

few published articles on the subject, which may be due to underdiagnosis of this condition. It must be suspected, particularly in the third trimester, if foetal echocardiography reveals dilatation and dysfunction of the right ventricle, tricuspid regurgitation and increased flow velocity in the ductus arteriosus measured by Doppler in the absence of structural heart disease.⁴ Identifying the possible cause of the condition requires taking a detailed history with particular emphasis on the diet of the mother and any medications taken during pregnancy.^{5,6} In our series, the type of maternal exposure most frequently associated with this condition corresponded to nonsteroidal anti-inflammatory drugs, as described in the literature,¹ although we found others such as exposure to hydroxychloroquine, which had not been described until now.

The early diagnosis of premature constriction of the foetal ductus arteriosus and the identification of its aetiology are essential in order to reverse or minimise haemodynamic alterations, as progression of this condition may lead to heart failure and foetal death.

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A. Ayerza Casas^{a,*}, L. Jiménez Montañés^a,
M. López Ramón^a, D. Lerma Puertas^b,
M.D. García de la Calzada^a

^a *Sección de Cardiología Pediátrica, Servicio de Pediatría, Hospital Universitario Miguel Servet, Zaragoza, Spain*

^b *Servicio de Obstetricia y Ginecología, Diagnóstico Prenatal, Hospital Universitario Miguel Servet, Zaragoza, Spain*

*Corresponding author.

E-mail address: ayerzac@hotmail.com (A. Ayerza Casas).

Review of para-infectious seizures from January 2012 to March 2014[☆]

Revisión crisis parainfecciosas de enero del 2012 a marzo del 2014

To the Editor:

Parainfectious seizures are afebrile convulsive seizures associated with minor infectious diseases, such as upper respiratory tract infections or acute gastroenteritis without electrolyte abnormalities or dehydration,^{1–6} and are little-known in our country.^{1,3,4}

The aim of this retrospective descriptive study was to determine the incidence of parainfectious seizures in a tertiary hospital and to analyse the main characteristics of these seizures as well as their natural course. The inclusion criteria were having one or multiple afebrile seizures (body temperature equal or less than 37.9°C) in association with a minor infection (upper respiratory tract infection or acute gastroenteritis without electrolyte abnormalities or clinical signs of dehydration); normal psychomotor development; and normal results in diagnostic tests.

We excluded patients that had fever during the seizures, previously diagnosed with epilepsy, or with psychomotor retardation.

Our study (Table 1) included 11 patients ranging in age from 3 months to 5 years, 7 of who were male and 4 female. Only one of them had had a typical febrile seizure in the past.

The number of seizures ranged from a single seizure to a cluster of 10 seizures, and their duration from less than 1 min to 20 min (mean duration, 5.7 min), with 81.8% of seizures lasting less than 5 min. Generalised tonic-clonic seizures were the most frequent type (54.5%).

Of the 11 patients, 5 had upper respiratory tract infections, and 6 acute gastroenteritis.

Salmonella was isolated in 1 of the 5 stool cultures performed, and rotavirus in 2.

An acute-phase electroencephalogram was done in 10 of the 11 patients, and was normal in 40% (3 of the remaining patients had a slow EEG, and another 3 irritative features).

The neuroimaging tests performed included six magnetic resonance studies and one computer-assisted tomography, all of which were normal except in one patient that had non-obstructive non-progressive hydrocephalus.

Five patients required anticonvulsants to control their seizures in the emergency room, and were given benzodiazepines (diazepam or midazolam). Six of the patients that were hospitalised required anticonvulsants at a later point, and sodium valproate and levetiracetam were used most frequently. Only four patients required maintenance treatment at discharge, and one needed combination therapy.

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Table 1 Analysed cases.

