

VETERINARY PREVENTIVE MEDICINE: NEED OF THE HOUR IN INDIA

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Abstract: Infectious diseases among susceptible animal population and between animals and humans (zoonotic diseases) are spread by several modes of transmission. Curative and/or clinical medicine was followed to treat the animals for several decades, which concentrate mostly on symptomatic treatment for the ailments. Unless adequate diagnostic facility is provided to the farming community for early identification of diseases in animal population, treatment could be practically difficult. Most of the people of farming community take their animals only when they show frank clinical symptoms, sometimes at the terminal stages of the disease process which resulted in either case-fatality or high cost for the treatment or chronic infection or complications. Eventually there would be huge economic loss to the farmers. The concepts of preventive medicine overcome all these hurdles and safeguard the animals from contracting with infectious diseases. The cost of preventive measures against diseases is comparatively cheaper than the treatment cost. The intangible loss due to disease incidences or outbreaks can also be reduced considerably. Farming community needs to be strengthened with awareness about epidemiological aspects such as prevention, control, eradication, quarantine, mode of spread and economic losses due to diseases.

Keywords: Preventive medicine – Infectious diseases - Awareness of concepts – Importance in veterinary curriculum

Historical perspective

Historically, many infectious diseases struck the world as early 500 BC onwards both in humans and animals. Animals were domesticated for the purposes of hunting, companion, agricultural work, and so on. Many animals were hunt for food. Infectious diseases were major threat to humans since ancient time, and they killed many people throughout the world, examples, smallpox, plaque, cholera, tuberculosis, leprosy, etc. Several diseases were shared in both animals and human beings, like tuberculosis, anthrax, rabies, brucellosis, glanders, etc. Animal population alone faced with several life threatening infectious/contagious diseases like rinderpest, pleuropneumonia, anthrax, foot and mouth disease, influenza, etc. After germ theory in 1500s, the prevention, control and eradication of diseases gained significance by many ways such as through vaccination and quarantine. During the ancient

times and even for many centuries 'curative' concept of medicine was followed in control of infectious diseases. The first successful vaccine developed by Edward Jenner in 1796 was the eye opener for several scientists to develop vaccines against many more diseases in humans and animals. Variolation was the process first started against smallpox using cowpox materials, after that immunization procedures were widely practiced against infectious diseases in many parts of the country.

Incidences of infectious diseases

India is one of the countries located geographically in the tropical climatic condition. It has several climatic patterns because of huge biodiversities. Movement of animals and human population from one State of the country to another State itself makes outbreak of diseases among animal population. The incidences of infectious diseases in the animal population had increased nowadays because of climatic change and increased animal population throughout the world. Contiguous nature of animal population, widespread movement of animals, international trade of animals for breeding and sustained livestock production, trade of foods of animal origin, feed and other materials for livestock and poultry farming resulting in spread of infectious diseases across the world. Apart from this movement of human population has also playing role in the carrying infectious pathogens to several countries in the world. Lacking of regular surveillance and monitoring programs, and screening facilities for the diseases in most of the countries at the point of entry like airport has also paving way for incursion of infectious pathogens into the virgin areas.

Survival strategy and transmission dynamics of infectious pathogens

Infectious pathogens follow several strategies for their survival in the host and the environment, like having multiple hosts, avoiding the external environment (ie, outside the host – mode of spread by coitus), rapidly-in-rapidly-out, developing a resistant form (formation of spores), and antigenic drift or shift. It is important to understand the weakest link in the transmission dynamics of a pathogen to stop its activity. It needs a multidisciplinary and holistic approach of preventive medicine concepts to solve these problems. There are several diseases, which were eliminated from the susceptible population before identification of its etiologic agent only by means of epidemiologic and preventive medicine strategies.

Vectors, both biological and mechanical play significant role in carrying infectious pathogens to several miles and spreading the diseases even from one country to another. Air-borne spread is another major mode of transmission dynamics in disease spread, for example foot

and mouth disease in cattle population. FMD virus can travel more than 300 km over the sea. Several episodes of epidemic and pandemics were associated with air-borne, vector-borne and widespread movement of animals and human population.

Concept of preventive medicine

Prophylactic concept of preventive medicine is more important than the curative clinical medicine in the field of veterinary science. The moral value and cost of the animal is mostly concerned by the farmers. Perhaps, curative medicine is costly for a farmer who keeps five to ten animals for his livelihood. The cost of treatment becomes more uneconomical for them; instead prophylactic vaccination and other preventive protocols can be followed with minimum expenditure. The economic loss definitely will be less. The practice of monitoring and surveillance of the susceptible animal population, early detection of diseases, isolation of infected animals and timely preventive interventions (primary, secondary and tertiary preventive measures) is always better than any other methods followed as curative medicine. Preventive medicine against diseases is always less cost than the curative medicine. Regrettably, the applied preventive medicine is still lacking in many of the countries in the world, particularly in the developing and under developed countries.

As far as veterinary profession is concerned, treating the animals for non-infectious conditions like kidney failure, liver dysfunction, blood transfusion in anaemic cases, etc., may consume lot of man power and money. At the same time infectious diseases can be prevented by simple vaccination procedure either annually or biannually with low cost. Farmers need only this kind of approach under the field. So, it is better to concentrate more on preventive medicine rather than curative concept of clinical medicine.

Veterinary preventive medicine includes understanding of the concepts of epidemiology and its application in the field, microbiological, pathological and parasitological aspects of infectious pathogens. It involves medical detection approach to identify the necessary (etiologic agent) and sufficient causes (predisposing, enabling and reinforcing causes) associated with a disease outbreak.

The policy makers of the government must give importance to the eradication of diseases from the susceptible population by proper implementation and surveillance programs can help to minimize the disease problem to which it does not cause any economic loss to the farming community and national economy too. It all needs to have a discipline of Veterinary Preventive medicine and Epidemiology as a separate entity in the veterinary curriculum to teach veterinary graduates and made available of experts in this field.

Conclusions

"Prevention is better than cure" is not only an aphorism and also a truism with regards to solving the problem of infectious diseases. Without understanding the concept of veterinary preventive medicine, the directed actions against diseases perhaps not a successful.

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