

Biomedical Laboratory Sciences

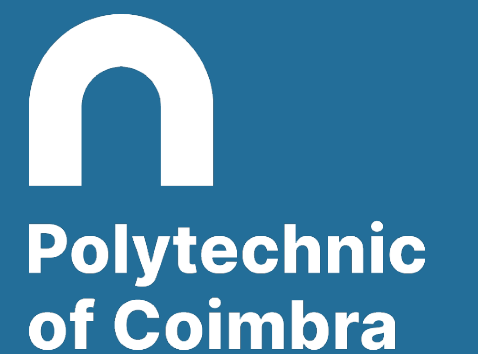
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Clinical Case



Clinical Biochemistry



Introduction

- Female;
- 44 years;
- Previously monitored in oncology for lung adenocarcinoma;
- Performed biochemistry, immunological and hormonal analysis on blood samples collected in 19-11-2022.

Methods and results

- Blood was collected into gel tubes and centrifuged.
- We place the tubes in the previously calibrated equipment and select the parameters to measure.
- We used the equipment Atellica® Solution (Siemens Healthineers) that can perform automatically immunoassays and clinical chemistry analysis.

Methods and results

Table 1- Biochemical parameters results

Biochemical Parameters	Results 19/11/2022	Results 17/11/2020	Reference values
Urea	19	19	10-50 mg/dL
Glucose	76	60	70-115 mg/dL
Creatinine	0.5	0.5	0.5-1.2 mg/dL
Na	138	138	135-145 mmol/L
K	3.6	3.6	3.5-5.1 mmol/L
Cl	97	100	95-107 mmol/L
Ca	1.14	1.12	1.14-1.29 mmol/L
Mg	16.3	17.7	16.0-26.0 mg/dL
Total Proteins	5.3	5.0	6.0-8.0 g/dL
Albumine	2.4	2.4	3.5-5.0 g/dL
Total Cholesterol	249	240	50-200 mg/dL
Triglycerides	350	376	≤ 150 mg/dL

Methods and results

Table 2- Biochemical parameters results

Biochemical Parameters	Results 19/11/2022	Results 17/11/2020	Reference values
Uric Ácid	2.5	2.5	3.1-8.5 mg/dL
Total Bilirrubine	9.2	9.2	≤ 1.2 mg/dL
Diretc Bilirrubine	8.1	8.2	≤ 0.3 mg/dL
ALP	386	430	≤ 117 U/L
AST	213	201	≤ 40 U/L
ALT	104	88	≤ 40 U/L
GGT	375	401	≤ 49 U/L
LDH	591	573	120-246 U/L
Amonia	51.0	50.0	11.0-32.0 µmol/L

ALP-alkaline phosphatase; **AST** - aspartate aminotransferase ; **ALT**- alanine aminotransferase; **GGT**- gamma glutamyl transferase ; **LDH** - lactate dehydrogenase

Methods and results

Table 3 - Immunological and Hormonological Results			
Specific proteins	Results 19/11/2022	Results 17/11/2020	Reference values
CRP	19.00	17.90	≤ 0.30 mg/dL
Procalcitonin	1.30	4.34	≤ 0.50 ng/mL

CRP - C-reactive protein

Discussion

➤ Biochemical parameters results - table 1

- Decreased concentrations of **total proteins** and **albumin**, may be due to liver or kidney damage. There are no alterations in the levels of **urea** or **creatinine**.
- Increase **total cholesterol** and **triglycerides** may be due to difficulties in lipid digestion, whether at the gastric or intestinal level. The blood collection was not made after a meal, because the level of **glucose** are normal.

Discussion

➤ Biochemical parameters results - table 2

- The increase levels of **total and direct bilirubin** gives us an indication of possible liver damage.
- **Total bilirubin** is increased, due to **direct bilirubin**, so we are possibly facing a cholestatic liver injury, as the liver manages to conjugate the indirect bilirubin, but it shows difficulty in making the direct bilirubin leave the hepatocytes.

Discussion

➤ Biochemical parameters results - table 2

- High levels of **ALP** and **GGT** supports cholestatic liver injury.
- Increased **ALT** and **AST** suggest possible hepatocellular liver damage. Although ALT is more specific for liver damage than AST.
- High **LDH** is used as tissue damage marker.
- High levels of **ammonia** confirms that the liver is compromised.

Discussion

➤ Immunological and hormonal results - table 3

- High concentrations of **CRP** and **procalcitonin** may indicate inflammation, with procalcitonin being more specific in case of bacteraemia.

Conclusion

- **Suspected diagnosis of** : cholestatic liver injury with an inflammatory process.
- **The patient's final diagnosis**: Lung adenocarcinoma with gastric, liver and brain metastasis.

Bibliography

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