

MYOCARDITIS RESULTING FROM ECHO TYPE 21 VIRUS*

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It has been demonstrated repeatedly that enteroviruses can cause severe diseases in infancy¹. Since the agents were first identified, ECHO viruses have been shown to be etiologic factors in a surprising number of clinical syndromes, including aseptic meningitis, transitory paralysis, encephalitis, illness with fever and rash, undifferentiated febrile illness, summer diarrhea and vomiting, mild respiratory illness and myocarditis². Few cases of myocarditis due to the ECHO group of viruses have previously been reported³⁻⁶. This article presents the clinical and pathological investigations of a 5-month-old boy with myocarditis due to ECHO type 21 virus.

Case Report

A 5-month-old boy was brought to Hacettepe Children's Hospital because of diarrhea, irritability and cyanosis on December 16, 1978. The diarrhea had started five days prior to admission, followed by fever, respiratory distress and cyanosis.

Physical examination revealed a malnourished boy with a fever (38 °C) and tachypnea (80 resp/min), with subcostal and intercostal retractions and tachycardia (200/min), with hypotension (50/30 mmHg) and circumoral and peripheral cyanosis. The liver was palpated four centimeters below the right costal margin. There was pretibial edema. Gallop rhythm was present. Crepitant and sibilant rales were heard at the base of the lungs.

Except for the white blood cell count which was 34,000/mm³, the urinalysis and complete blood count were within normal limits. Bacteriological cultures of throat and blood were negative. A telecardiogram revealed global cardiomegaly. An electrocardiogram showed voltage suppression and ST segment depression. The serum sodium level was 118 mEq/L and the potassium level was 4.5. mEq/L.

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Digitalis and oxygen were given for cardiac failure. Appropriate amounts of sodium and bicarbonate were given for hyponatremia and acidosis. Prednisolone was also administered for respiratory distress. Despite aggressive treatment, tachycardia persisted and twenty four hours after admission there was irreversible cardio-respiratory arrest.

Post mortem histological examination revealed myocarditis, bronchopneumonia (bacterial and viral), subarachnoid hemorrhage, brain edema and fatty liver.

In a virological study of the myocardial tissue, using the explant tissue culture technique⁷, the ECHO type 21 virus was isolated.

Discussion

When the clinician is evaluating a patient with unexplained heart failure or arrhythmia, myocarditis should be considered⁸. To date, when an etiological agent has been identified, this has most frequently been the B group of Cocksackie viruses². However, it is difficult to secure an etiological diagnosis, and such a diagnosis may only be made in the most severe cases.

In early infancy the incidence of ECHO virus infections is probably higher than that of Cocksackie virus infections⁹, but to date only the ECHO 9, 11 and 22 viruses have been isolated³⁻⁶, although a few cases of benign pericarditis have also been ascribed to ECHO virus infections^{10,11}.

In this case, the history of diarrhea and respiratory illness, the clinical and pathological findings and the isolation of the ECHO type 21 virus from the myocardium, all point strongly to the ECHO type 21 virus as the etiological agent.

Treatment of myocarditis is mainly supportive². In animal studies exercise was found to be detrimental¹² and corticosteroids had an adverse effect¹³. In this particular case, malnutrition and the administration of steroid may have had an important adverse effect on the clinical course of the illness.

To the best of our knowledge, this is the first case in which the ECHO type 21 virus has been isolated from the myocardium by means of the explant tissue culture technique.

Summary

This is a case report of the clinical, pathological and virological investigations of a 5-month-old boy who was clinically and histopathologically diagnosed as having myocarditis caused by ECHO type 21 virus.

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