. Postoperatively, he was taken for computed tomography of his head and spine. No injury was apparent. He made an uneventful recovery and was discharged two days later. The incident was debriefed with the theatre team, incident forms were completed, and the matter has been raised at anaesthetic and surgical governance meetings.

Reporter's comments

Some months earlier, low friction patient transfer (slide) sheets had been introduced to move patients to and from the operating table. These sheets were left under patients routinely during surgery and contributed (in this case) to the patient's departure from the table.

After the incident occurred, it became apparent that other theatres had had problems with patients moving (although not slipping off the table completely) since introduction of these transfer sheets. We have now changed our operating procedure so that surgical patients are placed either skin-to-mattress (if narrow enough to roll on to and off a transfer sheet) or on to a vacuum beanbag device (if too wide to be rolled). Slide sheets are removed once the patient is positioned.

CORESS comments

There is a team responsibility to ensure safe patient positioning but the surgeon should include this in his of her personal safety checks for the patient, prior to commencing any procedure. If an operating table is tipped or inclined, adequate patient restraints in the form of straps or poles should be employed.

Inadvertent administration of muscle relaxant (Ref 196)

A 45-year-old woman underwent an uneventful laparoscopic cholecystectomy for biliary colic. On transfer to the ward, she developed acute respiratory arrest after her cannula (placed in theatre) was flushed prior to administration of cyclizine for postoperative nausea. She became visibly cyanotic and flaccid, and required emergency ventilation with a bag valve mask and simple airway manoeuvres for approximately one minute before regaining the ability to breathe. She subsequently had full recollection of the event but reported that she was unable to move or breathe. On investigation, it transpired that some residual atracurium muscle relaxant had been present in the triple lumen IV line connector.

Reporter's comments

The IV line connector was not thoroughly flushed with normal saline after use in theatre, by appropriately trained anaesthetic staff. This was discussed at surgical and anaesthetic governance meetings, which concluded that the use of multiple port connectors should be limited (employing single injection ports instead), and that cannulas and all ports of any IV device must be flushed thoroughly after use.

CORESS comments

The CORESS Advisory Committee agreed with the reporter's comments. The National Reporting and Learning System produced a Signal in 2009 concerning residual anaesthetic drugs in cannulas (http://www.nrls.npsa.nhs.uk/signals/?EntryId45=65333).

Tough nut to crack (Ref 197)

An 82-year-old diabetic lady, with non-salvageable leg ischaemia, was admitted to the hub hospital of a vascular network. She was admitted under the on-call consultant, her angiography was reviewed and care was handed over to the consultant in charge of the ward for the week. The latter consultant arranged for her to be placed in an available slot on an elective operating list, undertaken by a third consultant vascular surgeon.

At surgery, above-knee amputation was somewhat protracted by the discovery of the long stem of a hip prosthesis, when dividing the femur. Diamond-tipped power tools eventually enabled division of the femur and prosthesis, and the patient made a satisfactory recovery.

Reporter's comments

The presence of the hip prosthesis (although noted) was not commented on by the on-call consultant on handover to the ward consultant, who did not review the angiography personally and failed to notice the operative scar over the hip. Having had the patient placed on his list by his ward-based colleague, the operating consultant also failed to review the films and missed the old hip operation scar.

CORESS comments

With modern consultant-delivered teamworking, shift systems and multiple handovers, there is a risk of important clinical information not being communicated. The responsibility for ensuring patient safety lies with each clinician in the chain and despite the advent of specialisation, basic surgical tenets of adequate history taking and clinical examination must not be ignored. Although the surgical safety checklist was followed, the operating surgeon had not personally reviewed the films, which would have indicated the presence of the hip prosthesis. Furthermore, a check for metalwork should be undertaken before applying a diathermy plate.

Inadvertent injection of chlorhexidine during angiography (Ref 204)

A serious untoward incident involving inadvertent injection of an alcoholic solution of 2% chlorhexidine occurred during lower limb angiography. The fluid was drawn up from an unlabelled gallipot, adjacent to the intended x-ray contrast media for injection. The procedure was performed under low lighting. Tissue necrosis developed and amputation of the leg was eventually necessary.

A search of the National Reporting and Learning System database revealed four incidents during the last three years involving inadvertent IV injection of chlorhexidine instead of x-ray contrast media. Two caused severe harm, with another causing cardiac arrest during insertion of a pacemaker. One near miss occurred where there was potential for the syringe intended for IV contrast media to have been refilled from an unlabelled open container filled with chlorhexidine. In another incident, a patient's arterial line was flushed with chlorhexidine from a gallipot instead of the intended saline solution.

The National Reporting and Learning System drew attention to similar problems in the 2010 Signal on injectable medicines in theatres (http://www.nrls.npsa.nhs.uk/signals/?EntryID45=66753).

CORESS/SSPSEG comments

This incident was discussed in detail by the Surgical Services Patient Safety Expert Group (SSPSEG) set up by NHS England. It was concluded that all skin cleansing agents should be removed from the interventional field prior to commencement of the intended procedure. As a corollary, agents to be injected should be drawn up from labelled sterile containers and must be checked before administration.