Zoonosis and Foodborne Diseases in Pakistan

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RESPECTED EDITOR,

Infectious foodborne disease (IFBD) due to improper food and water management is a challenge for public health and an economic problem mainly in developing countries [1-3]. Poor hygiene status, bad food standards, and illiteracy are predisposing factors [1]. Frequency, severity, and mortality due to IFBD are higher in more prone individuals, including children under five-year-old and the elderly; pregnant women; patients with organ transplantation, malignancy, chemotherapy, AIDS, or chronic liver disease [1].

Pakistan and Brazil also undergo effects of this preventable condition, and the digestive route is common in infections by viruses, bacteria, fungi, or parasites carried through the ingestion of contaminated water or meat, and not well-cooked foods [1-3] Norovirus (44%), Toxoplasma (18%), Listeria (15%), Clostridium (8%), Salmonella (8%), and Campylobacter (7%) are the most common agents of IFBD in Pakistan. Campylobacter is found in raw chicken (48%), raw beef (10.9%), raw mutton (5.1%), vegetables, fruit salads (40.9%), sandwiches (32%), cheese (11%) and milk (10.2%) [1]. Brucellosis is a zoonosis with high priority by the Pakistan National Institute of Health, including the control program that was implemented for the period of 2018–2023 [2]. Worldwide, brucellosis is the most transmissible zoonotic disease after rabies, and human infections are more prevalent in regions where the animal infection is endemic [2]. Brucellosis prevails among the high human populations with intensive animal farming. This severe IFBD is very frequently related to consuming unpasteurized dairy milk, and major challenges include an absence of permanent programs of disease control and lack of coordination among agricultural, environmental, livestock and health activities [2]. Echinococcus granulosus is also another major concern in Pakistan's southern agricultural areas with activities of extensive livestock raising sheep, goats, cows, and buffaloes [3]. The presence of cystic echinococcosis was detected in 9% of the examined animals, with the following prevalence: buffaloes 12%, sheep 10%, cows 9%, and goats 5.1% [3]. Evaluations revealed unilocular (98%) and multilocular (2%) cysts, indicating that the infections by E. granulosus and E. multilocularis are coexisting in the same region. Besides human IFBD, morbidity and mortality of the animals, there is economic prejudice due to the sale loss of the livers where hydatid cysts predominate (64.4%) [3]. Diagnostic pitfalls of hydatidosis increase in individuals living in non-endemic areas. Dos Santos *et al.* reported the case study of an 87-year-old woman who visited a sheep-raising farm in the Brazilian southern region three decades ago and had a longstanding unsuspected giant hepatic hydatid cyst, which emphasizes the diagnostic challenges [4]. Another Brazilian study described a 45-year-old immunosuppressed woman with systemic lupus erythematosus, who often utilized soft cheese and ready-to-eat meats in her daily meals, and developed milky ascites besides meningitis by Listeria monocytogenes. They focused on the possibility of underdiagnosis of opportunistic infection, mimicking the underlying disease and might make the early diagnosis more difficult [5].

Finally, some additional issues playing an eventual role in IFB and related to the treatment, research, and development, including molecular tools should be cited [6-8]. For instance, the role of methionine, histidine, cysteine and proline on the interaction between serum albumin and lomefloxacin; this interaction may decrease in the presence of histidine, methionine and cysteine, and may increase in the presence of proline [6]. The food content of bacterial lipopolysaccharides / mycotoxins causes nuclear receptor defects that can reduce the survival of neurons with neurodegeneration. Besides, absorption of higher contents of the microbial factors predisposes to insulin resistance, cholesterol disturbance, neuron dysfunction and Alzheimer's disease [7, 8].

These comments aim to enhance the interest and suspicion index about IFBD both in endemic and non-endemic regions, contributing to prompt diagnosis and control. Despite serious consequences, some of the IFBD are being neglected worldwide.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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