

Avian Influenza (Fowl Plague)

Introduction

Fowl plague is a highly acute viral and devastating disease of chickens. The disease was described in Italy as early as 1878 but the exact etiology was not identified until 1955 as being caused by a type A influenza virus. Type A influenza viruses are also known to affect humans, swine, horses, as well as practically all species of birds.

Influenza infections in the avian species (AI) are truly international, recognizing no geographical boundaries and spreads from country to country in all parts of the world.

The complexity of the problem with this disease was soon recognized when the discovery was made that the virus was not a stable agent like many other viruses and that the AI viruses were continually undergoing change. This meant that the immunity which may be solid enough against a given virus was inadequate if the virus altered its surface antigens. The recognition of antigenic variation finally offered an explanation for the extremes in severity of the disease, mortality and epidemiology.

The problem is further complicated by the fact that the subunits of the surface antigens, which can be readily identified, are not associated with virulence or severity of the disease in a flock. The subunits are known as hemagglutinins (HA) and neuraminidases (NA) of which there are at least 9 distinct types of HAs, numbered 1 to 9, and at least 8 distinct NAs, numbered 1 to 8. These subunits are found in various combinations. Hence, "classical" fowl plague having a surface antigenic composition of H_1N_1 has been frequently encountered in various parts of the world but the disease clinically was mild or asymptomatic and mortalities were slight or negligible.

Another elusive factor involves the inability to demonstrate the virulence and pathogenesis in the laboratory with an isolate made from a flock exhibiting mortalities approaching those caused by "classical fowl plague".

In 1978, 1979, and 1980 severe outbreaks of avian influenza especially in turkey flocks have been encountered in three different areas of the United States. The losses involving turkey market flocks, breeder flocks and chicken operations in Minnesota alone in the 1978 was estimated at \$5,000,000. The mortalities in some of these outbreaks approached 48% and losses due to drop in egg production especially in turkey breeder flocks were enormous. The surface antigens of the AI viruses isolated involved numerous serotypes and combinations which were not confined to the antigenic composition of those usually associated with "classical fowl plague".

Avian influenza (Flow Plague) is a unique and a major disease. Presently most diseases in domestic poultry are controllable however the plurality of antigenic and immunologic types of the virus and mode of their introduction and spread into poultry flocks makes this disease the most potentially economic disruptive malady affecting the poultry industry.

The importance of a mutual understanding of the epidemiology and differing levels of virulence of the isolates on the response of Regulatory Agencies relative to possible embargoes is of great International concern.

At the present time there is a lack of a unified understanding on identification and classification of strain virulence, epizootiology as well as an approach for the control and prevention of AI.

In view of the seriousness of the avian influenza in the U. S. during the past few years and in chickens and in turkeys throughout the world, an international symposium on avian influenza is being contemplated. The objective of an International Symposium by participants from the various parts of the world would be as follows:

Assemble information from scientific and regulatory people from several countries to present their problems and losses.

Need for an international agreement, and understanding, regarding the terminology of "influenza" and "fowl plague".

An International agreement and understanding on control measures of influenza in the avian species, particularly in domestic turkeys, chickens, duck, and geese.

A common understanding among countries regarding the epidemiology and severity of the disease to prevent unnecessary embargos associated with AI infections.

The role of research and regulatory official actions on the control and prevention of AI.

The economic effects of the viruses of differing levels of virulence.

Importance of exotic birds in commerce and their role in the introduction and perpetuation of AI.

The significance of AI viruses in migratory and other wild birds.