SHORT COMMUNICATION

Prevalence and Antibiotic Susceptibility of *Ureaplasma urealyticum* in Malaysian neonates with Respiratory Distress

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Summary

Ureaplasma urealyticum was isolated from the endotracheal aspirates of 39 (21.4%) of 182 neonates with respiratory distress requiring ventilatory support. *Mycoplasma hominis* was isolated from one (0.5%) neonate. Bacterial cultures were negative in 123 (67.6%) neonates. Antibiotic susceptibility test carried out on ten isolates of *U.urealyticum* showed that all the organisms were sensitive to erythromycin but resistant to lincomycin and sulfamethoxazole trimethoprim. All, except one, *U.urealyticum* were sensitive to tetracycline and minocycline. Two isolates were resistant to ciprofloxacin. This study showed that *U.urealyticum* was a common organism isolated from the endotracheal aspirates of neonates with respiratory distress.

Key Words: Ureaplasma urealyticum, Antibiotic susceptibility, Neonates, Respiratory distress

Ureaplasma urealyticum and *Mycoplasma hominis* has been implicated as a contributory cause of chronic lung disease of prematurity and in association with meningitis, hydrocephalus and intraventricular haemorrhage among neonates[1]. The aim of this study was to determine the prevalence of *U.urealyticum, M.hominis* and other bacteria in neonates with respiratory distress admitted to the Neonatal Intensive Care Unit in the Kuala Lumpur Maternity Hospital (between 15 June, 1995 to 28 February 1996) who required ventilatory support.

Endotracheal aspirate specimens were collected from neonates within 7 days of birth by mechanical suction into a sterile tracheal aspirate container via an appropriately sized sterile catheter. The specimens were inoculated into Boston broth and sent to the Bacteriology Division, Institute for Medical Research for ureaplasma isolation. Boston broth showing pH changes to alkali was inoculated on A7 agar (Sanofi, France) and the plates were subjected to anaerobic incubation for a minimum of 48 hours. The plates were examined microscopically under low power (10X) for characteristic colonial morphology of *U.urealyticum* and *M.hominis.* Boston broth without pH changes after 14 days of incubation were reported as negative for *U.urealyticum.* Ureaplasmas were preserved in liquid nitrogen for antibiotic susceptibility test.

Our results showed that *U.urealyticum* was the most common microorganism isolated from the endotracheal aspirates of 182 Malaysian neonates with respiratory distress (Table I). The organism was isolated from 39 (21.4%) of tracheal aspirates and in 30 (76.9%) of them, it was isolated in pure culture. The isolation rate of *U.urealyticum* from endotracheal aspirates of Malaysian neonates was comparable to those of 17 to 35% reported in several other studies[1].

U.urealyticum, a cause of nongonococcal urethritis in man, has been isolated from the lower genital tract of 40-80% of sexually mature asymptomatic women and

Table I
Results of bacterial culture obtained from the endotracheal aspirates of 182 neonates requiring ventilation

Microorganism isolated	No. of neonates (%)
None	123 (67.6)
U.urealyticum only	30 (16.5)
U.urealyticum with other bacteria	9 (4.9)
Other bacteria only	20 (11.0)
Acinetobacter spp.	4
Klebsiella spp.	4
Pseudomonas spp.	5
Group B streptococci	3
Coagulase negative Staphylococci	1
Methicillin sensitive *Staphylococcus aureus*	2
Methicillin resistant *S.aureus*	5
Escherichia coli	4
Haemophilus influenzae	1
Mycoplasma hominis	1

approximately 70% pregnant women. A high prevalence of this organism had been reported in a study of the vaginal discharge of women attending a Malaysian gynaecological clinic[2]. Isolation of *U.urealyticum* from endotracheal aspirates in the absence of other documented respiratory pathogens is significantly associated with radiographic evidence of pneumonia, increased number of circulating white blood cells; and increased numbers of neutrophils in the tracheal aspirate 2 days after birth. These findings suggested that *U.urealyticum* is a cause of pneumonia in the newborn infants[3]. The isolation rate of *M.hominis* was lower (0.5%) as compared to *U.urealyticum.*

Knowledge of *U.urealyticum* susceptibility patterns in neonates is of considerable importance for treatment purposes. In clinical practice, it is common for infants to be treated with broad spectrum antibiotics, however, it is possible that the eradication of other organisms may encourage growth of *U.urealyticum.* Ureaplasmas are generally susceptible to antibiotics that interfere with protein synthesis such as macrolides and tetracyclines. However, tetracycline and/or doxycycline should always be tested because resistance is known to occur in both *U.urealyticum and M.hominis* due to the presence of *tet*M gene[4]. In this study, Invitro antibiotic susceptibilities testing of ureaplasmas was performed using a commercial kit, Mycofast <<Screening>> (International Mycoplasma, France) as instructed by the manufacturer. Only ten isolates of *U.urealyticum* were viable upon subculturing and were tested for antibiotic susceptibilities. All isolates were sensitive to erythromycin (8 µg/ml) and resistant to lincomycin (4 µg/ml) and sulfamethoxazole-trimethoprim (4 µg/ml). All were sensitive to tetracycline (6 µg/ml) and minocycline (4 µg/ml) except one. Two isolates were resistant to ciprofloxacin (2 µg/ml). Erythromycin has been recommended as the first choice of drug for ureaplasmal infections of the respiratory and no resistant strains had been reported so far[5].

U.urealyticum has only recently been suggested as a cause of pneumonia in newborns and thus is not routinely sought by most hospital laboratories. The organism is not susceptible to those antibiotics that are used for presumptive therapy in very low birth weight infants with evidence of respiratory distress. Consequently, the infection presently goes undetected and untreated. Because of the frequency with which *U.urealyticum* colonizes the lower respiratory tract of neonates and its proven association with respiratory disease, it is recommended that culture for *U.urealyticum* should be considered on clinically ill neonates, with respiratory disorders in whom bacterial cultures are negative or who fail to improve their conditions with antibiotic therapy.

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