

Validation of the loop-mediated isothermal amplification method for rapid and sensitive detection of Ureaplasma species in respiratory tracts of preterm infants

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論 文 要 旨

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for rapid and sensitive detection of *Ureaplasma* species
in respiratory tracts of preterm infants**

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Introduction

A simple and rapid diagnosis of *Ureaplasma* spp. is required for the choice of the appropriate antibiotic. However, an ideal detection method has not been available. This study examined the efficacy of the loop-mediated isothermal amplification (LAMP) assay, which provides rapid and sensitive results, to detect *Ureaplasma* spp. in respiratory tract samples of preterm infants.

Methods

The study included preterm infants born before 32 weeks of gestation admitted Kagoshima City Hospital from June 2018 to March 2020. Nasopharyngeal swabs and/or tracheal aspirates were obtained in the first seven postnatal days. One hundred sixty-seven nasopharyngeal swabs and 101 tracheal aspirates were analyzed by LAMP, culture, and quantitative real-time polymerase chain reaction.

Results

All 167 infants had a median (range) gestational age of 28.7 weeks (22.3–30.9) and birthweight 1030g (322–1828). One hundred sixty-seven nasopharyngeal swabs and 101 tracheal aspirates were obtained. In the results of nasopharyngeal swabs, the sensitivity and specificity of LAMP were 73.9% (17/23) and 97.2% (140/144), whereas those of quantitative real-time polymerase chain reaction were 73.9% (17/23) and 95.8% (138/144), compared to culture. In the results of tracheal aspirates, the sensitivity and specificity of LAMP were 89.5% (17/19) and 92.7% (76/82), whereas those of quantitative real-time polymerase chain reaction were 89.5% (17/19) and 93.9% (77/82), compared to culture.

Conclusions

The LAMP assay showed similar sensitivity and specificity with quantitative real-time polymerase chain reaction in the respiratory tracts of preterm infants including extremely preterm infants during the immediate postnatal period. Therefore, the LAMP is a practical alternative for the early detection so that appropriate antibiotics can be administered for preventing BPD.