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Case report

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CARDIOVASCULAR CHANGES IN 18-MONTH BOY WITH PURULENT MENINGOENCEPHALITIS

SUMMARY

It is well- known that acute cerebrovascular accidents could provoke changes in hemodynamics, function and electrophysiology of the heart.

The paper presents the case of a child without previous heart disease, who developed left ventricular dysfunction as well as characteristic ECG changes in the form of the rhythm of wondering pacemaker and and a giant T wave, coinciding with an acute meningoencephailitis.

Key words: **meningoencephalitis, ECG, heart**

CASE REPORT

An 18-month boy was admitted to hospital on 17th of October in 2002 for the evaluation of anorexia, somnolence, high fever, vomitting and nuchal rigidity. A week ago he had a cold and was not treated for that.

Physical examination revealed febrile T=38,8ºC, pale and somnolent male toddler, with mild pharynx inflammation and slight nuchal rigidity.

His respitory rate was 32/min.

On cardiac examination, there were normal heart sounds without murmurs, slow and irregular pulse minimal rate 56/min, and increased blood pressure (TA=100/75 mmHg).

Laboratory analyses showed:

• Normal chest roentgenogram and normal fundus examination.

• Normal values of: urea, creatinine, glucose, electrolytes, creatinin-kinase, lactat-dehidrogenase, transaminases, as well as normal arterial blood gases.

• Blood count showed leukocitosis Le=17,6 with 90,3% of neutrophils.

• Obtained Cerebrospinal fluid (CSF) contained two thousand cells per cubic millimeter, with predominance of polymorhonuclears.

• Biochemical analyzes showed proteinorachia = l, 83 g/l and glucorahia = 2,09 mmol/l

• CSF culture - five days later - revealed H. influenza.

First ECG obtained after admission showed the giant T wave and the rhythm of wandering pacemaker (figure 1).

Echocardiographic examination revealed no morphologic and hemodynamic changes except slightly depressed myocardial contractile function with shortening fraction – FS=28%.

Electroencephalogram performed 6h later showed signs of diffuse delta dysfunction (1–2 c/sek) without ictal changes.

ECG were normalized on the second day, as well as myocardial contractility (figure 2).

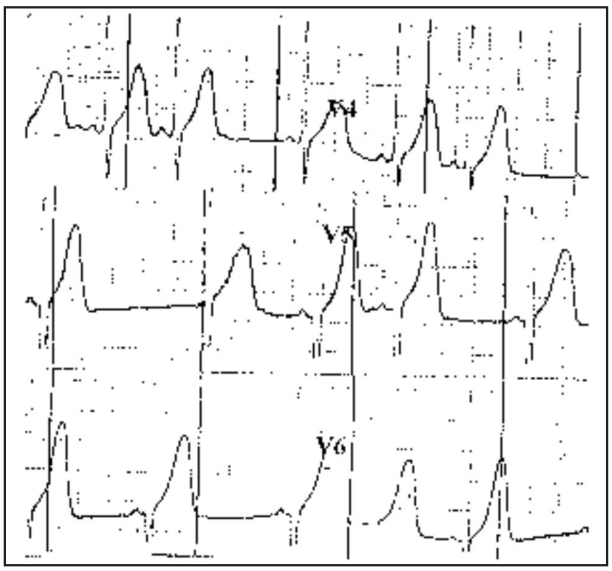

Figure 1. The rhythm of wondering pacemaker and giant T wave in lateral precordial leads

