Short communication: Localization of Morbillivirus Nucleic Acid in a Pygmy Sperm Whale (Kogia breviceps) by In Situ-Reverse Transcriptase-Polymerase Chain Reaction

Wei-Cheng YANG, Victor Fei PANG, Chian-Ren JENG, Ling-Ling CHUEH

1. Department of Veterinary Medicine, National Chiayi University, Chiayi City, Taiwan
2. Graduate Institute of Veterinary Medicine, National Taiwan University, Taipei City, Taiwan

ABSTRACT Combining the sensitivity of PCR and cell-localizing ability of in situ hybridization, the in situ RT-PCR technique was applied to localize cetacean morbillivirus nucleic acid in the lung of a stranded pygmy sperm whale (Kogia breviceps). Primers targeted to phosphoprotein gene of morbillivirus and digoxigenin-11-dUTP was incorporated into the amplicons. Positive signals indicating the presence of morbillivirus specific nucleic acid was clearly found in the type I pneumocyte and mononuclear inflammatory cells in the alveolar septa, space of bronchioles and alveoli. In comparison to previous immunohistochemical findings, in situ RT-PCR provided more direct evidence of causative agents in this case. The result also suggests that in situ RT-PCR with its strength of high sensitivity and natural resistance to sample contamination could be a useful method in the pathogenesis investigation of the morbillivirus infections. [Yang WC, Pang VF, Jeng CR, *Chueh LL. Short communication: Localization of Morbillivirus Nucleic Acid in a Pygmy Sperm Whale (Kogia breviceps) by In Situ-Reverse Transcriptase-Polymerase Chain Reaction. Taiwan Vet J 38 (3): 177-182, 2012. * Corresponding author TEL: 886-2-3366-1303, FAX: 886-2-3366-1303, Email: linglingchueh@ntu.edu.tw]

Key words: in situ RT-PCR, morbillivirus, pygmy sperm whale

INTRODUCTION

Viruses of the Genus Morbillivirus of the Family Paramyxoviridae have emerged in the past 15 years as significant causes of disease and mortality in marine mammals [4]. The identified viruses are canine distemper virus (CDV) in seals and polar bears, dolphin morbillivirus (DMV) and porpoise morbillivirus (PMV) in cetaceans, and phocine distemper virus (PDV) in pinnipeds [11]. PMV was isolated from few harbor porpoises (Phocoena phocoena) found stranded in Ireland in 1988, while DMV infection occurred epizootically in common dolphins (Delphinus delphis ponticus), Atlantic bottlenose dolphins (Tursiops truncatus), striped dolphins (Stenella coeruleoalba), and Risso’s dolphins (Grampus griseus). For example, death of thousands of striped dolphins from DMV infection in the Mediterranean Sea was reported [3]. The PMV and DMV are distinct from PDV and CDV and more closely related to rinderpest virus (RPV) and peste des petits ruminants virus (PPRV). Most dolphins with morbillivirus disease were found dead or in a moribund state then die shortly thereafter. Macroscopically, usually a severe bilateral pneumonia repres-