High performance of 5-aminolevulinic acid induced fluorescent urine cytology for detecting urothelial carcinoma

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Backgrounds & objectives

- Urine cytology has low sensitivity and is often limited in clinical use.
- We investigated the utility of 5-aminolevulinic acid (5-ALA) induced fluorescent urine cytology for detecting urothelial carcinoma (UC).

Materials & Methods

The protocol of the 5-ALA-based fluorescent detection assay

1. Centrifuge urine sample
2. Add 5-ALA
3. Adjust the concentration to 200μg/ml
4. Centrifuge MEM and 5-ALA
5. Incubator (37°C, 2 hours)
6. Observe urine sample in spectrophotometer

Photographic comparison between conventional and 5-ALA-induced fluorescent urine cytology

<table>
<thead>
<tr>
<th>Pathological diagnosis</th>
<th>Conventional</th>
<th>5-ALA</th>
<th>MEM and 5-ALA</th>
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<tbody>
<tr>
<td>BPH</td>
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<td>Cystitis</td>
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<td>Bladder tumor (pTa, high grade)</td>
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5-ALA-induced fluorescent urine cytology was more sensitive than conventional urine cytology and equally high specific.

Conclusions

- 5-ALA-induced fluorescent urine cytology was more sensitive than conventional urine cytology, regardless of pT stage and tumor grade and equally high specific.