

Awakening of Zoonotic Viral Diseases

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Animal has been a companion of humans since last several thousand years. We share a strong bond with them, both emotional as well as physical. Animal-derived products are a mainstay of our platter; but along with taste, they brought issues related to our wellbeing. Due to their coexistence and coevolution since beginning of life on earth, animals pose a great risk to the health of humans. As a result of similar physiology and resemblance in genetic makeup, transmission of pathogenic organisms from animal-to-human and *vice versa* is a great health hazard. Therefore, to achieve complete protection of human against any zoonotic disease, it is very important to take the carriers of the disease, animals, into account and to develop a plan to identify animal reservoirs harboring different diseases of zoonotic potential.

There is a long list of diseases transmissible between humans and animals. Many a time, certain diseases, which were initially only thought to be spreading human-to-human in a particular geographic area, were eventually found transmitting from animal-to-human in other parts of the world. This curious scenario of spread of disease is particularly relevant in terms of Hepatitis E virus (HEV) infection. There are more than three million cases of acute HEV infection every year around the world. While in Asia disease (caused by HEV genotype 1 & 2) spread is only through human-to-human transmission, in the industrialized world disease (caused by HEV genotype 3 & 4) spread is *via* animals [1]. The availability of a vaccine against genotype 2 infection in China helps ease the disease burden in Asia, but that vaccine is not available in other parts of the world. Further, there is very little understanding about the mechanism of infection and spread of virus from animal-to-human. This zoonotic health hazard is more prevalent either in patients under immunocompromised situations (e.g. patients infected with HIV or undergoing solid organ transplantation) or those consuming the raw meat of infected animals. About 48% of rhesus monkeys (*Macaca mulatta*) used in laboratory setting and coming from special pathogen free environment, were found to be positive for anti-HEV antibody (Vikas Saxena and Chris Walker, unpublished data). Also, several veterinarians working with swine were found to be positive for anti-HEV antibody [2]. Thus, while there is a need to develop treatment regimen against HEV genotype 3 & 4, at the same time it is important to learn about the disease pathogenesis in animals.

Further, it points towards the imminent threat of zoonotic diseases that are yet to be identified. Greater efforts are needed to explore this understudied section of infectious diseases. The rapid whole genomic sequence analysis is a viable tool. It became handy in the identification of zoonotic isolate of methicillin-resistant *Staphylococcus Aureus* (MRSA) [3]. Similar approaches could be used in the epidemiological investigation of zoonotic diseases around the world. Proactive understanding of such diseases will be useful in their containment and eradication; thus helping in making the world a healthier place to live.

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