

A review of attendances at Paediatric Accident and Emergency Department at Mater Dei Hospital for neurological complaints Patient

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Abstract

Aims: Attendances at paediatric accident and emergency department (A&E) during a six month period were reviewed to determine the proportion of children with neurological complaints, type of symptoms and the outcomes in terms of admissions, discharges and out-patient referrals.

Methods: Neurological complaints were classified as (a) febrile convulsions, (b) unprovoked seizures, (c) status epilepticus, (d) headaches, (e) altered consciousness, (f) acute ataxia, (g) flaccid weakness, (h) visual loss, or (i) others. Outcomes of these attendances were also recorded as either admission, referrals to out-patient clinics or discharges from A&E.

Results: A total of 7670 children attended paediatric A&E during the study time of which 352 (4.5%) presented with neurological complaints. 173 children (49%) presented with headache, 54 (15.3%) presented with unprovoked seizures, 51 (14.4%) presented with febrile convulsions, 34 (9.6%) presented with altered consciousness and the remaining 40 children (11.7%) presented with various other complaints. 24.8% of children who presented with headache were admitted, 34.1% were referred to out-patient clinics and 41% were discharged. In contrast, 75.5% of children who presented with unprovoked seizures were admitted, 22.2% were referred to out-patient clinics and 3.7% were discharged. There were no deaths.

Conclusion: 1 in 20 children who attended paediatric A&E presented with neurological complaints. One half of these children presented with headache, around one third presented with seizures (febrile and unprovoked), around 10% presented with altered consciousness. Around a half of these children were admitted, a quarter were discharged home and the other quarter were referred to out-patient clinics.

Key Words

Emergency Service, Hospital; Neurologic Manifestations; Paediatrics

Introduction

The development of specialized health services translates into a better holistic service for patients. The introduction of paediatric sub-specialities at Mater Dei Hospital (MDH) is an important development in paediatric health care in Malta. Periodic review is necessary in order to encourage further service developments or improvements in quality of such paediatric specialist services.

There is a paucity of literature about attendances at paediatric Accident and Emergency (A&E) for neurological complaints, both on a local as well as

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on an international level. We looked at attendances at paediatric A&E at MDH for neurological complaints, with the aim of determining the following:

- The number of children with neurological complaints, and their ages
- The proportion of children who presented with neurological complaints when compared to the total attendees at paediatric A&E
- The main type of complaints
- The proportion of admissions, discharges and out-patient referrals.

Methods

This was a prospective case-note review of all paediatric A&E attendances for neurological complaints over a six month period from January to June 2013. Details of patient age, gender, main symptoms and main outcome of all such A&E episodes were compiled. The main presenting symptoms were classified as follows:

- Febrile convulsions
- Unprovoked seizures
- Status epilepticus
- Headaches
- Altered consciousness
- Acute ataxia
- Flaccid weakness
- Visual loss
- Others

This data was compiled using standard audit forms and all data was analysed using Microsoft excel.

Results

A total of 7670 children attended paediatric A&E during the six month period between Jan 2013 and June 2013. Of these, 352 children (4.5 %) had one or more neurological complaints. Patients' ages ranged from 2 months to 16 years with a mean age of 6 years and a standard deviation of 4.7 years. 45% were female and 55% were male. (Table 1)

173 children (49%) presented with headache, 54 (15.3%) presented with unprovoked seizures, 51 (14.4%) presented with febrile convulsions and 34 (9.6%) presented with altered consciousness. These four types of complaints accounted for 88.3% of all paediatric attendances for neurological complaints during the study period. The remaining 40 children (11.7% of attendees) presented with various other

complaints: Acute ataxia (4 cases), visual loss (3 cases), head lump; neck pain; ptosis; Marcus Gunn phenomenon; sudden inability to bear weight; torticollis and occipital swelling (6 cases).

Looking at these attendances as a whole, 43.4% were admitted, 27.6% were discharged home and 29.4% were referred to out-patient clinics. Only one child required ITU admission, and there were no deaths. Of the admissions, 75% of attendees were admitted under the care of the general paediatric consultants, and 25% of attendees were admitted under the care of the paediatric neurologist.

Further analysis of the most common neurological complaints

A. Headache complaints

173 children (49%) attended paediatric A&E with headache symptoms of which 90% were over 4 years of age. 24.9% were admitted, 41.2% were discharged and 34.3% were referred to out-patient clinics. Of the admissions, 79.1% were admitted under a general consultant and 20.9% were admitted under the neurology consultant. (Table 1)

B. Unprovoked seizures

53 children (15.3%) attended paediatric A&E with unprovoked seizures. The majority of patients (68%) were under 8 years of age, and the remaining 32% of patients were 8 to 16 years of age. There was only one case of status epilepticus. 75.5% were admitted, 22.6% were referred to out-patient clinics and 3.7% were discharged. Of the children with unprovoked seizures who were admitted, 47% were admitted under the care of the general paediatric consultants, and 53% were admitted under the paediatric neurologist.

C. Other complaints

The remaining 11.7% of attendees presented with the following complaints: acute ataxia (4 cases, 1.1%), visual disturbance (3 cases, 0.8%), status epilepticus (1 case, 0.28%) and other miscellaneous complaints: head lump, neck pain, ptosis, Marcus-Gunn phenomenon, sudden inability to bear weight, torticollis, occipital swelling and non-specific headache associated with other complaints (32 cases, 9%).

