PROTOCOL FOR COLLECTION, HANDLING AND TRANSPORT TO THE LABORATOYR OF CSF REQUIRING ANALYSIS FOR THE DETECTION OF BILIRUBIN (XANTHOCHROMIA)

PRINCIPAL

Spectrophotometric analysis of CSF for bilirubin (xanthochromia) is performed to try to identify those patients who have had a subarachnoid haemorrhage (SAH) but in whom the CT scan is negative. The scan detects bilirubin in CSF and this finding may be consistent with a bleed into the CSF.

CT scan is positive in up to 98% of patients presenting within 12 hours of onset of symptoms, but in only 50% who present within 1 week. This test can be used to determine the need for angiography in those few CT-negative patients in whom clinical suspicion of SAH remains high. Xanthochromia may remain positive for up to 2 weeks after the event.

The formation of bilirubin after haemorrhage is a time-dependent process and bilirubin may not be detectable soon after the event (e.g. onset of severe headache). CSF should not be sampled until at least 12h after a suspected event. The opening pressure should always be recorded when performing a lumbar puncture. Lumbar puncture is contraindicated in patients with papilloedema, focal neurological deficit or reduced consciousness.

Essential information that must be included on the request form:

- Clinical indication for request and if the differential diagnosis includes meningitis
- Result of CT scan
- Time of onset of symptoms / event
- Time of lumbar puncture

SPECIMENS

CSF may also be required for microbiological examination and for protein and glucose estimation. **Sufficient CSF will therefore be needed for all of these required investigations.**

N.B. If only 3 samples can be collected then the last sample should be sent according to suspected diagnosis i.e. ?infection/meningitis to Microbiology, ?SAH to Biochemistry

The final, least bloodstained sample should be used for xanthochromia analysis

- Label **three** 28mL sterile universal containers and one grey-top fluoride tube each with the patient's name, hospital number, ward, birth date, **time** CSF was obtained and the sequence order of sampling.

- Sample1: The first specimen should be a **minimum of O.5 mL** of CSF placed in grey-top fluoride for glucose estimation. **This specimen should be sent to Clinical Biochemistry**

- Samples 2 & 3: Microbiology requires **at least 5 mL** of CSF divided into 2 sequentially numbered sterile 28mL universal containers labeled "second" and "third". The Microbiology Department must be contacted prior to collection and these 2 specimens must be delivered to the Microbiology Department as soon as possible.

- Sample 4: A further **minimum of 1 mL** of CSF should be placed in the final (labeled "fourth") sterile 28mL universal container for the spectrophotometric scan and protein analysis. (NB **I mL** is about 20 drops from the Luer connector on a needle).

It is essential to **protect this sample from light** by placing it in a thick brown envelope outside the usual plastic specimen bag.
A **blood specimen** (yellow–top tube) should also be taken at the same time for serum bilirubin, total protein and glucose estimation that are needed to aid interpretation.

The grey-top fluoride and 4th sample must be delivered to the Clinical Biochemistry Department as soon as possible – DO NOT USE THE PNEUMATIC TUBE.

IF THIS PROCEDURE IS NOT FOLLOWED ANALYSIS IS LIKELY TO BE COMPROMISED

CONTACTS

Basildon Hospital Biochemists: ext. 3029 / 3025 / 3539

Southend Hospital Biochemist: ext. 8795

REFERENCES

Revised national guidelines for analysis of cerebrospinal fluid for bilirubin in suspected subarachnoid haemorrhage. *Ann Clin Biochem*. 2008; 45: 238 - 244