RESPIRATORY VIRUSES SCREENING IN BRAZILIAN INDIANS FROM NORTHERN AMAZON STATE

ABSTRACT

Viral respiratory tract infections are among the leading causes of lower respiratory tract illness in infants and young children of developed countries. However, little is known about respiratory viruses in isolated populations of developing countries. In the present work nasal swabs were taken from a Yanomami small community in order to evaluate the presence of Adenovirus, Respiratory Syncitial virus, Parainfluenza and Influenza in closed populations. 5.5% of the samples were positive for Adenovirus, and were the specimens collected from asymptomatic children.

Introduction

Viral respiratory tract infections remain the most common diseases affecting humans throughout the world (5). They are the major causes of lower respiratory tract illness in infants and young children (6, 7), are responsible for 5% hospital-treated pneumonia in otherwise healthy adults, and cause serious illness among immunocompromised and elderly individuals (9, 8) in developed countries. However, little is known about viral respiratory pathogens in isolated populations of developing countries. In this study, we screen 75 samples from an Yanomami tribe for the presence of respiratory viruses and their clinical manifestations. The Yanomami tribe is located at Demeni River-Side in Northern Amazon State.

Material and Methods:

Specimens

Nasal swabs were collected from an Ajuricaba community in the first semester of 1996. This community belongs to the Yanomami tribe, and is located at the Demeni riverside, a tributary of the Negro river in the Northern part of the Amazon State (Fig. 01). The community was comprised of children and adults, and a total of 75 samples were obtained. The swabs were kept in vials containing 1.0 mL of sterile phosphate buffered saline (PBS, pH 7.2), and frozen onto dry ice while transported to the laboratory, where they were prepared for tissue culture inoculation.

Virus isolation

The swabs were removed from the vial
and treated with penicillin G/ streptomycin (Gibco BRL). Then they were placed onto two or more nearly confluent Hep-2, and NCI-H292 (ATCC CCL-23, CRL-1848, respectively) cell monolayers grown in 24-well polystyrene microplates (Corning Inc., New York, NY). The cells were examined daily until the appearance of cytopathic effects (CPE). If no CPE was detected after 14 days, the cells were blind passaged twice (1, 2, 3, 4). Cells showing CPE were tested by Immunofluorescence Assay (IFA) for the following respiratory antigens: Human Respiratory Syncitial Virus (RSV), Adenovirus, Influenza virus and ParaInfluenza virus.

**IFA for respiratory virus antigens**

Cells showing CPE were cytoospin onto teflon-covered glass cover slips and reacted against a panel of anti-respiratory monoclonal antibodies (Respiratory Virus Panel I: Viral screening and identification Kit, Chemicon International, Inc, Temecula, CA) according to the manufacturer instructions. A specimen was considered positive for the viruses noted above if >3 cells gave specific fluorescence, possibly positive if 1-3 cells gave specific fluorescence, and negative if no virus specific fluorescence was observed.

**Results**

From the 75 nasopharyngeal samples taken from the Yanomami Indians, only 5.5% (04/75) showed the presence of virus. Adenovirus was the pathogen agent that caused cytopathic effects in the monolayer cells and which was confirmed by immunofluorescence assay. The positive samples were obtained from children with no respiratory disease.

**Discussion**

Viruses that infect the respiratory tract have a worldwide distribution, and evidence of infection is shown in serologic reports (2). In the tropical regions these viruses occur yearly, generally with larger incidence in the rainy season. Since adenoviruses were first cultured and reported as distinct viral agents in 1953 (10), 49 serotypes of human adenovirus have been described in literature (11). Serotype 7 is associated with ocular and respiratory disease, and in Belém and Rio de Janeiro the variant Ad4a was associated with pharyngoconjunctival fever and acute respiratory disease (12). The ethnic and geographic diversity and high migration rate observed in Brazil may facilitate dispersion and propagation of these viruses, as well as the appearance of new variants in areas with high population density (13). but what can we say about adenoviruses found in a closed population such as the Yanomamis? Has the virus been introduced recently by sporadic foreign visitors or errant migrants, by contact with other Indian communities during reunions, or has the virus been in this population for a longer time? This was the first study on the presence of viral agents in Indian tribes from the Amazon State. Other studies focusing on the establishment of viral diseases and their clinical manifestations, as well as the detection and genetic characterization of those viruses infecting these populations are much in need to better understand the circulation and epidemiology of respiratory tract viruses in Brazil.
Fig. 1. Geographical location of the tribe Yanomami
RESPIRATORY VIRUSES

References:


10 - ROWE WP, HUEBNER RJ, GILMORE JK, PARROT RH, WARD TG. 1953. Isolation of a cytopathogenic