Original article

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Short-term outcomes and major barriers in the management of convulsive status epilepticus in children: a study in Georgia

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Introduction

- Convulsive status epilepticus is the most common childhood neurological emergency in developing countries
- Lack of specialized protocols for emergency services is a main hallmark of pre-hospital management of CSE
- Restricted availability of intravenous second-line antiepileptic drugs (AEDs) is a hindering factor in Georgia
- Buccal midazolam, rectal diazepam, and lorazepam are not registered in Georgia

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Study aims and methods

- Aims
  - Evaluation of the epidemiological features of convulsive status epilepticus in paediatric patients.
  - Identification of obstacles influencing the management of patients with convulsive status epilepticus in Georgia .

- Methods
  - A prospective, hospital-based study was performed.
  - Paediatric patients with CSE, admitted to the emergency department of a referral academic hospital from 2007 to 2012 and treated according to an adapted protocol, were studied.

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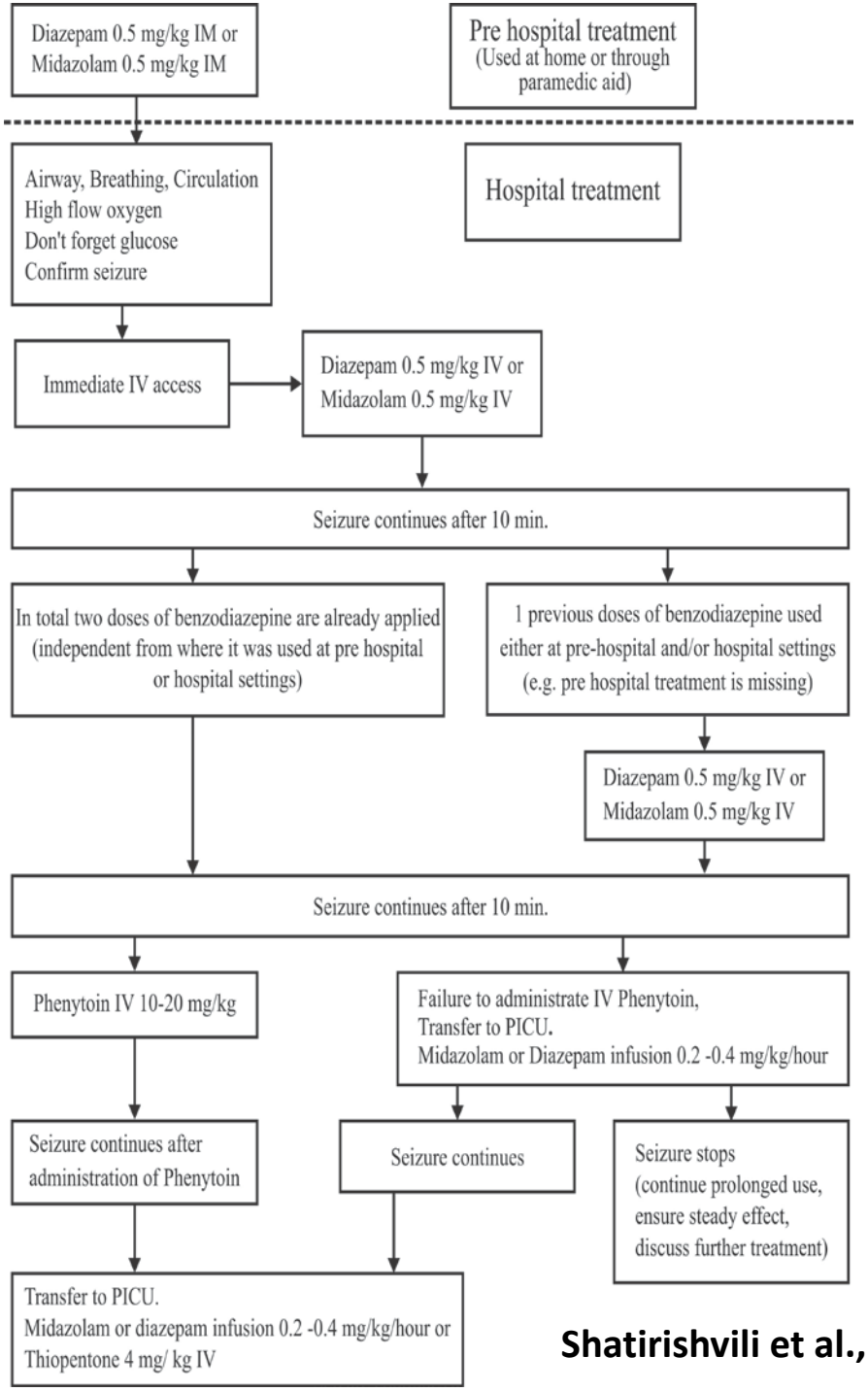
Adapted treatment protocol of CSE



