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Outbreak of neurological enterovirus A71 infection in Catalonia

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Background: Enteroviruses (EV) belong to the *Picornaviridae* family and they are associated with a wide range of pathologies, mainly asymptomatic or benign infections, such as febrile syndrome and hand-foot and mouth disease, and less frequency respiratory, neurological or systemic diseases. The aim of this study was to describe the incidence and epidemiological characteristics of neurological EV diseases in our hospital between January and October of 2016.

Material/methods: Clinical samples from patients with suspected EV neurological diseases were included in the study: cerebrospinal fluids (CSF) or throat swabs from children with unknown origin fever, meningitis or encephalitis/rhomboencephalitis (RE), and CSF from adults with aseptic meningitis who had been in contact with children. Clinical and laboratory data were recorded. CSF was analyzed for cell count and tested for EV by commercial real-time RT-PCR (EV GeneXpert, Cepheid; and EVPA, Progenie Molecular). Only EV-positive samples from RE cases were genotyped using a specific RT-PCR of species EV-A, B, C which amplify 3'-VP1 region of the viral genome and sequencing.

Results: A total of 165 samples were analyzed and 74 (45%) were EV positive. Of the 74 positive cases, 50 (67.5%) were female; 61 (82.5%) were children and 13 (17.5%) adults. EV was detected in CSF from 68 patients with meningitis and in throat swabs from 6 children with RE (none in CSF). Mononuclear pleocytosis was observed in 50% of cases with a mean of 97 cells/ mm^3 (1-405) in aseptic meningitis and 50% with a mean of 104 cells/ mm^3 (20-311) in RE. All adults had aseptic meningitis and all RE occurred in children. Most of the neurological infections were observed during April and June. The most frequent symptoms in patients with meningitis were fever (93%), headache (88%) and vomiting (75%); all of them evolved favourably. Symptoms in RE cases were ataxia (67%), drowsiness (67%), gait instability (67%), tremors (50%) and dysmetria (33%). Five children with RE (two of them with cervical myelitis) had magnetic resonance (MR) altered (T2 hyperintensity in the pons, medulla oblongata and cervical spinal cord). Four patients with RE received treatment with intravenous immunoglobulin and two of them also received corticoids. Neurological symptoms disappeared in all RE cases after few days. In 3 (50%) of the RE cases EV was genotyped as EV-A71. In the other 3 cases, EV couldn´t be typed but 5'-NCR sequence indicated that EV were EV-A.

Conclusions: An EV outbreak occurred from April to June of 2016 in Catalonia with paediatric cases of encephalitis/RE. This study confirms the association of EV-A71 with these severe neurological infections. In case of clinical suspicion of RE, a craniospinal MR should be performed urgently before 24h and throat and/or stool specimens should be included for EV diagnostic.