Table 1: This table shows main findings of this review of Paediatric A&E attendances for neurological complaints

	Neurological complaints	%	% of total no of children attending paediatric A&E From Jan to June 2013
Total no of children attending Paed A&E	7670	-	-
Children presenting with neurological complaints	352	-	4.5
Gender			
Male	191	45	-
Female	161	55	-
Headache	173	49	2.3
Discharged	71	41	-
Referred to Out-patient clinics	59	34.1	-
Admitted (total)	43	24.8	-
Admitted under General Paediatricians	34	79	-
Admitted under Neurology Consultant	9	21	-
Seizures	105	29.8	1.3
Unprovoked seizures	54	15.3	0.7
Discharged	2	3.7	-
Referred to Out-patient clinics	12	22.6	-
Admitted (total)	40	75.5	-
Admitted under General Paediatricians	19	47	-
Admitted under Neurology Consultant	21	53	-
Febrile seizures	51	14.4	0.7
Altered consciousness	34	9.6	0.4
Other presenting complaints	40	11.6	0.52

Discussion

The study has shown that 4.5% of children who attended Paediatric A&E at Mater Dei Hospital during the period January 2013 and June 2013 presented with neurological complaints.

Headache accounted was the most common presenting complaint (49%) and 25 % of this group required hospital admission and further investigation. In contrast to unprovoked seizures, attendance to A&E was uncommon under 3 years of age. Headache accounted for 2.25% of all paediatric medical A&E attendances and in comparison to other studies, headache seems to be commoner in our cohort. For instance, the proportions of children presenting with headache reported by Burton et al ¹, Kan L et al ² and Conicella et al ³ were 1.3%, 0.7% and 0.8% respectively. This comparison needs to be

interpreted with caution as our study period was only 6 months and our setting may be very different from other centres. It is plausible that given that A&E is relatively very accessible in Malta when compared to other countries, children with functional headache and also anxiety related headache may be over-represented in our cohort. 45% of patients who presented with headache were referred to outpatient clinics, raising the question of how of many these patients could potentially be managed on a non-urgent basis by GPs or their paediatricians on an out-patient basis.

Unprovoked seizures and febrile convulsions were the second most common cause of attendance to paediatric A&E for a neurological complaint. 105 children attended with seizures and roughly half of these were febrile seizures and half were

unprovoked seizures (first unprovoked, epileptic seizures or other non-epileptic events). (Table 1) This accounts for 1.36% of all paediatric A&E attendances during the six month study period. In contrast to headache patients, children with seizures tended to be young, i.e. 1 to 7 years of age. This observation may be explained by the fact that half of the group of children with seizures had febrile convulsions which tend to present between the 2nd and 5th years of life. It is also known that certain forms of epileptic seizures also tend to present in certain age groups, and that overall epilepsy tends to present in the first few years, declines towards the latter part of the first decade and rises again in adolescence. These factors may also have shifted the age of presentation of seizures to the lower age groups in this cohort.

Martindale JL et al ⁴ found that 2% of all paediatric A&E attendances were for seizures, while Smith LJ et al ⁵ found that A&E attendances in children over one year of age accounted for 1.2% of all district general hospital A&E attendances. This suggests that our cohort compares well with the literature.

10% of our cohort presented with altered consciousness and this accounts for 0.4% of all paediatric attendances to A&E. (Table 1) Although the numbers are small, the data shows a tendency for this problem to be commoner in the older age groups in this cohort. Altered consciousness calls for prompt recognition, admission, careful monitoring and appropriate investigation, especially in young and non-verbal children. There is a clear lacuna in the literature about paediatric attendance at A&E for altered consciousness. In adults, Kanich W et al 2002 ⁶ reported that altered consciousness accounts for 5% of all adult medical A&E attendances. In contrast, Kekec et al 2008 in another adult study reported that 0.57% of all A&E attendances had altered consciousness and that 6% of these patients i.e. 0.003% of all attendances were under 14 years of age⁷.

Regarding the outcomes of attendances to paediatric A&E with neurological complaints, there were no deaths during the six month period of this study. The majority of children who attended with headache were discharged, referred to out-patient clinics, or in a smaller proportion of cases admitted under the care of the general paediatric consultants. In contrast, children you presented with unprovoked seizures were either admitted under the care of the

paediatric neurologist and the general paediatricians in roughly equal proportions, or referred to out-patient clinics, but only rarely discharged.

The strengths of this study are that given that paediatric A&E at MDH caters for the whole of the Maltese population (including urgent referrals from the private sector), this data is representative of the whole paediatric population in Malta. Moreover, data collection was performed prospectively using clear and consistent criteria, and the results have answered the research questions clearly. This information is clinically relevant and may influence future administrative decisions about paediatric services at MDH.

Although 352 attendances is not a small number, 6 months as the duration of this study is a relatively short period of time.

This review invites further research particularly about the frequency and quality of management of neurological emergencies in A&E, particularly status epilepticus. This could be approached through an audit of the management of status epilepticus, taking NICE guidelines and other guidelines as the standards. Further review of children attending paediatric A&E with headache may be called for, looking at their final diagnoses as classified by the International Classification of Headache, the level of functional disability, referral patterns to out-patient clinics and interim management. This could be approached with a prospective study that looks into level disability at the time of presentation, childrens' and families' perception of the symptoms during the interval until they are reviewed in clinic and their final diagnoses.

Regarding patients presenting with seizures, further review of final diagnoses and referral pattern to out-patient clinics will be useful, particularly with a view to see whether the introduction of a first seizure clinic would improve patient management and waiting time.

Conclusion

This review of a group of 352 children who attended paediatric A&E at MDH for neurological complaints during a six month period shows some important points. During this period, around 1 in 20 children seen at paediatric A&E presented with neurological complaints. One half of these children presented with headache, around one third presented with seizures (febrile and unprovoked), and the rest presented with altered consciousness

and other complaints. Around a half of these children were admitted (including one child who required admission to intensive care unit), a quarter were discharged home and the other quarter were referred to out-patient clinics. There were no deaths.

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