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Results

- Case fatality rate (CFR) was 8%
- Recurrent CSE manifested in 23% patients
- 44% individuals had a previous diagnosis of epilepsy
- Neurological deterioration after CSE developed in 17% patients
- The nature of the new neurological consequences in the entire cohort were as follows:

    - Diffuse persistent hypotonia
    - Hemiparesis
    - Cranial nerve palsy
    - Cognitive impairment
    - Loss of previously reached developmental milestones

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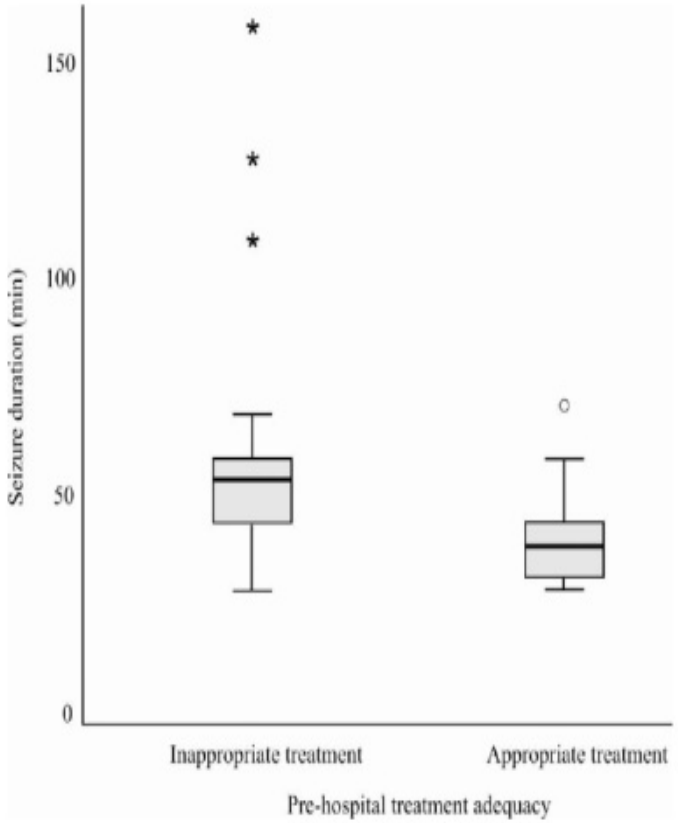
Results

- The minimal time from seizure onset to BZD administration at pre-hospital setting was five minutes

- The seizure duration in the timely intervention group was significantly shorter compared to those with delayed intervention (Fig. 1)

Figure 1. Seizure duration and pre-hospital treatment adequacy



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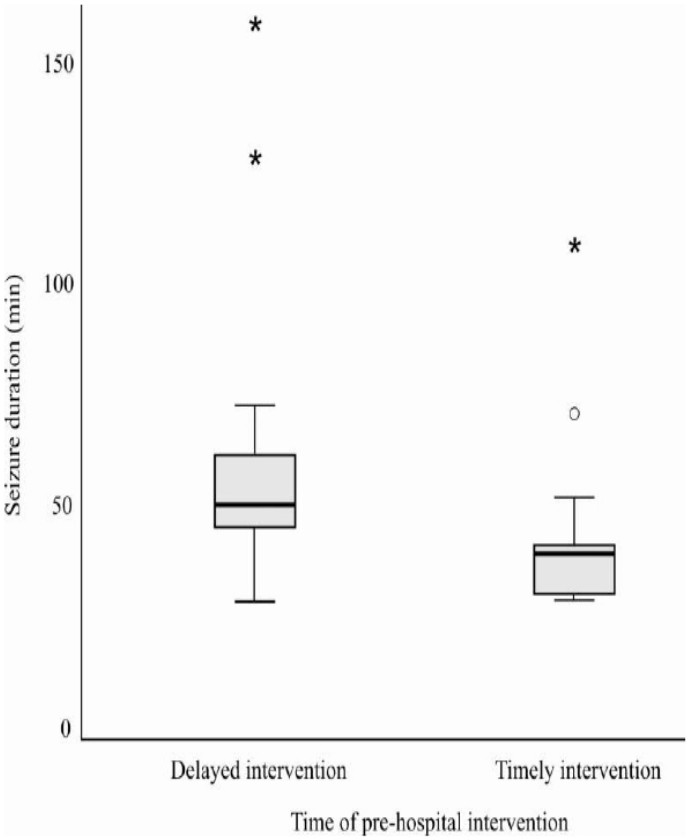
Results