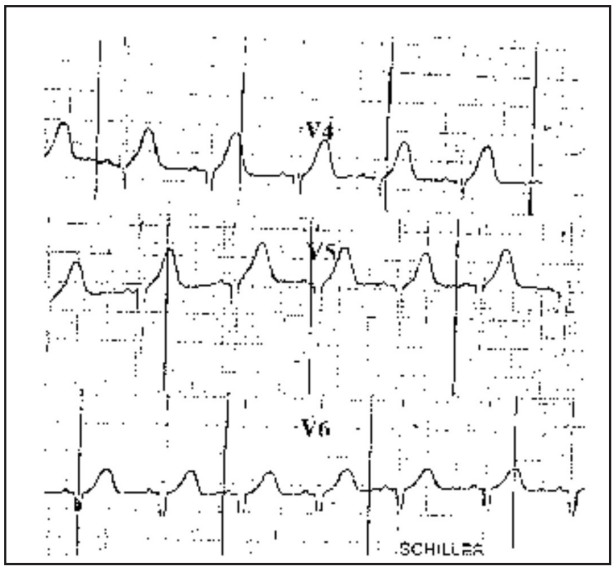

Figure 2. Normal electrocardiogram on the second day in the same boy

The similar patient's condition without significant changes lasted next 4 days. After that, the patient showed signs of improvements.

All these days the patient was somnolent, without neurologic, cardiorespiratory and other complication.

Acid-base, fluid and electrolyte values which were frequently controlled, were also within physiologic range.

The boy was treated with ceftriaxon (14 days, during) and manitol with dexamethasone in doses of 0,4-mg/kg bids, during the first and second day of hospitalization.

DISCUSSION

Until today, accumulated evidence have indicated that acute cerebrovascular accidents could provoke changes in cardiac electropysiology, function and structure (1,2,3).

Abnormal electrocardiographic changes without detectable heart disease have been known to accompany central nervous system disorders since Byer's original description in 1947 (4).

These electrocardiographic (ECG) changes chiefly and mostly represent repolarization abnormalities and may be very bizarre.

The most frequently mentioned are QT prolongation, T-wave flattening or inversion and ST-segment alternations (5).

Left ventricular dysfunction with cerebrovascular pathology was also observed (6).

There are a few possible explanations for this.

New observations suggest the role of cortical and autonomic nervous system as well as neurohumoral mechanism in pathogenesis of myocardial damage and electrophysiologic changes (7,8,9,10).

We described the patient, without previous heart disease who developed acute ECG changes in the form of giant T waves and the rhythm of wandering pacemaker coinciding with an acute meningoencephalitis.

This ECG pattern normalized on the second day after hospitalization.

It is well- known that the giant T wave can reflect parasympathetic (Psy) influence on the heart, although there are other explanations of its origin.

Page et all. described the giant T wave in 2% of adult patients with subarachnoidal hemorrhage (11).

According to our opinion, the giant T vawe and left ventricular dysfunction in this case could be the consequence of the strong Psy influence on the heart.

It was shown that strong and simultaneous sympathetic and parasympathetic discharge could lead to exaggerated negative inotropic and chronotropic vagal influence on the heart.

This could be the condition in this case (12,13,14).

Impaired left ventricular function noticed simultaneously with ECG changes may be the second consequence of this.

The importance of adequate interpretation of possible cardiovascular changes coinciding with ongoing brain pathology lies in their potential for making the right diagnosis especially in children.

They cannot always express characteristic clinical signs of CNS derangements and it is important to differentiate, sometimes similar clinical pre-

sentations like intoxication, metabolic or other possible cardiovascular pathologies in contrast to cerebrogenic cardiovascular changes.

According to everything previously mentioned, good orientation in similar situations in clinical practise could help every physician in his everyday work.

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KARDIOVASKULARNE PROMENE U OSAMNAESTOMESEČNOG DEČAKA SA PURULENTNIM MENINGOENCEFALITISOM

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SAŽETAK

Dobro je poznato da akutni cerebrovaskularni poremećaji mogu dovesti do izmena hemodinamike, funkcije i elektrofizioloških dešavanja u srcu.

Ovo je prikaz dečaka sa akutnim purulentnim meningoencefalitisom koji je koincidirao sa znacima disfunkcije leve komore i elektrokardiogramskim izmenama u formi ritma lutajućeg centra vodiča i džinovskog T-talasa.

***Ključne reči*: meningoencefalitis, EKG, srce**