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Subgroups A and B Respiratory Syncytial Virus Isolated in Ehime Prefecture, 1995-1999

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Respiratory syncytial virus (RS virus) is one major causative agent of infantile acute respiratory infection during the winter season. It often causes serious lower respiratory tract infections, such as bronchiolitis and pneumonia. There are two subgroups of RS virus, group A and group B. Information regarding the distribution of these two subgroups during epidemic seasons has been scarce. Our recent studies on the strains isolated in Ehime Prefecture in 1995-1999 revealed a transition from group A to group B toward the end of 1998. That data is detailed in this report.

Clinical specimens were collected from outpatients in a pediatric clinic in Matsuyama City. Pharyngeal swab specimens obtained from infants with acute respiratory infections were inoculated to FL, RD-18s, and Vero cells cultured in roller tubes. Viruses were identified by neutralization or by fluorescent antibody method. Subgroups were determined by the method of Milaan et al.; i.e., RT-PCR amplification of nt 943-1160 of RS virus genome (the 3'-end of the 1B gene and the 5'-end of the N gene) followed by Dot blot hybridization with subgroup specific probes (1).

During the study period (January 1995 to February 1999), 154 RS virus isolates were obtained from patients with acute respiratory infections. All the isolates could be typed into

subgroup A ($n = 107$) or B ($n = 47$). Follow-up of monthly isolation of RS virus is shown in Fig. 1. RS virus was most frequently isolated during the winter season, and isolation during the summer season was sporadic. These subgroups co-existed throughout the study period, and contributed to epidemics. From the autumn of 1998 to early 1999, there was a dramatic increase in the number of RS virus isolates, and particularly in that of subgroup B isolates. Figure 2 shows the prevalence of each subgroup during the epidemic season from 1995 to 1999. Until the 1997/1998 epidemic season, subgroup A was predominant, at which time subgroup B became predominant. This observation is in line with reports from Japan (2,3), Europe, and America (4,5) in that, although both subgroups may cause respective epidemics in the same season in the same area, the predominant subgroup alternates. Most patients from whom RS virus was isolated were under 6 years of age. Patients under 1 year of age accounted for 56% of cases with subgroup A and 68% of cases with subgroup B, and the difference in the percentage was not significant. Among 107 cases, known clinical manifestation including 13 pneumonia, 72 bronchitis, 15 upper respiratory tract inflammation, and 7 others, there was no significant correlation between the clinical manifestation and subgroups.

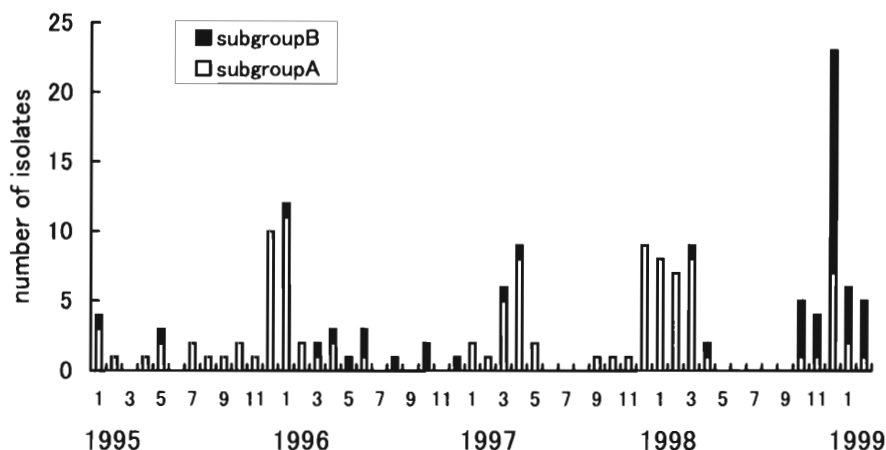


Fig. 1. Isolation of RSV subgroups during January 1995 and February 1999.

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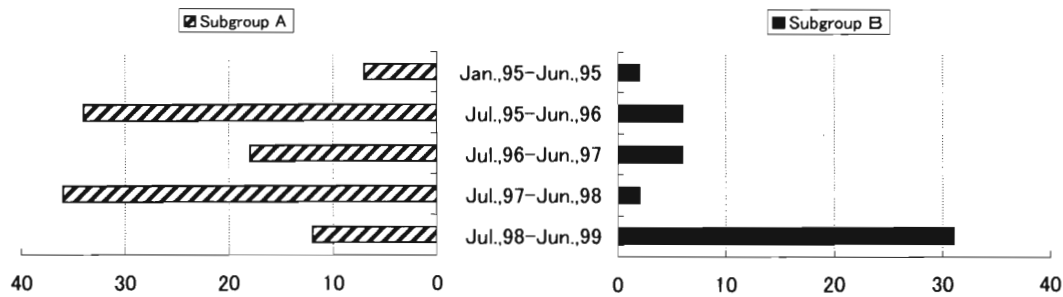


Fig. 2. Distribution of RSV subgroups detected over five epidemic seasons.

REFERENCES

1. Milaan, A. J. V., Sprenger, M. J. W., Rothbarth, H., Brandenburg, A. H., Masurel, N. and Class, E. C. J. (1994): Detection of respiratory syncytial virus by RNA-polymerase chain reaction and differentiation of subgroups with oligonucleotide probes. *J. Med. Virol.*, 44, 80-87.
2. Tsutsumi, H., Onuma, M., Suga, K., Honjo, T., Chiba, Y., Chiba, S. and Ogra, P. L. (1988): Occurrence of respiratory syncytial virus subgroup A and B strains in Japan, 1980 to 1987. *J. Clin. Microbiol.*, 26, 1171-1174.
3. Nagai, K., Tsutsumi, H., Yamazaki, H., Pattamadilok, S. and Chiba, S. (1993): Three antigenic variant groups in human respiratory syncytial virus subgroup B isolated in Japan. *Arch. Virol.*, 128, 55-63.
4. Mlinaric-Galinovic, G., Chonmaitree, T., Cane, A. P., Pringle, R. C. and Ogan, L. P. (1994): Antigenic diversity of respiratory syncytial virus subgroup B strains circulating during a community outbreak of infection. *J. Med. Virol.*, 42, 380-384.
5. Peret, T. C. T., Hall, B. C., Schnabel, C. K., Golub, A. J. and Anderson, J. L. (1998): Circulation patterns of genetically distinct group A and B strains of human respiratory syncytial virus in a community. *J. Gen. Virol.*, 79, 2221-2229.