High Prevalence of Turkey Parovirus in Turkey Flocks from Hungary Experiencing Enteric Disease Syndromes

Elena Alina Palade, Zoltán Demeter, Ákos Hornyák, Csaba Nemes, János Kisary, and Miklós Rusvai

Contact Address: Palade.Alina@aotk.szie.hu

Important Findings

Samples collected in 2008 and 2009, from 49 turkey flocks were tested for the presence of viruses currently associated with enteric disease (ED) syndromes: astrovirus, reovirus, rotavirus, coronavirus, adenovirus, and parovirus. Turkey astroviruses were found in 83.67% of the cases and turkey astrovirus 2 (TAsT-2) in 26.53%. The investigations directly demonstrated the high prevalence of turkey parovirus (TuPV) in 23 flocks (46.9%) experiencing signs of ED, making this pathogen the second most identified after astroviruses.

Significance of Findings

The present study provides strong evidence that there is a high prevalence of TuPV in Hungarian turkey flocks experiencing ED; this finding could imply a potential major role for the pathogen in the development of this complex syndrome. However, due to the considerable genetic diversity of all circulating virus strains, the limitation of current diagnostic techniques, and the fact that most enteric viruses incriminated in poult enteritis complex (PEC) and poult enteritis and mortality syndrome (PEMS) have been directly demonstrated in healthy turkey flocks as well, conclusions regarding the potential implication and role of these viruses in the pathogenesis of ED should be carefully formulated and sustained by planned experimental infections, combined with extensive phylogenetic analysis, and corroborated with epidemiologic field studies.

Additional Information

PEC is an ED syndrome of turkey poult up to 6 wk of age, which, in cases of increased mortality, is referred to as PEMS. Morbidity and mortality are variable, and the economic impact of these syndromes is primarily due to poor production, failure of affected birds to grow, increases in costs of therapy, and poor feed conversion efficiency. The etiology of the disease is not completely understood but is considered multifactorial.

Viral and bacterial agents were isolated from flocks with clinical signs of PEMS. Turkey coronaviruses, astroviruses, and reoviruses have been identified in flocks suffering from PEMS but also in healthy turkey flocks, suggesting that a certain combination of pathogens and factors can lead to PEMS. Turkey coronavirus (TCV), a member of the group 3 coronaviruses, was identified in 1951 as the etiologic agent of a highly contagious enteric disease named “bluecomb disease.” Studies based on immunofluorescence and immunoperoxidase staining procedures determined that enterocytes of the jejunum and ileum and the epithelium of the bursa of Fabricius were primary sites of replication for TCV. In recent years, TCV has been increasingly identified as an important cause of ED in turkeys and has been associated with PEMS; however, studies revealed that TCV was not required for PEMS to occur.

Astroviruses have been associated with acute gastroenteritis in mammals and turkeys, as well as with hepatitis in ducks, and have been detected in birds with PEMS although their exact role remains unclear. TAsT-2 have been isolated from 1 to 3 wk-of-age turkey poult experiencing viral enteritis. A TAsT-2 isolate from turkey flocks with severe signs of PEMS was isolated and referred to as TAsT-2 and proven to be molecularly distinct from the original TAsT-2. Avian nephritis virus (ANV) is known to cause disease in young chickens; it evolves with distinct kidney lesions and enteritis and was recently identified for the first time in commercial turkey flocks. Rotaviruses, such as avian rotavirus (AvRV), are a major cause of enteritis in a wide range of mammalian and bird species. Avian reoviruses (ARV) have been isolated from turkeys with PEMS and also from chickens with running-stunting syndrome. Ever since 1984, paroviruses have been suspected to have a role in ED.

Alta Prevalencia de Parvovirus del Pavo en Parvadas de Pavos en Hungrıa que Experimentan Síndrome de Enfermedad Entérica

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Dirección para contactar: Palade.Alina@aotk.szie.hu

Hallazgos Importantes

Muestras recolectadas en el año 2008 y en el 2009, de 49 parvadas de pavos fueron sometidas a prueba para la presencia de virus que actualmente se asocian con el síndrome de la enfermedad entérica (ED, por sus siglas en inglés): astrovirus, reovirus, rotavirus, coronavirus, adenovirus y parovirus. Se encontraron astrovirus de pavo en 83.67% de los casos y astrovirus de pavo tipo 2 (TAsT-2, por sus siglas en inglés) en 26.53% de los casos. Las investigaciones demostraron directamente la alta prevalencia del parovirus de pavo (TuPV, por sus siglas en inglés) en 23 parvadas (46.9%) que experimentaban signos de enfermedad entérica, haciendo de este patógeno el segundo más identificado después de los astrovirus.

Relevancia de los Hallazgos

El presente estudio proporciona una fuerte evidencia de que existe una alta prevalencia del TuPV en parvadas de pavo en Hungría que experimentan enfermedad entérica; este hallazgo podría implicar un papel potencialmente importante para el patógeno en el desarrollo de este complejo síndrome. Sin embargo, debido a la considerable diversidad genética de todas las cepas virales en circulación, a las limitaciones de las actuales técnicas de diagnóstico y al hecho de que igualmente se ha demostrado directamente que la mayoría de los virus entéricos que están incriminados en el complejo de la enteritis...