

¹¹¹In DTPA

1. Indications

Indium (¹¹¹In) DTPA injection is approved for:

- *Cisternography*
 - Detection of obstruction in cerebrospinal flow
 - Differentiation between normal pressure hydrocephalus and other forms of hydrocephalus
- *Leakage of cerebrospinal fluid (rhinorrhea or otorrhea)*

2. Preparation

Approved product, see summary of product characteristics (SmPC).

3. Quality control

Approved product, see summary of product characteristics (SmPC) and the European Pharmacopeia.

4. Interactions

Acetazolamide: inhibition of carbonic anhydrase by acetazolamide may decrease the rate of cerebrospinal fluid [CSF] production by the choroid plexus, thus altering CSF kinetics; this may result in a false-positive cisternogram.

5. Contraindications

Haemorrhagic tendency.
Increased intracranial pressure.

6. Adverse reactions

Performing a lumbar or occipital puncture may cause adverse reactions which are usually mild of nature. The symptoms include headache and signs of meningeal irritation, which as a rule improve within 48 h.

Aseptic meningitis and pyrogenic reactions have been rarely (<0,4%) observed.

If, in the case of suboccipital administration, the radiopharmaceutical is deposited in the immediate vicinity of those places where cerebral nerves exit from the brainstem, the n. oculomotoris, the n. facialis and the n. vestibulocochlearis may be activated causing transitory effects like ptosis of the eyelid, tinnitus or drooping of a corner of the mouth.

7. Biodistribution & pharmacokinetics

After injection into the subarachnoid space at lumbar level, ¹¹¹In DTPA moves upwards into the cervical subarachnoidal space and usually accumulates in the posterior fossa after 1-1,5 h. Three hours after injection activity is observed in the Sylvian and interhemispheric

fissures. After 6 h the tracer has reached the convexity of the hemispheres. At this point it passes from the CSF into the blood. Subsequently ¹¹¹In DTPA is quickly excreted by glomerular filtration and 24 h after administration the highest activity can be found in the resorption sites along the superior sagittal sinus. Approximately 65% of the administered dose is excreted by the kidneys within 24 h and this increases to 85% in 72 h. In the case of pathological impairment of the cerebrospinal fluid this characteristic distribution pattern disappears, which yields diagnostic information.

8. Stability

The product has a shelf life of 24 h after the radioactivity reference time. The product has to be stored in the original unopened packing at 15-25°C.

9. Literature

- SmPC Indium [In111] DTPA Injection, solution for injection 37 MBq/ml.
- Thut DP et al. ¹¹¹In-DTPA Cisternography with SPECT/CT for the Evaluation of Normal Pressure Hydrocephalus. *J Nucl Med Technol* 2014; 42:70-4.