Enterobacter aerogenes

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Group: 08:00-09:00
Objectives

- Apply biochemical tests for the correct identification of a microorganism causing *septicemia* in a patient of 11 days of life.

- To perform antimicrobial susceptibility tests applied to the microorganism previously identified in the biochemical tests, in order to know the antibiotics that can be administered and that can inhibit the growth of this one in an effective way.
Introduction

• Microorganism belonging to the genus Enterobacter, from the family Enterobacteriaceae.

• It is a Gram-negative bacillus, facultative anaerobic.

• It causes a high range of pathologies, including bacteremia, osteomyelitis, and septic arthritis, as well as infections of the urinary tract, gastrointestinal, respiratory tract and skin.

• It causes pathology after its guest has already been weakened, and commonly resides in hospitals.
• It is a newborn, female, 11 days old, premature first twin of 25 weeks, 650 grams at birth. She was born by emergency cesarean section due to premature labor.

• It evolved with severe hyaline membrane disease requiring two doses of surfactant.

• A percutaneous venous catheter was placed through the upper left limb at 8 days of life, after which an x-ray was obtained.

• She developed septicemia by multi-resistant Enterobacter aerogenes and received treatment from 9 days of life.
- DIAGNOSTIC

- Pericardial effusion, with cardiac tamponade secondary to central venous catheter atrial perforation.
Methodology

Biochemical tests:

- Performing biochemical tests on broths and solid medium
- Sowing the crop in each test
- After the incubation period:
  - Observation of the tests
  - Comparison of results in the reference tables
  - Identification of the microorganism
Susceptibility testing

1. Prepare suspension of the microorganism
2. Impregnate the swab in the suspension
3. Inoculate in the agar box Mueller Hinton
4. Incubate the box at 37 °C for 24 h
5. Cover the entire agar
6. Place the sensidiscos in the agar
7. After the incubation, measure the inhibition halos
8. Compare in the CLSI reference tables
9. Determine susceptibility of each antibiotic
Results
Biochemical tests
Citrato of Simmons (-)  
It should have been (+)

LIA (-)  
It should have been (+)

KLIGER  
Glucosa (+)  
Lactosa (+)  
Gas (+)

MIO (-)

MALONATE (+)

UREA (-)

METHYL RED (+)

SIM (-)

Vogues Proskauer (-)  
It should have been (+)
Antibióticos

CMI y CMB:
Técnica de Kirby-Bauer:
## Results

<table>
<thead>
<tr>
<th>Name</th>
<th>Resistant (mm)</th>
<th>Intermediate (mm)</th>
<th>Susceptible (mm)</th>
<th>Results (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 10</td>
<td>Ampicillin</td>
<td>&lt;=13</td>
<td>14-16</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;=17</td>
<td>Intermediate</td>
</tr>
<tr>
<td>CRO</td>
<td>Ceftriaxone</td>
<td>&lt;=13</td>
<td>14-20</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;=21</td>
<td>Susceptible</td>
</tr>
<tr>
<td>CIP</td>
<td>Ciprofloxacin</td>
<td>&lt;15</td>
<td>16-20</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;=21</td>
<td>Intermediate</td>
</tr>
<tr>
<td>SXT</td>
<td>Trimethoprim-sulfamethoxazole</td>
<td>&lt;=16</td>
<td>11-15</td>
<td>&gt;=16</td>
</tr>
<tr>
<td>NA 30</td>
<td>Nalidixic acid</td>
<td>&lt;=13</td>
<td>14-18</td>
<td>&gt;=19</td>
</tr>
</tbody>
</table>
Discussion of results

• Biochemical Tests
  • According to the biochemical tests performed on the sample taken from the patient, we deduce that it was definitely Enterobacter aerogenes since the majority of the results of the tests performed coincide with those consulted in the bibliographies.

• Antibiotics
  • Once the microorganism responsible for septicemia has been identified with certainty, it performs susceptibility tests in order to assign an antibiotic to the patient and obtain a beneficial result.
  • According to the results, *Enterobacter aerogenes* is susceptible to Ampicillin and Trimethopina-Sulfamethoxazole, intermediate for ceftriaxone and ciprofloxacin, and resistant to Nalidixic acid 30.
  • So that it can safely prescribe AM 10 and SXT, with certain CRO and CIP observation and deny Supplying NA 30
Conclusions

• Based on the results, we were able to identify the microorganism causing septicemia in a patient of 11 days of life, as well as we could perform the susceptibility tests of this microorganism to know the antibiotics that could inhibit the growth of *Enterobacter aerogenes*. 
Bibliography:
