2.9 Sickle cell disease

Sickle cell disease is an inherited disease affecting red blood cells and can lead to life-threatening clinical conditions. It is present in approximately 10% of the black population in the UK. Patients with sickle cell anaemia have sickle haemoglobin (HbS). Deoxygenated HbS molecules stick together forming rods, making red cells rigid and sickle-shaped. The sickle-shaped cells have a tendency to obstruct blood vessels, causing tissue hypoxia and pain (sickle crisis). Significant mortality and morbidity is associated with sickle-cell crises such as cerebrovascular incidents and painful joints, chest and abdomen.

It is imperative that the ODP and theatre team manage care to avoid risk factors that could induce a sickle crisis during the perioperative episode. Sickle crises most often occur during the postoperative phase of care.

The following conditions must be avoided

- Hypoxia
- Dehydration
- Overtransfusion of blood products
- Hypothermia
- Pain
- Infection
- Anaemia
- Hypoventilation

The role of the ODP will encompass

- Pre-oxygenation
- Adequate hydration
- Transfusion of red blood cells
- Active warming
- Monitoring: close scrutiny of hydration, urine output, temperature and SaO₂
- Administration of oxygen, analgesics and antibiotics

Priorities for the postoperative phase

- Close observation
- Effective analgesia
- Hydration and oxygenation
- Active warming

Sources/bibliography:
1. Anaesthesia UK: http://www.frca.co.uk/
2. ANAESTHETIC TOPICS

2.10 Thromboelastogram

Definition: A measurement of coagulation using a thromboelastogram (TEG®). Gives an estimate of coagulation status.

Application: Perioperative patient management may be safer when coagulation risks such as hypercoagulation, disseminated intravascular coagulation (DIC) and fibrinolysis are accurately diagnosed. In some service units ODPs are responsible for processing tissue samples and recording and communicating the results. ODPs are also involved in subsequent clinical decisions regarding administration of blood products.

Sources/bibliography:
3.1 Patient positioning

Safe positioning of patients is essential for surgical access, and to prevent possible injuries to both patients and theatre practitioners. This can be achieved by assessing the risk, planning the move and correct use of available equipment.

Assessment

Factors to consider to ensure safe and secure positioning of the patient:

<table>
<thead>
<tr>
<th>Patient factors</th>
<th>Other factors to consider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, height, weight, skin condition, cardiopulmonary and nutritional status, pre-existing conditions, type and length of procedure</td>
<td>Staffing levels, patient position, surgical access, types of transfer equipment, patient protection, table supports, pressure on major blood vessels (venous return and cardiac output), possible nerve damage</td>
</tr>
</tbody>
</table>

Common patient positions

**Supine**

- Patient lies on back
- Arms at side, supported, palms down
- If arms on armboard, palms up
- Legs straight and in alignment
- Hips parallel to spine
- Protect bony prominences

**Prone**

- Patient lies face down
- Use of specialist mattress or pillows to ensure abdomen is free
- Head positioned to ensure access to airway
- Arms by side or supported by armboard
- Protect bony prominences

**Trendelenburg**

- Modification of supine position
- Table is tilted into a head-down position
- Degree of tilt to be agreed by surgeon/anaesthetist
- In reverse Trendelenburg, table is tilted head-up

Key points

In order to prevent nerve damage the arms should not be abducted to an angle greater than 90° from the midline.

Care needs to be taken with all patient positioning to assess and minimise the risk of nerve damage.

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**Patient positioning**
3. SURGICAL TOPICS

Lithotomy

Patient is moved from the supine position
Buttocks are placed level with flex in table
Legs are raised and placed into stirrups
Stirrups must be level and at correct height for patient
Legs are raised and lowered simultaneously to avoid patient injury
Padding may be required to protect bony prominences/nerves

Lateral

Patient is placed on non-operative side
Patient’s back is placed towards the edge of the table
Legs are positioned to avoid pressure on peroneal nerve – surgery permitting
Abdominal and lumbar supports used
Upper arm supported on curved arm board or pillow

Fowler’s (sitting)

Patient starts in supine position, buttocks at flex and knees at lower flex
Foot section lowered slightly, knees flexed
Upper section raised to form back of chair: 45–90°
Table tilted slightly backward
Arms supported by boards or pillows

Hazards

Frequent sites of injury
Brachial plexus: patient’s head turned sharply
Ulnar nerve: compression of elbow against table/mattress
Radial nerve: avoid external pressure on the nerve
Sciatic nerve: curves superficially around neck of fibula; could be against lithotomy poles
Facial nerve: avoid unnatural facial alignment and compression of the face; use supports

Other potential problems
- Twisting injuries
- Soft tissue injuries
- Musculoskeletal injuries
- Shearing injuries to skin
- Compartment syndrome

Sources/bibliography:

18 Patient positioning
3.2 Surgical handwash procedure

This activity is performed to reduce the risk of contamination in the clinical environment (NATN, 2004). The surgical handwash is an extension of the standard hygienic handwash procedure. Occlusive dressings should be placed over skin lesions and jewellery removed. Hands should be washed immediately before beginning the surgical handwash. During the surgical handwash the scrubbing brush can cause skin damage and an increase in skin cell shedding. Brushes can be used, but only for brushing the nails. Nails can be cleaned using a disposable nail pick.

During this procedure the fingertips are considered the cleanest area. The elbow and proximal forearm are considered the least clean. Movement from fingers towards elbows reduces the risk of hand contamination. Ensure that the hands and forearms are wet before applying scrub solution. Select and dispense an appropriate measure of aqueous disinfectant solution (such as chlorhexidine or povidone–iodine preparations).

First wash

The systematic six-step handwash procedure should be performed (see illustration).

1. Palm to palm
2. Right palm over left dorsum and left palm over right dorsum
3. Palm to palm, fingers interlaced
4. Backs of fingers to opposing palms with fingers interlocked
5. Rotational rubbing of right thumb clasped in left palm and vice versa
6. Rotational rubbing back and forward with clasped fingers of right hand in left palm and vice versa

This wash must include the arms up to the elbows

1. Palm to palm
2a. Right palm over left dorsum
2b. Left palm over right dorsum
3. Fingers interlaced, palm to palm
4. Backs of fingers to opposing palms
5a. Rotational rubbing of right thumb
5b. Rotational rubbing of left thumb
6a. Rotational rubbing of left palm
6b. Rotational rubbing of right palm

Surgical handwash procedure
Two subsequent washes

The procedure continues with two more modified washes before drying the hands. This time wash the hands (using the Ayliffe six-step hand wash) and two-thirds of the forearms. Do not extend the wash to the elbows this time. Hands must be rinsed thoroughly from the fingertips to the elbows, allowing excess water to drain from the elbows into the sink. The taps are turned off with the elbows to avoid contaminating the hands and forearms.

The hands and arms should be dried by placing the opposite hand behind a towel and blotting the skin, using a corkscrew movement to dry the hand to the elbow. The towel must not be returned to the hand once the arm has been dried. The hands must be held higher than the elbows and away from surgical attire to avoid contamination.

Patient care and professional issues

Hands should be washed thoroughly using the standard procedure whenever gloves have been worn. Water-based emollient is applied if appropriate. The National Patient Safety Agency (NPSA) has published a patient safety bulletin concerning latex allergy and its contents should be familiar to all ODPs.

Taking good care of your skin to minimise the risk of contamination is your responsibility. The standard to which you practise may have an effect upon patient outcomes.

Sources/bibliography: