RELATIONSHIP BETWEEN RENAL FUNCTION AND ERTAPENEM PLASMA CONCENTRATION IN ADULT PATIENTS

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BACKGROUND AND IMPORTANCE

**ERTAPENEM**: Parenteral β-lactam antibiotic → Renal excretion → Time-dependent bactericidal activity

- **Usual dose**: 1g/24h → If estimated glomerular filtration rate (eGFR) <30ml/min: 0.5g/24h.

AIM AND OBJECTIVE

Evaluate the relationship between renal function (eGFR) and ertapenem plasma trough concentration (Cert).

MATERIALS AND METHODS

**Retrospective observational study** Third-level hospital

→ **Biodemographical**

→ **Clinical**

→ **Treatment-related**

Continuous variables were expressed as mean ± SD and categorical variables as % (cases)

**N= 102 patients** → 53% male sex, 73.0 ± 12.2 years old

Mean eGFR: 57.5 ± 27.86 ml/min/1.73 m²

Cert measure: 6.4 ± 4.04 days after ertapenem initiation

Mean duration of treatment: 15.5 ± 11.4 days

**RESULTS**

- **Cert** was measured ([HPLC-UV](#)) after at least two doses of ertapenem and before the next dose administration (trough).

- Renal function was measured as eGFR according to CKD-EPI.

- Pearson correlation coefficient (R) → Correlation between eGFR (independent variable) and Cert (dependent variable).

- **ANOVA** → Determine the statistical significance of R (p value).

**Table 1. Mean Cert for the different eGFR ranges**

<table>
<thead>
<tr>
<th>eGFR category</th>
<th>Cert (mcg/mL)</th>
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</thead>
<tbody>
<tr>
<td>eGFR &gt;90 (n=24)</td>
<td>7.3 ± 12.1</td>
</tr>
<tr>
<td>eGFR 60-90 (n=24)</td>
<td>14.1 ± 10.1</td>
</tr>
<tr>
<td>eGFR 30-60 (n=29)</td>
<td>19.4 ± 19.5</td>
</tr>
<tr>
<td>eGFR &lt;30 (n=25)</td>
<td>29.7 ± 28.0</td>
</tr>
<tr>
<td><strong>Total (n=102)</strong></td>
<td><strong>17.8 ± 20.3</strong></td>
</tr>
</tbody>
</table>

- **R-value**: -0.436 (R²=0.190) → Inverse linear correlation between eGFR and Cert with statistical significance (p=0.001).

- Influence of other covariates (albumin, platelets, ertapenem dose, sampling time) on the relationship between Cert and eGFR was studied → No significant impact observed.

CONCLUSION AND RELEVANCE

- **Decrease in eGFR is correlated with an increased in Cert**, with a possible overexposure in patients with renal dysfunction.

- **A dose adjustment could be considered** in patients with compromised renal function, even if the eGFR>30 mL/min/1.73 m².