Contagious Rhino-Tonsillitis (C.R.T.): A New Virus Entity Unrelated To Other Infectious Diseases In The Dog *

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HISTORY

Since the winter of 1955, a very severe outbreak of a highly contagious disease has destroyed thousands of dogs in France. It was determined that the disease had originated in Normandy and from there it spread to the English Channel and then to the Paris suburbs. Afterwards, similar cases were diagnosed in many parts of France.

This condition was characterized clinically by a diphasic development consisting of: a) a period of rhinitis and pharyngo-tonsillitis, and b) a period, sometime later, of visceral and mostly nervous complications. Only adult dogs were affected.

This disease has been described in Germany and France since the early 1900's under various names such as "contagious broncho-pneumonia of adult dogs", "adult dog distemper", and "canine influenza". The etiology was unknown, but the action of an ultravirus, different from the distemper virus, was presumed by clinicians. Since 1955, the authors have studied the disease and this report is a resume of the previous data and the real results.

CLINICAL OBSERVATIONS

Observations were made on more than 200 cases in various stages in the field and at the Small Animal Hospital of the Alfort Veterinary School. All patients were over one year of age and the mortality was over 50 per cent.

Following an incubation period of three to six days three phases may be seen: a) local inflammation, b) extension of inflammation, and c) complications. The first phase begins with a temperature rise of 3° to 4° F. settling to about 103° F. after 48 hours. There is reddening of the pharyngeal mucosa, loss of appetite, exaggerated sensitivity to palpation of the throat and sometimes a cough. The tonsils hypertrophy, are covered with a dense mucous, and may be congested with fine red points or stripes. The lymph glands of the head become swollen and congested. There is no nasal discharge and the animal has a characteristic expression, as if it had a headache. The tonsillitis persists for 10 to 20 days and may be accompanied with a slight conjunctivitis. Recovery is possible at this stage.

In the second phase the patient may either show a purulent inflammation of the conjunctivae and nares, which may extend to a typical broncho-pneumonia, or

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the tonsillitis is complicated by a dry tracheitis and sinusitis. The submaxillary lymph glands are swollen and the dog becomes apathetic, with total anorexia and photophobia. The mucous in the respiratory tract becomes tenacious and reduced in quantity. This second phase may last for one to three weeks; death may occur from broncho-pneumonia, or the disease extends into the phase of nervous complications.

The third phase is usually sudden in onset, with differing nervous symptoms in individual cases including paraplegia, ataxia, myoclonia, epileptic attacks or encephalitis. At this point, appetite often returns and the muco-purulent discharges regress. Most of the animals die after progressive paralysis; survivors usually show permanent nervous sequelae. Some dogs, as with distemper, exhibit purely nervous symptoms from the start.

PATHOLOGY

No specific gross lesions are evident. In 140 dogs that either died or were euthanized, the following lesions were observed: a) conjunctivitis in 120, b) mucopurulent nasal discharge in 140, c) laryngo-tracheobronchitis in 56, d) bronchopneumonia in 22, e) inflammation of the digestive tract in 105, f) congestion or degeneration of the liver in 84, g) slight icterus in 5, h) renal infarction in 12, i) myocarditis in 20, and j) metritis in five.

Histopathology reveals a characteristic acute inflammation of the tonsils, with excess lympho-plasmocytes and reticulosis. The spleen and lymph glands show reticulosis. The nucleus of the liver cells in nearly all cases show a change in the chromatin leaving a clear space around the nucleolus. Other viscera showed only non-specific inflammatory changes. No inclusion bodies were seen in any sections.

ETIOLOGICAL AGENT

The etiological agent is considered to be an ultravirus, passing easily through largepore filters. It can be recoved from the nasal exudate, the nasal mucosa, the pharyngeal mucosa, and the lymph glands of the head. The virus resists cold at

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 -4° C. for over two months and virulence persists for up to six months when stored at -72° C. Lyophilization reduces virulence considerably. Alcohol does not destroy the virus but *Formol* at 1:1000 is lethal as well as sodium carbonate, caustic sod aand potassium at 3:100. The virus is not affected by penicillin, streptomycin, chlortetracycline, or oxytetracycline. Egg or tissue culture techniques have not proved successful. Transmission is via direct contact and indirect contact through feed, feeding utensils and close housing.

SUSCEPTIBLE SPECIES

The dog, fox and man are the only known susceptible species. The disease produced in the fox is characterized by a more or less severe reaction in the respiratory tract, and the disease is transmissible from fox to dog. This sensitivity of the fox to C.R.T. may explain why dogs in rural regions seem to be more predisposed to attack.

The apparent susceptibility of man was discovered quite by accident. During experiments several laboratory assistants received infection by inhalation. Six suffered from pharyngitis and nasal catarrh and one had an acute and painful laryngitis several times which was accompanied twice with conjunctivitis. It has not yet been possible to re-transmit the virus from man to dog, but antibodies to C.R.T. may be demonstrated in human blood by serological means.

The cat, rabbit, mouse, guinea-pig and ferret did not show any reaction after infection by various routes.

IMMUNITY

Attempts at immunization by administration of repeated doses of virulent virus have not given clear results. In fact, dogs re-inoculated at 20 to 60 day intervals showed an increased sensitivity to the virus, with intense local and general reactions which in several cases led to the death of the animal. It would be wrong, however, to conclude that no immunity can be obtained because 40 per cent of the experimental dogs were resistant to infection.

DISCUSSION

C.R.T. has many features in common with distemper in its clinical symptoms and lesions; however, all cases were in adult dogs, many of which had had distemper previously and recovered. No relationship can be found between the virus of C.R.T. and the following viruses: a) distemper, b) hepatitis, c) human A.P.C., d) "pharyngo-conjunctival fever" of man, or e) infectious catarrhal fever of dogs. C.R.T. virus would therefore appear to be quite separate and specific in all respects and appears to be primarily a disease of the tonsil and rhino-pharyngeal mucosa. Other complications such as pneumonia and nervous disorders would seem to be a result of secondary bacterial or viral invasion due to the weakened state of the animal.

AMVA Members Urged To Donate Blood

The American Veterinary Medical Association's Council on Public Health and Regulatory Veterinary Medicine has endorsed the drive currently underway to collect blood from members of the veterinary profession to improve treatment for persons exposed to rabies.

Moreover, the Council has urged all members of the veterinary profession to cooperate in the program by donating blood.

The ultimate aim of the program is to eliminate the shock syndrome and "delayed serum sickness," occurring in some persons after rabies treatment. This reaction occurs frequently when hyperimmune horse serum is used to treat severe types of exposures, such as bites about the face, neck, head, or hands. Research conducted so far indicates that the replacement of horse serum with high titer human serum globulin virtually eliminates the reaction problem in the administration of tetanus antitoxin.

The Council, in endorsing the program, pointed out that the veterinary medical profession as a group has been exposed frequently to rabies. Many veterinarians have received the Pasteur treatment and possess high antibody titers urgently needed for the development of the new serum.

The drive to collect blood from veterinarians is sponsored by the U.S. Public Health Service, Communicable Disease Center, Atlanta, Ga.; state health departments; state and local veterinary associations; and the National Red Cross.

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