Severe Hepatitis Caused by Delta Virus Infection in Venezuela

From September 1979 to June 1981, an epidemic of severe hepatitis occurred among the Yucpa Indians in western Venezuela, which caused 144 cases and 30 deaths. The outbreaks occurred in three communities; the disease is endemic in other villages. The majority of those affected were children and adults over 25. Eleven autopsies were performed; they revealed that the causes of death were: fulminant hepatitis (55 per cent), acute hepatitis with complications (18 per cent), and chronic hepatitis with hepatic insufficiency (27 per cent).

Although serologic tests suggested that hepatitis B virus was the cause of the outbreaks, investigations made in control villages showed that while hepatitis B was highly endemic, it did not have severe manifestations. One year later, 35 persons who had been affected by the disease during the outbreak were examined, and 80 per cent were found positive for some virus B (HBV) marker. Of the persons from the same villages that did not fall ill, 1.5 per cent were hepatitis B surface antigen (HBsAg) positive and 86 per cent were positive for some marker of hepatitis B virus (HBV).

In the control communities, an average of 7 per cent of the persons were positive for HBsAg and 68 per cent for some marker of B virus.

Tests made on serum specimens of the persons involved in the outbreak and in the control villages for Delta virus antibodies (an imperfect virus which replicates only in the presence of HBV) showed the following results: of 26 persons who fell ill during the outbreak, 17 (65 per cent) were positive for Delta virus antibodies, while of 23 persons who were surface B (HBsAg) carriers but did not fall ill during the outbreak, only one (4 per cent) was positive.

This outbreak of severe hepatitis was apparently due to a Delta virus superinfection among HBsAg carriers in a population extensively infected by hepatitis B virus.

Note: Delta is a hepatotropic agent whose antigen/antibody system depends on the hepatitis B virus for its expression. It was discovered in Italy in 1977 by Mario Rizzetto and, at that time, was thought to be a new indicator of hepatitis B. Subsequently it was demonstrated that it was a specific agent, dependent on hepatitis B virus, and capable of being transmitted to susceptible persons under certain circumstances and of inducing acute and chronic hepatitis. The virus is a small particle (38 nm) coated with HBsAg and with an interior antigen: core delta antigen (cdAg). Its nucleic acid appears to be ribonucleic acid in the form of a twisted strand.

Delta infection may occur both in humans and in chimpanzees, and occurs either as an acute coinfection with hepatitis B or as superinfection in a hepatitis B virus carrier. In the first case, the coinfection induces acute hepatitis. Recent information from Italy suggests that the evolution of this infection is usually accompanied by the development of antibodies specific to hepatitis B and sometimes to Delta antigen. The superinfection of a hepatitis B carrier with Delta virus may cause asymptomatic infection, acute hepatitis, or chronic hepatitis. Although very little specific information is available about the frequency of each of these results of superinfection with Delta virus in hepatitis B virus carriers, in prevalence studies the frequency of Delta infection indicators is usually four or five times higher in persons with chronic hepatitis than in asymptomatic carriers of hepatitis B virus without hepatic disease. It is estimated that between 50 and 75 per cent of Delta infections may lead to chronic infection.

Epidemiological studies have shown that Delta infection is more common in southern Italy. In that region, between 20 and 80 per cent of persons with acute hepatitis B, over 50 per cent of those with chronic hepatitis B, and 10 per cent of hepatitis B virus carriers may have Delta infection. Delta infection appears to spread endemically with hepatitis B and does not appear to be connected with an obvious blood contact. In other places, the infection is observed more frequently in drug addicts and hemophiliacs with chronic hepatitis B. More than 50 per cent of these individuals in almost all regions of Europe and the United States are infected. In these groups, Delta virus is transmitted by direct blood contact, that is, by the classic hepatitis B mechanism. In most of the developed countries, transmission of Delta virus is believed to coincide with transmission of hepatitis B.

(Source: Ministry of Health and Social Welfare of Venezuela, Boletín Epidemiológico Semanal 38, 30 May-5 June, 1982.)