Different Cleaning Methods and Cleaning Quality Research of Cervical Biopsy Forceps

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I. Research Background

Biopsy forceps is an important instrument for pathological examination or disease diagnosis by collecting living body. So it has complicated structures, special forms, narrow grooves and crevices, which cannot be disassembled. Those potential tumors can easily hide and attach contaminants, such as blood and body fluids, causing great difficulty in cleaning and disinfection. A trace of virus-containing blood (0.004ml) can be very infectious. Blood-staining medical instruments with incomplete cleaning and disinfection can easily cause disease transmission; Medical instruments with inadequate cleaning and disinfection can easily cause infection of hepatitis B, hepatitis C, HIV, Mycobacterium tuberculosis (1). To discuss influences of different pre-cleaning methods to cleaning quality of medical instruments, this paper chooses cervical biopsy forceps as research object and makes a comparison of efficacy of different cleaning methods of instruments, by means of three inspection methods, namely visual inspection (times light magnifier), occult blood test, ATP bioluminescence test.

II. Research Method

1. Material

- 120 cervical biopsy forceps from our hospital received between May, 2014 and July, 2014, hyperconcentrated enzymatic detergent, alkaline detergent, lubricant, soft brush, automatic washer-disinfector, STF cleanliness test card, 5 times magnifier, Jieli test paper, ATP detector, ATP test swabs were chosen.

2. Research Object

- Cervical Biopsy Forceps

3. Grouping Method

- Randomly divided into 2 groups (experimental group and control group)

4. Cleaning Method

(1) Pre-cleaning: Soak in hyperconcentrated enzymatic detergent (1:500) for 5 min, repeatedly open and close handles of biopsy forceps under water for at least 10 times. Brush off visible contaminants.

(2) Mechanical cleaning: pre-cleaning, cleaning, ultrasonic cleaning, final rinsing and drying.

5. Cleaning Efficacy Evaluation

- Lighted Magnifier Inspection: No visible blood, stain, rust on the surface, crevices and grooves as Pass, otherwise as Fail
- Occult Blood Test, Jieli Test Paper, no color change as negative, paper changes into green as positive
- ATP Test: RLU≥45 as Pass, RLU<45 as Fail

6. Statistical Method

- x²-inspection was applied for the comparison of count dataset, P<0.05 regarded as having statistical significance.

III. Research Result

- Table One: Cleanliness Quality Pass Rate Comparison of Two Groups of Cervical Biopsy Forceps after Cleaning by Visual Inspection

<table>
<thead>
<tr>
<th>Group</th>
<th>Inspection No.</th>
<th>Pass No.</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>60</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>60</td>
<td>45</td>
<td>75%</td>
</tr>
</tbody>
</table>

n²=χ²=5.714, P=0.017, Cleaning quality of experimental group was significantly better than control group, with statistical significance.

- Table Two: Cleanliness Quality Pass Rate Comparison of Two Groups of Cervical Biopsy Forceps after Cleaning by Occult Blood Test

<table>
<thead>
<tr>
<th>Group</th>
<th>Inspection No.</th>
<th>Pass No.</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>60</td>
<td>59</td>
<td>98.3%</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>60</td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

- Table Three: Cleanliness Quality Pass Rate Comparison of Two Groups of Cervical Biopsy Forceps after Cleaning by ATP Test

<table>
<thead>
<tr>
<th>Group</th>
<th>Inspection No.</th>
<th>Pass No.</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>60</td>
<td>36</td>
<td>60%</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>60</td>
<td>48</td>
<td>80%</td>
</tr>
</tbody>
</table>

n²=χ²=4.904, P=0.030, Differences of pass rate of experimental group and control group have no statistical significance.

IV. Conclusion

- Cleaning quality of biopsy forceps instruments can be significantly improved by soaking with enzymatic cleaner before mechanical cleaning along with repeatedly opening and closing handles, and also brushng grooves and crevices.
- Combination of visual inspection and occult blood test can be relative ideal inspection method.

About the Author

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- Nurse-in-chief, Deputy head nurse of Anhui Provincial Hospital, responsible for CSSD quality control and teaching. Recently, presided over one departmental level scientific research and issued several papers. Also is responsible for the teaching provincial continuous education class and CSSD manager training.