Case	Sex	Age	FH	N. seizures	Duration	Seizure type	Intercurrent infection	Blood tests	EEG	Neuroimaging	PL	Tx	Tx at discharge	Outcome
1	Male	0.6	No	2	3	Tonic	URTI	Neutrophils + CRP	Normal	No	No			N
2	Male	0.5	No	2	1	GTC	URTI	Normal	Slow	MRI: normal	Yes: normal	LEV	LEV	N
3	Female	0.2	No	4	1	GTC	AGE	Normal	Normal	MRI: normal	Yes: normal	ER: IV midazolam		N
4	Male	3.8	Epilepsy	2	10	GTC	URTI	Normal	Slow	MRI: normal	Yes: normal	ER: RD + midazolam	VPA	N
5	Male	2.1	Narcolepsy	10	2	GTC	AGE	Normal	Normal	MRI: normal	Yes: normal	LEV	VPA + LEV	N
6	Female	1.4	No	3	5	Secondarily generalised partial	AGE	Normal	Irritative activity	MRI: normal	Yes: normal	LEV	LEV	N
7	Female	4.5	Epilepsy	1	20	Secondarily generalised partial	URTI	Lymphocytosis	Normal	No	No	ER: RD + midazolam	VPA	N
8	Female	4.8	Febrile seizures	1	5	GTC	AGE	Normal	Centrottemporal irritative activity	MRI: hydrocephalus	No			Partial epilepsy
9	Male	2.1	No	1	Unknown	Tonic	URTI	Normal	No	No	No	ER: RD		N
10	Male	2.1	No	2	2	GTC	AGE	Normal	Slow	CT: normal	Yes: normal			N
11	Female	2.1	No	1	8	Secondarily generalised partial	AGE	Normal	Centrottemporal irritative activity	Normal	Normal	ER: RD	LEV	

FH, family history; AGE, acute gastroenteritis; CPR, chain polymerase reaction; N, normal; CT, computed tomography; MRI, magnetic resonance imaging; GTC, generalized tonic clonic; URTI, upper respiratory infection; LEV, levetiracetam; VPA, valproate; ER, stesolid rectal; RD, rectal diazepam.

All patients were followed up at the hospital. Only one patient went on to develop epilepsy (partial seizures with secondary generalisation).

Parainfectious or convulsive seizures associated to minor infections such as acute gastroenteritis or upper respiratory tract infections are rare in Spain.¹⁻⁶

To date, most of the case series conducted in Spain associate parainfectious seizures with acute gastroenteritis.^{1-3,5,6}

The case series published by Lara Helgueda et al.⁴ showed that parainfectious seizures occurred in association with acute gastroenteritis in 67.6% of patients and with upper respiratory tract infections in 32.4%, figures that are very similar to those found in our series, which are 54.5% and 45.5%, respectively.

It is common for multiple seizures to occur in the course of a single infection, but this is not a necessary criterion for diagnosis.¹⁻⁶ In fact, in our study we observed that four of the patients (36.4%) had a single seizure.

The imaging test performed most frequently was magnetic resonance imaging of the brain, which was ordered in 70% of cases and yielded abnormal results in only one patient (hydrocephalus). These data are consistent with what is reported in the literature.⁴

Parainfectious seizures have shown a tendency to be refractory to treatment.²⁻⁵ This was not observed in our series, in which 54.4% of patients required maintenance therapy for cluster seizures and only one patient required combined therapy.

Of all the patients reviewed in this study that had a convulsive seizure diagnosis at admission, only 54.5% were discharged with a final diagnosis of parainfectious seizures.

All patients were followed up in our office and had favourable outcomes, with no subsequent history of seizures save for one patient that developed partial epilepsy.

In conclusion, parainfectious seizures occur rarely in Spain, resulting in underdiagnosis and consequently in the performance of a considerable number of diagnostic tests and the administration of unnecessary treatments.

Conflict of interest

The authors declare that there is no conflict of interest.

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- E. Hernández Frutos*, D. Conejo Moreno,
I. Arribas Montero, M. Hortigüela Saeta, M.L. Angulo García
- Servicio de Pediatría, Hospital Universitario de Burgos, Burgos, Spain*

*Corresponding author.

E-mail address: estherhdezfrutos@gmail.com

(E. Hernández Frutos).