Quantification of Endotoxins and Cultivable Bacteria in Root Canal Infection before and after Chemomechanical Preparation with 2.5% Sodium Hypochlorite

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**Aim**
- To quantify endotoxins and cultivable bacteria in root canal infections with pulp necrosis and apical periodontitis before and after chemo-mechanical preparation with 2.5% NaOCl.
- To investigate the possible correlation of endotoxin and cultivable bacteria with the presence of clinical symptomatology.

**Materials & Methods**
- 24 patients referred for RCT were selected for this study.
  - a- 11 cases were asymptomatic.
  - b- 13 cases were symptomatic (either tenderness to percussion and/or pain on palpation).
- **Inclusion criteria**
  - a- Single-root
  - b- Necrotic pulp
  - c- Radiographic evidence of PAR
  - d- No antibiotic treatment during the last 3 months
- Access was opened and canals were sampled (S1).
- Canals were cleaned & shaped using rotary instruments + 2.5% NaOCl, then canals were sampled (S2).
- Samples were used to culture obligate & facultative anaerobes and to determine endotoxin conc.
- The data collected were statistically analyzed.

**Results**
- **At the initial sampling**
  - a- Bacteria were recovered from all root canals.
  - b- Endotoxins were present in 100% of the root canal samples.
- **After chemo-mechanical preparation**
  - a- Bacterial load dropped to a mean value of 99.78%.
  - b- Endotoxin conc. dropped to a value of 59.99%.
- Endotoxin & bacterial content in S2 was significantly reduced in comparison to S1.
- No statistical difference was found in bacterial count between symptomatic & asymptomatic teeth.
- Statistically significant differences were found in endotoxin content between symptomatic and asymptomatic teeth.
- A +ve correlation between endotoxins and tenderness to percussion was found.

**Conclusion**
- Chemo-mechanical preparation with 2.5% NaOCl was able to reduce LPS content by only 59.99%.
- A successful RCT can still be achieved in clinical practice. However, high contents of endotoxins might play an important role in the development and the persistence of endodontic symptoms after RCT.

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