

Zoonoses and dairying in India

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Zoonoses are diseases and infections that are naturally transmitted between vertebrate animals and humans. A zoonotic agent may be a bacterium, a virus, a fungus or other communicable disease agent. Zoonoses constitute 61% of all known infectious diseases. It may also be noted that out of the 175 diseases considered to be emerging, 75% are zoonotic (Asokan G V. 2011) (WHO 2012).

Zoonoses in India are of great public health importance which is compounded by various environmental, social and economic factors. As a result of these factors playing out, India has been identified as one of the 20 hotspots for highest incidence of zoonotic diseases in the world (The Indian Express 2012).

Global warming is reportedly causing an increasing trend in the prevalence of zoonoses in India (Singh BB. 2011). Further, around 70% of the population in India lives in a rural milieu which mainly relies on farming with close animal contact and frequent exposure to sick or infected ones. The livestock density is also higher, and given the tropical climate, there is also an abundance of vectors that transmit diseases. Poor hygiene, poverty, malnutrition, lack of education, close contact etc, also predispose majority of the rural population to zoonotic diseases (Asokan G V. 2011).

The above factors coupled with a poor system for detection and monitoring of zoonotic diseases, inadequate diagnostic infrastructure and lack of organized national programmes for control of many zoonotic diseases has made this subject an area that requires some serious attention in our country.

Around 200 zoonoses have been described (WHO 2012), of which 45 of them are purported to be transmitted from cattle (Merck Handbook 1998). Information regarding most of the zoonoses in India transmitted from cattle is scanty due to obvious reasons mentioned above. Some of the important and emerging zoonoses are Brucellosis, bovine TB, Leptospirosis, Gastro-intestinal infections,

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Listeriosis, Q-Fever, Tick-borne diseases, Skin infections etc. While some may require medication for complete recovery, some are fatal if prompt and appropriate treatment is not provided.

Brucellosis

Human brucellosis is a significant public health problem in India, the magnitude of which is not known. Persistence of animal reservoir, low physician awareness, poor availability of diagnostic facilities, and the nonexistence of regional data bases contribute towards the perpetuation of human brucellosis in India (Handa R. 1998). Fewer than 10% of the human cases of brucellosis may be clinically recognized and treated or reported (Mantur BG. 2007). The disease exists in the general population in India and high clinical suspicion must be made in patients especially when there is history of animal contact or consumption of unpasteurized milk (Gokhale Y A. 2003).

Brucellosis may often be unsuspected because of its varied clinical manifestations and may be a more important cause of fever than previously considered. There are about 27 symptoms affecting almost all the systems that have been noticed in patients with brucellosis (WHO 2006).

Tuberculosis due to bTB

Bovine Tuberculosis (bTB) infects many domestic and wild animals though cattle are the primary hosts. The main routes of transmission to humans are by consumption of raw milk and inhalation of infectious aerosols in dried bovine sputum. Moreover, the disease in humans caused by bTB and human TB bacteria are identical with respect to clinical symptoms and lesions and would require complex tests to distinguish them (Challu 2007). It is interesting to note that though bTB is a zoonosis, the importance of human TB bacterium as a reverse zoonosis is also gaining prominence with reports of around 9 % and 36% of the humans and bovines respectively having mixed infections with both bTB and human TB organisms (Prasad HK. 2005). Immuno-suppressed and

malnourished people are more likely to develop active TB infection following infection with bTB bacterium (Challu 2007).

Leptospirosis

Cattle are one of the principal hosts for Leptospirosis. Infection in humans is most likely to occur by contamination with infected urine or uterine contents (GIDEON 2009). Farmers who milk infected cows and those who are engaged in agriculture, especially in rice and cane fields contaminated with urine are exposed to infection. Infection rate is also higher in monsoon months (Shivakumar n.d.).

Gastro-intestinal infections

There are a variety of zoonotic agents that cause gastrointestinal disturbances due to contamination of food or water with faecal matter of cattle harbouring the infective agents. The common zoonoses affecting the g.i. tract are Salmonella, E.Coli, Campylobacter, Rota virus, Cryptosporidia and Giardia (Pelzer Kevin 2009) (Yaoyu 2008). The faecal-oral route of contamination is always a possibility in the rural environs where close contact with cattle is commonplace. The young, malnourished, immuno-compromised and pregnant women are usually more susceptible.

Tick-borne infections

Tick-borne infections have been reported from various regions of our country and are a group of zoonoses that requires attention. They may be difficult to diagnose due to their non-specific signs and symptoms. Again, with people living in close proximity with cattle, usually with moderate to high loads of ticks on them, the possibility of these infections being prevalent cannot be discounted. Babesiosis (Marathe A 2005), Rickettsial infections (Akanksha 2010) and Crimean Congo Haemorrhagic Fever (Patel AK 2011) are some of the examples.

Q-fever

Q-fever is also caused by a rickettsial agent that can be acquired by humans when they come in contact with reproductive fluids of infected cattle which have aborted. Infection can also occur by consuming raw milk of infected animal. Pregnant women and immuno-compromised people are more prone to infection (Pelzer Kevin 2009).

Listeriosis

Humans can get the infection when they come in close contact with cattle that have aborted due to the infection. Infection can also occur by drinking raw milk of infected cattle. Listeria is especially hazardous to pregnant women and immuno-compromised people (Pelzer Kevin 2009).

Skin infections

Various infectious agents can cause skin infections in people who are in close contact with infected animals. Dermatophilosis (Pal 1995), Dermatophytosis, (Madhavi S 2011) Cow pox, Buffalo pox (Singh RK 2007)etc are some of the examples. The conditions usually resolve uneventfully after providing appropriate treatment.

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