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Gabapentin for the treatment of pain manifestations in children with severe neurological impairment: a single-centre retrospective review

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ABSTRACT

Pain, irritability and feeding intolerance are common symptoms affecting quality of life in children with severe neurological impairment (SNI). We performed a retrospective study to explore the use of gabapentinoid medications for symptom control in children with SNI. Patients attending the palliative care or gastroenterology department being treated with gabapentin for irritability, vomiting or pain of unknown origin were included. Information was gathered retrospectively from medical documentation. Irritability was reduced in 30 of the 42 patients included. Gabapentin was discontinued in 15 children, 12 of whom then received pregabalin. Three children had a good response to pregabalin, six a minimal improvement and three no improvement. These results support the use of gabapentinoids in this patient cohort.

INTRODUCTION

Pain and distress symptoms are among the most challenging clinical problems faced by those caring for children with severe neurological impairment (SNI). Up to 50% of children with severe cognitive impairment are reported to have pain episodes every week.[1] Even in the context of an apparent gastrointestinal source, the underlying cause for pain and irritability often remains unclear.[2] Both central neuropathic pain and visceral hyperalgesia, an increased response and sensitivity to stimuli within the gastrointestinal tract,[3] are potential causes of this pain and irritability.[4 5]

In a study published over a decade ago, Hauer *et al* first identified the potential benefits of gabapentin in nine children with SNI[4] and a follow-up study by the same author identified an improvement in pain behaviours in over 90% of 22 children treated with gabapentin.[5] We performed a retrospective study in 42 patients, to see if the findings of Hauer's seminal studies[4 5] could be replicated, and to investigate if pregabalin is an appropriate second-line agent for this indication.

METHODS

A retrospective chart review of paediatric patients with SNI attending the gastroenterology and palliative care services at Our Lady's Children's Hospital, Crumlin was performed. All patients who had been prescribed gabapentin treatment for pain or irritability of unknown origin were included. Information was gathered from medical notes. Prior to commencing gabapentin all children in this study were formally clinically evaluated by the paediatric gastroenterology or palliative care services, and investigated or treated empirically for organic disease, without improvement of their symptoms. The rationale for using gabapentin or pregabalin in these children with possible visceral hyperalgesia was based on its role in reducing neuropathic pain as well as its central effects.[6]

Patients were not involved in the design or the conduction of this research.

RESULTS

There were 42 patients included in the study, with follow-up ranging from 3 to 63 months and a mean duration of 21 months—a total of 75 patient-years' follow-up. The most frequently reported symptoms prior to commencement of gabapentin were crying and irritability, occurring in 39 and 37 children, respectively. A good or very good overall response to gabapentin was reported in 25 patients, while minimal or no response occurred in eight and seven patients, respectively. Improvement in irritability was reported in 30 patients, and 17 patients required less pain medication (table 1). Increased lethargy was reported in three cases and there were isolated cases of vomiting, alopecia, twitching and raised liver enzyme levels. There was an apparent loss of response over time in four children (table 1). The mean duration of gabapentin treatment

Table 1 Effectiveness of gabapentin

	n	%
Overall response to gabapentin		
Deteriorated	1	2
None	8	19
Minimal	7	17
Good	10	24
Very good	15	36
Not documented	1	2
Change in irritability		
Yes	30	71
No	11	26
Not documented	1	2
Pain reduction		
Yes	17	40
No	23	55
Not documented	2	5
Adverse effects		
None	31	74
Improvement reducing over time	4	10
Lethargy	3	7
Twitching	1	2
Alopecia	1	2
Vomiting	1	2
Elevated liver enzymes	1	2
Gabapentin discontinued	15	36
Of them		
Alopecia	1	7
Asymptomatic	1	7
No improvement	1	7
Changed to pregabalin	12	80

in those four children was 25 months. All were on the highest dose of 60 mg/kg/day.

Gabapentin was switched to pregabalin as a second-line agent in 12 of the 42 children. The dose of gabapentin was maximised prior to switching in 11 of the children. There was no noted effect of pregabalin in two patients, minimal in six, good in three and not documented in one (table 2). The mean duration of follow-up of patients on pregabalin was 13.5 months.

Table 2 Pregabalin

	n	%
Total switch to pregabalin	12	
Rationale for change to pregabalin		
Lethargy	2	17
Ongoing symptoms	6	50
Elevated liver enzymes	1	8
Improvement reducing over time	3	25
Efficacy of pregabalin		
Deteriorated	0	0
None	2	17
Minimal	6	50
Good	3	25
Very good	0	0
Not documented	1	8

DISCUSSION

Acknowledging the limitations surrounding the retrospective nature of this study, it nevertheless serves to corroborate the observations of Hauer *et al*[4 5] and more than doubles the numbers of reported children with SNI receiving gabapentin. It suggests a possible role for pregabalin where gabapentin fails or is not tolerated. Perhaps more importantly, it provides evidence for the efficacy of these medications in a very challenging and growing cohort of children where there otherwise exist extremely limited therapeutic options.

Contributors AC conceptualised and designed the study, designed the data collection instruments, collected the data, drafted the initial manuscript, and reviewed and revised the manuscript. RM designed the study, designed the data collection instruments, collected the data, and reviewed and revised the manuscript. SH and AB conceptualised the study, designed the data collection instruments and critically reviewed the manuscript for important intellectual content. BB and MD conceptualised and designed the study, designed the data collection instruments, carried out the initial analysis, and reviewed and revised the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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