

NEWCASTLE NEONATAL SERVICE LUMBAR PUNCTURE

Indications:

This is usually to obtain CSF for diagnostic purposes, either as part of an infection screen or metabolic 'work-up'. Occasionally a lumbar puncture is required for other reasons.

Cautions:

If an infant is unstable, there is never a reason to do this as an 'emergency'. Stabilise the baby first. Where infection or metabolic disease is the indication, useful information can still be obtained by deferring the procedure 24 hours.

Significant thrombocytopenia (<50) or a coagulopathy are relative contra-indications – discuss this with the consultant in charge.

Parental assent

We do not currently take formal written consent for an LP, but the indications for the procedure, the procedure itself, and likely information obtained should be discussed with the parents before hand.

Equipment / setting up

Before commencing procedure ensure that:

1. Incubator at correct height/working surface correct height
2. Seat available should the doctor need one
3. Monitors to be used work
4. Everything needed for the procedure is on trolley
5. Warm environment to prevent patient heat loss
6. If possible a third party to be on hand if needed

Attach saturation monitor to the baby. **This is an aseptic procedure.** Prepare the trolley after the person performing the LP is gowned and gloved, taking care that full aseptic technique is used when opening packs and preparing equipment needed.

You will need:

Sterile gown pack
Sterile hand towel
Gloves - appropriate size
Dressing pack
Skin cleanser
Steri-drape
Sterile spinal needles 22G and 25G
Sterile universal bottles x 3
Glucose bottle (yellow)
(Manometer – occasionally)
Elastoplast

Procedure

Prepare the sterile field and clean the infants back before proceeding to curl the baby. The baby can be managed as follows: if incubator nursed – side flap of incubator down with nurse on opposite side holding the infant; if cot nursed the procedure may be carried out using the overhead infant warmer, on a suitable flat surface using the cot mattress to rest the baby on.

Positioning the baby in a curled position is most important. Success depends as much upon the person holding the infant as the person performing. Ideally an experienced nurse should hold the baby ensuring, especially in the sick neonate, good airway control. The baby should be positioned lying on the left side, curled up into a ball with the spine flexed as much as possible.

The spine should be along side the edge of the mattress in order to give the doctor easy access. The baby must be held firmly so that movement is restricted (ie one hand on the nape of the neck in order to hold the head forward onto the chest, the other firmly holding the lower limbs in order to flex the thighs over the lower abdomen). It is important that the lower spine should be flexed but care should be taken to avoid excessive flexion of the neck.

Identify the iliac crests and drop a perpendicular to the spinal processes (corresponding to L4). It may help to make a small mark here with your finger. Carefully and slowly introduce and advance the needle, in the direction of the umbilicus. A 'give' is usually felt on entering the space, but will be missed if the needle is advanced too rapidly, resulting in a bloody tap. Once the space is entered remove the stylet. CSF should flow freely. Collect the appropriate specimens, usually as a minimum 3 sterile universal containers containing 5-10 drops and a yellow (fluoride oxalate) glucose tube, to be sent for MC and S, gram stain and differential, glucose and protein. Consider whether extra samples are needed, for example for PCR or metabolic studies. A simultaneous blood glucose aids interpretation of results. If no CSF is obtained consider a different angle or space, or ask someone more senior for help.

Throughout the procedure check the heart rate, respirations, saturation levels and colour.

Once finished: When the needle has been withdrawn, immediately unflex the baby's back so as to seal off the needle track. Put a small plaster over the puncture site. Leave the saturation monitor on for a few hours and nurse flat until the nurse is happy with the baby's condition.

Points to Ponder:

- 1) **Pain relief** should be carefully considered and individually allocated. Local anaesthetic (e.g. lignocaine) may be used, but can make identifying landmarks more difficult. Consider the use of a topical anaesthetic over the lumbar area, such as Ametop or EMLA, the use of sucrose in a bigger baby, or the use of morphine in a ventilated baby.

- 2) Ensure that the procedure does not go on for too long - if not successful after 15 minutes perhaps another doctor could try - be diplomatic!
- 3) Remember - success is in the nurses hands as much as the doctors.