- 65% patients received “appropriate” pre-hospital treatment

- The seizure duration in these cases was significantly shorter, compared with the “inappropriate” group (Fig. 2)

Figure 2. Seizure duration and time of intervention



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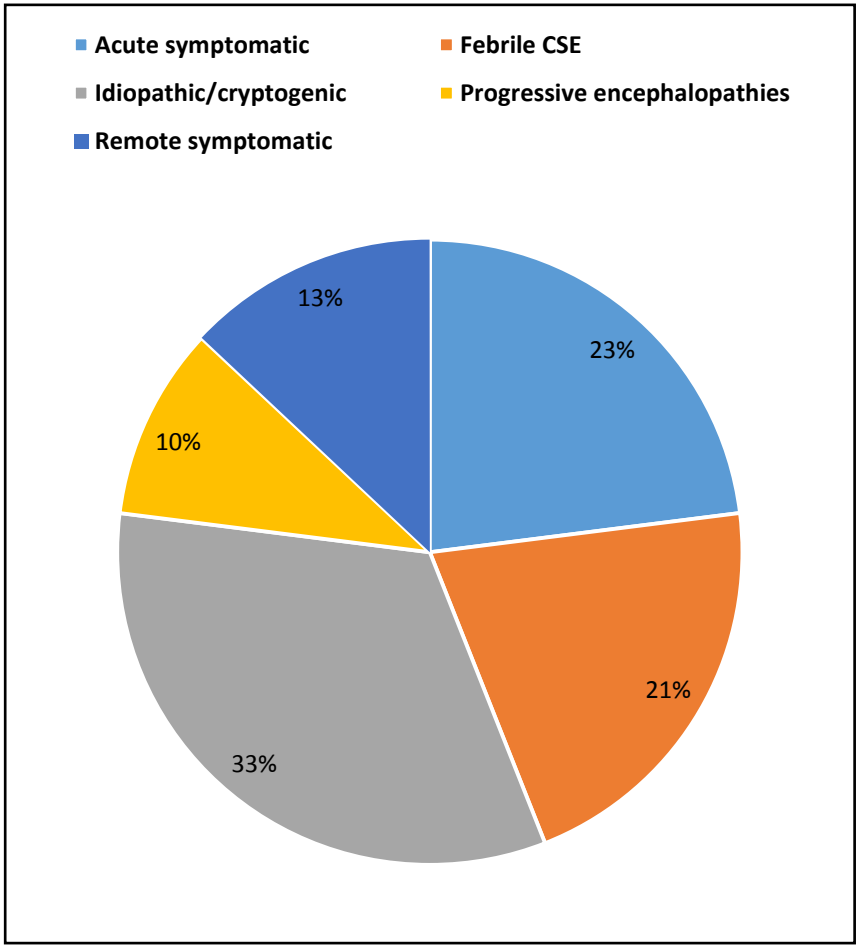
Etiology of CSE

Aetiology	n (%)
Acute symptomatic	11 (23)
Viral encephalitis	3
Bacterial meningitis	1
Tuberculous meningitis	1
Haemorrhagic stroke after rupture of arteriovenous malformation	1
Sinus thrombosis	1
Ischaemic stroke	1
Posterior reversible encephalopathy	1
AED withdrawal	1
Aspiration syndrome	1
Febrile CSE	10 (21)
Idiopathic/cryptogenic CSE	16 (33)
Progressive encephalopathies	5 (10)
Dravet syndrome	2
Migrating partial epilepsy of infancy	1
Congenital disorder of glycosylation CDG type 1	1
Urea cycle disorder	1
Remote symptomatic	6 (13)



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Conclusions

- Acute symptomatic aetiology was the second most frequent cause, with predominating infection of the central nervous.
- Delayed pre-hospital treatment intervention increases risk of seizure prolongation.
- Unavailability of injectable second-line AEDs leads to repeated use of BZDs and, as a result, to increased need for mechanical ventilation.
- Use of artificial ventilation is not associated with increased mortality.

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