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Levels of aspartate aminotransferase and alanine aminotransferase correlate with severity of clinical symptoms in patients with Chikungunya Fever

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BACKGROUND

Chikungunya fever (CF) is an infection caused by an arbovirus, associated with fever and arthritis in the acute phase with a progression for a chronic phase in 15-60% of the patients. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are cytosolic mitochondrial enzymes abundant in liver but also present in other tissues and their elevation may reflect cellular and tissue damage. This study aimed to investigate the relationship between these enzymes and clinical manifestations of CF in distinct phases of the disease.

MATERIALS AND METHODS

Clinical and laboratory data were collected from a 3-year cohort study with 78 patients. The Stanford Health Assessment Questionnaire (HAQ) and short form-12 health status (SF-12) were applied and clinical examinations and laboratory tests were collected from three quarterly visits.

RESULTS

A total of 78 patients were evaluated, mean age of 50.47 years (range 19-79), of which 66 were female. The median levels of AST and ALT were within normal range in all three trimesters. In the first trimester (n=34), there was correlation of AST levels with visual analog scale (VAS) score for fatigue (r=0.3906 p = 0.0246), with patient mean arterial pressure (PAM) (r=0.4516, p=0.0122), and also patients who referred edema in lower limbs during acute infection were associated had higher AST levels [median of 22 (IQR:21-26.5) vs median of 16 (IQR:14-25), p=0.0320. In the second trimester (n=24), a correlation was observed of AST and ALT serum levels with HAQ, (r= 0.3170 p=0.0281) and (r=0.2847, p = 0.0499), respectively; and with physician global evaluation VAS score (r=0.4302, p=0.0028) and (r=0.3246, p = 0.0277), respectively. Also in second trimester, AST levels correlated with mental domain of SF-12 (r=-0.2875, p = 0.0475), with VAS score for morning stiffness (r=0.3003, p = 0.0403), with patient global evaluation of disease VAS score (r=0.3571, p = 0.0148) and with VAS score for fatigue (r=0.3028 p=0.0386). Patients with HAQ greater than two were associated with higher values of AST [median of 19 (IQR:16-23.5) vs median of 24 (IQR:20-30), p=0.0208. In the third trimester (n=36), there was a correlation of AST levels with PAM (r=0.3786, p=0.0123), ALT levels with VAS score for morning stiffness (r=0.4127, p=0.0054), and of ALT with mental domain of SF-12 (r=-0.4152, p=0.0069).

CONCLUSION

In patients with chikungunya fever, levels of AST and ALT might be correlated with clinical features of disease. Additional studies are needed to confirm if these enzymes are biomarkers of severity of musculoskeletal symptoms of disease.