



Mini Review

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Challenges and Risks Facing Animal Wealth and Human Health Due to Coronavirus Outbreak

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Abstract

Viral mutations are now threatening livestock and human health, and the most important of these viruses in our time is the Coronavirus, influenza virus, and other viruses. The world has come to view this issue with complete concern, is studying continuously its implications for the global economy and the search for the true cause of these viral mutations is it man-made as a kind of biological warfare? or by environmental factors? In this paper, we discuss the transmission, epidemiology, clinical manifestation and histopathological examinations of coronavirus infection.

Keywords: Clinical manifestation; Coronavirus; Epidemiology; Mutations; Transmission.

Introduction

Coronaviruses belong to family coronaviridae and classified into α , β , γ and δ coronaviruses. These viruses characterized by its crown appearance due to the presence of glycoprotein spherical particles that resemble spikes as it radiates from virus envelop [1]. β -coronaviruses are one of genera of F.coronaviridae which comprised of Bovine coronavirus (BCoV), Middle East respiratory syndrome coronavirus (MERS-CoV), Human coronavirus OC43 (HCoV-OC43), severe acute respiratory syndrome coronavirus (SARS-CoV) [2], canine respiratory coronavirus, equine coronavirus, virus porcine hemagglutinating encephalomyelitis virus and mouse hepatitis [3].

BCoV is one of the important viruses that cause a fatal respiratory and intestinal problems and subsequently economic losses [2]. The Outbreak of coronaviruses is strongly related to mutation gene that lead to emerging of new serotype with different host range and fatal [3]. It is reported that MERS-CoV and SARS-CoV was originated from Egyptian tomb bats and human infected through dromedary camels and seafood market [4,5]. In addition to zoonotic character of coronaviruses ,the genetic diversity cause emerging new coronavirus in every decade and now a new coronavirus has appeared in Wuhan, China, and the world has become threatened [6].

Transmission and epidemiology of a coronavirus

BCoV is transmitted to animals through fecal oral route and in some cases through aerosols of infected animal, in addition to that, it transmitted horizontally from dam to their offspring [7]. The transmission of other coronaviruses including SARS-CoV and MERS-CoV are not completely understood but infection may be through contact with infected animals and bats has critical role in this infection [1,4] .On the other hand these viruses spread widely either in animal or human population ,causing severe world economic losses through reduced performance, diminish production of animal , boost mortality and high cost of treatment of animal and human [7].Furthermore, although strict quarantine measure through closing the market and environmental disinfection are more useful ,it cause bring down the movement of buying , selling ,importation and exportation[5]. SARS-CoV upheaval during September 2012 was caused global economic losses about \$16 billion [1].

Clinical manifestation of coronavirus infection

Animals infected with BCoV exhibited dry cough intermittent, sero to mucopurulent nasal discharge, increased respiratory rate, high temperature, diarrhea and anorexia [8]. Enteritis due to Bcov

manifested by presence of mucoid diarrhea yellow to bloody in color then converted to watery, dehydration, weakness, depression and in the advanced stage in some cases occur coma, and death due to hyperkalemia and acidosis [7]. The clinical sign of CoV infection in human are similar to that in animal according to [1] who reported that human with MERS-CoV infection displayed that cough, sore throat, myalgia and shortness of breath.

Histopathological evaluation of an animal infected by a coronavirus

Respiratory lesions in animals with coronavirus infection including mucopululent exudate in trachea, petechial haemorrhages in tracheal mucosa and consolidation of lung cranioventrally. Microscopically; it found that infiltrates of the pulmonary interstitium by mononuclear cell causing thickening of the interstitium, hyperplasia of the bronchiolar epithelium with desquamation in some parts, the lumen of alveoli, bronchi and bronchioles filled with mucin admixed with neutrophils, bronchial collapse with multinucleate epithelial syncytial cells and hyperplasia of the bronchial associated lymphoid tissue [8].

Enteric lesions of coronavirus infection included focal hyperplasia of cells of intestinal crypt with cell debris inside crypt lumen, boost inflammatory cells in lamina propria [9], degeneration and necrosis of intestinal epithelium, the lumen of the spiral distal colon and rectum may be contained blood clot [7].

Acknowledgments

None

Conflicts of Interest

The authors declare that they have no conflict of interest.

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