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Tick-borne encephalitis in children treated in Kaunas Hospital during 2012-2019

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Summary

Background. Lithuania has the highest tick-borne encephalitis (TBE) rate in Europe (25/100 000*). Even though TBE incidence in children is lower (9/100 000*), it may still cause long-term consequences. Therefore, it is essential to further investigate its clinical and epidemiological characteristics in children.

Aim. To evaluate epidemiological and clinical characteristics of children with TBE.

Methods. We performed a retrospective analysis of 87 cases of children with confirmed TBE who were hospitalized in Kaunas Hospital of the Lithuanian University of Health Sciences from 2012 to 2019. Each case of TBE was identified with neurological symptoms and positive serological tests.

* ULAC (The Centre for Communicable Diseases and AIDS) data

Results

- 87 children (55.2% male, 44.8% female), 1-17 years old.
- 50.6% - tick bite, 6.9% - exposure to unpasteurized milk.
- **Incubation period** - 1-60 days (19 days on average).
- **Biphasic course** - 70.1% with an average of 13 days between the phases.

SYMPTOM	FREQUENCY % (N)
Headache	100 (87)
Nausea	85.1 (74)
Vomiting	78.2 (68)
Drowsiness	67.8 (59)
General weakness	66.7 (58)
Meningeal signs	93.1 (81)
Nuchal rigidity	79.3 (69)
Tripod sign	77 (67)
Kernig's sign	37.9 (33)
Brudzinski's lower sign	14.9 (13)
Brudzinski's upper sign	9.2 (8)
Focal neurological signs	93.1 (81)
Tremor	82.8 (72)
Impaired balance	73.6 (64)
Coordination dysfunction	40.2 (35)
Cranial nerve damage	34.5 (30)

Results

- Isolated meningitis - 57.5%, meningoencephalitis - 41.4%, meningoencephalomyelitis - 1.1%
- **Pleocytosis** - 94.3% (average WBC count - 111.7 per μL , protein - 0.5 g/l)
- Duration - 12 days
- Early **residual signs** (75.9%):
 - Tremor of the tongue, eyelids and fingers
 - Asthenia
 - Headache
 - Balance or coordination disorders
 - Fatigue

FORM	AGE GROUPS		Total N (%)
	1 – 8 years N (%)	9 – 17 years N (%)	
Mild*	17 (77.3)	33 (50.8)	50 (57.5)
Moderate – severe **	5 (22.7)	32 (49.2)	37 (42.5)
Total	22 (100)	65 (100)	87 (100)

$p < 0.05$

**Mild form includes cases of meningitis. **Moderate-severe form includes cases of meningoencephalitis and meningoencephalomyelitis.*

Conclusions

- Only a half of the subjects reported having a tick bite.
- Younger children tend to suffer from moderate to severe forms of TBE less frequently than older ones.
- The majority of children had residual signs of TBE upon discharge from the hospital, which shows the need for them to be followed up.