Viral infections of the central nervous system

Detection of cerebrospinal fluid antibody in children with severe hand, food and mouth disease induced by enterovirus 71 infection and its clinical significance

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Objective To evaluate the clinical significance of anti-EV71 IgM in cerebrospinal fluid(CSF) as a new indicator for early diagnosing children with severe hand, foot and mouth disease(HFMD) induced by enterovirus 71(EV71) by detecting the anti-EV71 IgM level and then analyzing the relationships among the IgM levels, CSF routine examination and patients' clinical features. **Methods** A total of 294 laboratory-confirmed cases of children with severe HFMD infected by EV71 were collected into the research group from March 2014 to June 2014, consisting of 53 fatal cases and 241 severe cases, and their CSF samples underwent enzyme-linked immunoabsorbant assay(ELISA) for anti-EV71 IgM levels, CSF routine and biochemical tests. A total of 41 cases of children with severe HFMD induced by other enteroviruses were collected as antibody-testing control group during the same period. These results combined with patients' clinical data were analyzed with statistical methods. **Results** In the research group, the total positive rate of anti-EV71 IgM in 294 CSF samples of children with severe HFMD infected by EV71 was 60.2% (177/294); the positive rate of anti-EV71 IgM in the fatal HFMD subgroup was 62.3% (33/53); the positive rate of anti-EV71 IgM in the severe HFMD subgroup was 59.8% (144/241). There was no statistical difference in the anti-EV71 IgM positive rate between fatal and severe HFMD subgroups(x^2=0.115,p=0.735). In the research group, patients in antibody-positive subgroup were younger than ones in antibody-negative subgroup (t=2.595,p=0.010). And within the antibody-positive subgroup, the patients (1.93±0.73 years old) with fatal type were younger than the ones (2.64±1.23 years old) with severe type (t=3.15,p=0.002). The CSF nucleated cells count and positive rates in antibody-positive subgroup were higher than those in antibody-negative subgroup (Z=-3.663,p=0.000;x^2=19.089,p=0.000). The nucleated cells in antibody-positive subgroup and antibody-negative subgroup were mainly monocytes (57.03±25.17)% and polykaryocytes (50.47±25.57)% respectively, and the cell classification of the two subgroups showed statistical difference (t=2.343,p=0.020). And within the antibody-positive subgroup, the ratio of the patients with nucleated cells count higher than 100×10^6 /L in fatal type group and severe type group was 69.7% (23/33) and 47.2% (68/144) respectively, and the two ratios showed statistical difference (x^2=5.429 p=0.02). The CSF protein quantity and positive rates in antibody-positive subgroup were higher than those in antibody-negative subgroup (Z=2.158,p=0.031;x^2=5.921,P=0.015), and the two subgroups showed no statistical difference in glucose and chloridion concentrations (p>0.05). **Conclusion** The anti-EV71 IgM levels in CSF can serve as a new indicator for early diagnosing children with severe HFMD induced by EV71. And the anti-EV71 IgM levels in CSF correlated to the CSF nucleated cells count and classification and CSF protein quantity. In the antibody-positive subgroup, the smaller the age or the higher the nucleated cell count, the higher the possibility of patients developing into fatal cases.