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THE FEBRILE SEIZURE' INFLUENCE ON THE CARDIAC FUNCTION

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Introduction. Febrile seizures (FS) are usually considered relatively benign, and no reported cases of febrile seizure-induced death have been documented. By contrast, sudden unexpected death in epilepsy is a well-established phenomenon. However, in susceptible individuals, the pathophysiologic mechanisms of it could potentially be induced by a first unprovoked seizure, or even by a provoked seizure. Increasing evidence suggests that some cases of sudden unexplained death in childhood are associated with a history of FS. Epilepsy and seizures can have a profound effect on cardiac function. Cardiac troponins are specific biochemical markers that are highly sensitive and specific for the diagnosis of acute myocardial Infarction. CK-MB is more concentrated in the myocardium and also exists in skeletal muscle so it is not so specific for cardiac damage as troponin. FS is the commonest seizure in pediatric. It occurs between the age of 6 and 60 months. FS can be divided in simple (SFC) and complex (CFC). Evidence on troponin and CK-MB elevation after seizures is based on limited data especially in pediatric. We study the effects of FS on heart in children base on the levels of these two biomarkers.

Aim: is to evaluate the level of cardiac troponin I and CK-MB in children with febrile seizure.

Material and methods. This was a case series study conducted in infants and children between 6 and 72 months old, whom were admitted with impression of febrile seizure in pediatric ward of Shahid Motahari Hospital, Marvdasht, Fars provenience, Iran, from October 2016 to November 2018. The exclusion criteria were patients with diagnosis of meningitis, shigellosis, and pervious neurologic disease with convulsion. Samples contain 3cc clot blood. All samples were taken after 24 hour of convulsion. In laboratory troponin I was checked by Ramp device with immunochromatography method and CK-MB was checked by auto analyzer. The statistical analysis was done using the SPSS version 21. Demographics and other parameters compare with Mann-Whitney U test.

Results. This study contains 35 males (64.81%) and 19 females (35.19%). The male/female ratio is 1.84. The mean age of the patients was 26.85 ± 16.82 months. The level of troponin I was 0.01 in all patients. This value is the lowest normal range of troponin I (0.01-0.2). So the mean of troponin I has no difference between male and female and simple and complex FC. Patients with SFC and CFC have no statistically difference between means of CK-MB in boys and girls ($p=0.65$) and ($p=0.27$) respectively. The mean of CK-MB serum level was 17.19 ± 13.05 and based on gender was 17.50 ± 14.98 in boys and 16.63 ± 8.96 in girls The mean of CK-MB in patients with SFC is 15.12 ± 10.66 . It is 16.41 ± 12.94 in male and 12.75 ± 3.36 in female. This data shows no statistically difference between boys and girls ($p=0.65$). The mean of CK-MB in patients with CFC is 20.89 ± 16.17 . It is 19.50 ± 18.61 in male and 23.29 ± 11.76 in female. There is no significant statistically difference base on gender in this group ($p=0.27$). The mean of CK-MB in CFC group is 20.89 ± 16.17 and in SFC group is 15.12 ± 10.66 . According to this results there is a significant statistically difference between CFC and SFC in mean of serum level of CK-MB ($p=0.03$). Boys are more involved in both SFC and CFC with frequency 65.71% and 63.16% respectively. The difference of CK-MB serum level between SFC and CFC maybe caused by longer time of seizure in CFC than SFC so more skeletal muscles involvement and damaged. According to were mentioned febrile seizure is safe and sudden death in this children is not related to cardiac involvement. But we recommend more study in this field.

Conclusions. This study shows cardiac muscles are saved in course of febrile convulsion as the commonest seizure in children. CK-MB which is not so specific for heart involvement has significant difference in SFC and CFC according to probably more skeletal muscles injury in CFC.