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CSF and Meningitis Report Interpretation

Practical 09 / Report and data interpretation

Aim

Interpret cell counts, glucose, protein and microbiology in an anonymised cerebrospinal fluid report.

Principle

CSF patterns overlap. Cell type and number, paired glucose, protein, appearance and microbiology contribute to a time-sensitive assessment.

Materials and Requirements

- Simulated CSF reports with paired serum glucose
- Clinical timelines and supplied microscopy or molecular results

Procedure

1. Confirm the collection time, clinical context, prior antimicrobial exposure and paired serum glucose.
2. Verify the specimen source and paired blood glucose time. Review prior treatment and the clinical onset and confirm whether opening pressure and tube sequence were recorded.
3. Review white cells and differential, red cells, protein and the CSF-to-blood glucose relation.
4. Tabulate appearance, counts, predominant cell type, protein and both glucose values. Calculate the ratio with matched units and flag red-cell contamination or incomplete sampling information.
5. Compare bacterial, viral and other teaching patterns and check available direct detection results.
6. Compare neutrophil and lymphocyte patterns with paired glucose and protein. Relate the microscopy or nucleic acid result to timing and discuss how prior therapy can affect the yield.
7. Consider trauma during collection, immunosuppression or early disease when findings conflict. State what additional case information or report would help reconcile the pattern.
8. State the concerning findings and the need for urgent supervising-team review of suspected meningitis.
9. Present the concerning findings, likely pattern, uncertainty and immediate communication. Document the receiving team and time of handover in the simulated record.

Precautions

- Use reports only for this station.
- A reassuring single CSF parameter cannot safely exclude a serious infection.

Observations and Interpretation

CSF and Meningitis Report Interpretation

Observations and Record

Item	What to record	What it tells you
Cell profile	Total count and predominant cells	Supports a pattern without determining cause alone
Chemistry	Protein and glucose relative to blood	Adds discriminating information
Aetiology	Direct results, timing and treatment history	Explains confirmation limits

Worked Example

CSF glucose 30 mg/dL and paired blood glucose 100 mg/dL give a ratio of 0.30. In a febrile patient with neutrophilic pleocytosis, this is concerning and requires urgent evaluation.

Result and Interpretation

Communicate the CSF pattern, relevant uncertainties and the need for immediate clinical review when indicated.

Viva Questions and Answers

Why pair CSF glucose with blood glucose?

Absolute CSF glucose depends in part on systemic glucose.

Can a negative stain exclude infection?

Sensitivity, specimen timing and prior treatment affect detection.

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