SURGICAL SAFETY UPDATE

Cases from the Confidential Reporting System for Surgery (CORESS)

Injection error 1

On a routine GI operating list the anaesthetist, keen to ensure rapid patient turnover and completion of the list, drew up three separate prophylactic antibiotic doses of intravenous cefuroxime 1.5g for the first three patients, as discussed with the surgeon. On administration of the antibiotics the first patient was noted to twitch, but otherwise the procedure was completed uneventfully. When the prophylactic antibiotics were administered to the next case, however, the patient fitted. Review of the administered drugs revealed that the cefuroxime powder had inadvertently been reconstituted with 1% lignocaine solution, which was kept in the same drawer as the water for injection, in a similar ampoule. The patient recovered with no adverse effects, but had to be awakened and the operation was not completed.

Injection error 2

In a separate incident an anaesthetist prepared two syringes of Alfentanil 500mcg/ml for the first two patients on the operating list. On completion of the first case he administered what he thought was ondansetron 2mg/ml, drawn up from a similar sized ampoule, to reduce postoperative nausea. Inadvertently, however, the drug given was the Alfentanil drawn up for the second patient. The first patient sustained temporary laryngospasm and respiratory depression, causing prolonged recovery from anaesthesia.

CORESS comments

Medication errors can occur in:

- Choosing a medicine – irrational, inappropriate and ineffective prescribing, underprescribing and overprescribing.
- Writing the prescription – prescription errors, including illegibility.
- Manufacturing the formulation to be used – wrong strength, contaminants or adulterants, wrong or misleading packaging.
- Dispensing the formulation – wrong drug, wrong formulation, wrong label.
- Administering or taking the drug – wrong dose, wrong route, wrong frequency, wrong duration.
- Monitoring therapy – failing to alter therapy when required, erroneous alteration.

Aronson[1], has classified medication errors according to four broad categories:

- Knowledge-based errors (through lack of knowledge)
- Rule-based errors (using a bad rule or misapplying a good rule).
- Action-based errors (called slips).
- Memory-based errors (called lapses).

The Advisory Board was grateful to the anaesthetist who contributed these reports. Two separate mechanisms were involved in these injection errors. In the first the antibiotics were reconstituted with the wrong fluid for injection. In the second the wrong syringe was picked up. These were both action-based errors. The anaesthetist commented that drawing up multiple drugs for different operations contravened good practice. Coloured sticky labels applied to syringes may help, but are not always standardised. Keeping drugs with similar packaging and appearance next to each other in a store cupboard constitutes a systems error. Checking each ampoule's drug content and date of expiry, prior to administration, is mandatory before injection.

Fall from grace

An anaesthetised patient due to undergo a gynaecological procedure was placed on the operating table with her legs up in stirrups and her bottom over the edge of the table. The anaesthetist, keen to reduce the risk of pulmonary aspiration, tilted the table head-up with the consent of the operating surgeons. Unfortunately, despite prior removal of the transfer slide sheet, the patient slid off the table and fell to the floor. The procedure was abandoned. The patient had to be awakened

from anaesthesia and transferred to the emergency department to undergo a full trauma survey and imaging to exclude spinal and cranial injury. Litigation was successful.

CORESS comments

Falls from operating tables constitute serious risk to the patient and may be underreported. Removal of the slide sheet forms part of the WHO check. Certain procedures may be more prone to risk of patient slippage particularly where an operating table needs to be angled (neurosurgery; laparoscopic surgery; gynaecological and colorectal procedures). Where there is increased risk, securing straps can be employed and a high degree of awareness of the potential risk is the responsibility of the operating surgeon.

Atypical thromboses: Case 1

A 42-year-old woman presented to her GP with rapid-onset pain and pallor of her right leg. The GP was unable to feel pulses and referred her to the emergency department of the local hospital. She was transferred to the care of the vascular team who obtained a duplex scan and CT angiogram confirming occlusion of the superficial femoral artery with the appearance of embolism causing acute leg ischaemia. A femoral embolectomy was undertaken that night, at which the vascular registrar removed a quantity of recent clot. The patient was placed on intravenous heparin.

The leg survived overnight, but remained dusky and further thrombectomy was necessary the following morning. Due to the odd appearance of the clot, some was sent for histological examination. The histology report commented on the appearances of myxomatous material. The patient underwent transthoracic echocardiography and chest CT scans confirming the presence of a left atrial myxoma. She was subsequently referred to the cardiac surgeons, who undertook surgical resection of the tumour and the patient made a full recovery.

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We are grateful to those who have provided the material for these reports.

The online reporting form is on our website, coress.org.uk, which also includes 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.

CORESS is an independent charity, supported by the Federation of Surgical Specialty Associations

References
1. Aronson JK. Medication errors: what they are, how they happen, and how to avoid them. QJM: In J Medicine 2009; 102 (8): 513–521.

Case 2

Following hysterectomy for bleeding a 46-year-old woman presented with a warm swollen left leg. Duplex scan suggested iliofemoral thrombosis and the patient was treated for a postoperative DVT. She was anticoagulated, but at three-month follow-up, duplex scanning imaging suggested propagation of the clot with abnormal appearances, and she underwent abdominal and pelvic CT scans. CT imaging revealed fleshy tissue, or clot invasion of the left pelvic and iliac veins, propagating into the inferior vena cava. The vascular surgery team became involved and eventually undertook open venous exploration, removing a large quantity of abnormal thrombus from the IVC and iliac vein. Postoperatively the patient remained anticoagulated.

Histological examination of the clot revealed cellular features of intravenous leiomyomatosis, a rare benign smooth muscle tumour, of uterine origin, that may grow into pelvic veins. On continued anticoagulation the patient remained well at six-month follow-up with no significant recurrence.

Case 3

A 54-year-old non-smoking man with minimal risk factors for vascular disease presented with a dusky, painful, swollen left calf of 48 hours onset. Duplex scanning suggested the probability of a calf vein DVT with an associated haematoma in the calf muscles adjoining the veins. The haematoma was explored and drained of dusky clot, and the patient was anticoagulated. However, the swelling persisted over the next two weeks and there was further bloody discharge from the calf incision. An MRI scan showed an irregular oedematous appearance of the calf muscles and the wound was re-explored with biopsy of the indurated muscle. Histological examination of the excised muscle demonstrated the presence of an invasive rhabdomyosarcoma. The patient's affected leg required amputation shortly after.

CORESS comments

These atypical presentations of arterial and venous thromboses don't represent surgical mishap or adverse incidents. However, the Advisory Board noted that if there is no obvious source of embolus, then it is reasonable to ask for histological examination of thrombus to rule out an atypical pathology. Arterial or venous thrombosis with no obvious cause may be the first manifestation of occult neoplasia.