



Special Radiological Procedures Of The Head ,Breast And Respiratory System

Cervical &Lumber Myelography

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Radiology Tech.

قسم تقنيات الاشعة والسونار

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المرحلة 3

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Lecture No. 4.

Theoretical

تدريسي المادة : م.م خيرات رحيم لهمود

(INTRODUCTION)

Myelography

Definition: A radiographic examination of the spinal canal and spinal cord.

Method: Involves injecting a contrast medium (dye) into the fluid-filled space around the spinal cord (subarachnoid space).

Purpose: To detect spinal pathologies, including tumors, cysts, spinal cord injuries, and herniated discs.

Historical Use: Traditionally followed by X-ray projections.

Modern Shift: Largely replaced by MRI scans, which are non-invasive and provide better soft-tissue detail.

Current Use: Still performed in specific cases, primarily in conjunction with CT scans (CT Myelography), especially when MRI is contraindicated (e.g., due to metallic implants).

Cervical Myelography

This may be performed by introduction of contrast medium into the thecal sac by lumbar puncture and then run up to the cervical spine, or by direct cervical puncture at C1/2.

Indications

Suspected spinal cord pathology or root compression in patients unable or unwilling to undergo MRI imaging.

Lateral Cervical C1/2 Puncture Versus Lumbar Injection

Cervical Myelography Procedure (Injection Route)

- 1. Preferred Route:** Cervical myelography is typically and most easily performed using a **lumbar puncture** (injection) at the level of the cauda equina.
- 2. Contrast Movement:** The contrast medium is injected in the lumbar region and then maneuvered to run up into the **cervical region**.
- 3. Imaging Goal:** The procedure aims to obtain diagnostic quality radiographs, historically performed on the **fluoroscopy table**.

Indications for Direct Cervical Puncture

A direct **cervical puncture** (injection in the neck) is indicated under specific circumstances:

- When there is **severe lumbar disease**.
- In conditions that may **restrict the flow of contrast medium** and make a lumbar puncture difficult or unsuccessful.
- When there is **thoracic spinal stenosis** (narrowing of the thoracic spinal canal).

Contrast Medium

Non-ionic contrast medium is used with a total dose not exceeding 10 mL of contrast medium (a concentration of 300 mg mL⁻¹).

— Equipment

Tilting x-ray table with a C-arm fluoroscopic facility for screening and radiography in multiple planes.

Radiographic Views

After needle withdrawal, two antero-posterior (AP) radiographs are obtained, with the tube angulated cranially and caudally, in turn, along with both oblique views once again with cranial and caudal tube tilt. lateral views are needed to ensure full assessment of the cervico-thoracic junction.

Lastly, a further lateral view of the craniocervical junction is taken with mild neck flexion, because the extended neck position may prevent full visualization of the upper cervical cord up to the foramen magnum.

Lumbar Myelography

- This procedure is to look for the level of spinal cord disease such as lumbar nerve root compression, cauda equina syndrome, **conus medullaris** lesions, and **spinal stenosis**. This is done for those who are unwilling or unable to do MRI scan of the spine. **Lumbar puncture** is done before injected contrast into the **thecal sac**.

The lumbar thecal sac is punctured at L2/3, L3/4 or L4/5. The higher levels tend to be away from the most common sites of disc herniation and stenosis, and therefore puncture may be easier.

Indications

Suspected lumbar root or cauda equina compression, spinal stenosis and conus medullaris lesions in patients who are unable or unwilling to undergo MRI.

Contraindications

However, it is dangerous to do lumbar puncture in those who have raised intracranial pressure. For those who have recently done lumbar puncture in one week time, there may be some **cerebrospinal fluid** (CSF) accumulates in the **subdural space**. Thus needle may be mistakenly inserted into subdural space rather than the targeted **subarachnoid space**.

Contrast Medium

The contrast medium is the same as that used for cervical myelography. The maximum dose is again the equivalent of 3 g of iodine, and may be given as 10 mL of contrast medium of 300 mg mL⁻¹ concentration, or 12.5 mL of 240 mg mL⁻¹.

Radiographic Views

1. AP and oblique views are obtained. (About 25 degrees of obliquity is typical)
2. Lateral view with a horizontal beam is useful, but further laterals in the erect or semierect position on flexion and extension.

Any questions?

*Thank
You*