

# The etiology, treatment and recovery in acute facial palsy in children living in *Borrelia burgdorferi* endemic area, South-Western Finland

Heidi Pöyhönen (hmlaut@utu.fi)<sup>1</sup>, Laura Lehtonen<sup>2</sup>, Ville Peltola<sup>1</sup> and Tuire Lähdesmäki<sup>1</sup>;

<sup>1</sup> Department of Paediatrics and Adolescent Medicine, Turku University Hospital and University of Turku, Turku, Finland.

<sup>2</sup> University of Turku, Turku, Finland

## BACKGROUND

Facial palsy causes facial weakness with loss of taste, hyperacusis, and decrease of salivation and tear secretion. Lyme borreliosis is a common cause of acute facial palsy in children living in *Borrelia burgdorferi* endemic areas, and the empiric treatment is usually targeted on it. Other causes can be trauma, inflammation, other infection than borreliosis and neoplasia, or the etiology can remain unknown. The overall recovery of facial palsy in children is known to be relatively good.

## AIM

Our aim was to investigate the incidence of borrelia infection and other etiology, and recovery results in facial palsy patients in borrelia endemic area of Turku.

## MATERIALS AND METHODS

We collected medical record and laboratory data of patients under 17 years of age (n = 94) treated for facial palsy in the Department of Paediatrics and Adolescent Medicine, Turku University Hospital, in years 2002 - 2016. Positive antibodies against flagellar antigen, positive C6 index, positive *B. burgdorferi* PCR in CSF, or positive intrathecal antibody index were considered as definite Lyme borreliosis diagnosis. We examined the outcome after facial palsy in *Borrelia* and non-*Borrelia* groups based on medical records. House-Brackmann grade 1 (normal) or 2 (slight facial weakness noticeable only in near inspection and complete closure of eye with minimal effort) were noted as a good healing result.

## RESULTS

The etiology of facial palsy was Lyme borreliosis in 35 patients. Other etiology is seen in **Figure 1**. Antimicrobial treatment was targeted on borrelia infection (**Figure 2**). Oral steroid treatment was given to 20 patients. The overall recovery was fast (< 2 months) in 74% and slow (2 - 9 months) in 23% (**Figure 3**). The permanent facial palsy was noted in 3 (3%) patients, and the recovery of one patient remained unclear. The patients in **borrelia group** seemed to heal faster: the recovery was fast in 86% and slow in 11%. In **non-borrelia group**, the recovery was fast in 66% and slow in 29%. In both groups the facial palsy remained permanent in 3% of patients. The difference in recovery between the two groups, however, was not statistically significant (p=0.12).

## CONCLUSIONS

*Borrelia* infection is a common etiology of facial palsy in children living in borrelia endemic areas. The overall recovery result in acute facial palsy in children, despite the etiology, is good.

Table 1. Patient characteristics (n=94). CSF, cerebrospinal fluid.

Characteristic		Number (%)
Sex	Male	46 (49 %)
	Female	48 (51 %)
Mean age	9.1 years ( range 2.0–16.9, SD 4.3)	
Side of facial palsy	Right	48 (51 %)
	Left	43 (46 %)
	Both	3 (3 %)
Number of facial palsy episodes	1	89 (95 %)
	2	4 (4 %)
	3	1 (1 %)
CSF sample taken	84 (89 %)	

### House-Brackmann facial nerve grading system

- Grade I - Normal**  
Normal facial function in all areas
- Grade II - Slight Dysfunction**  
Gross: slight weakness noticeable on close inspection; may have very slight synkinesis  
At rest: normal symmetry and tone  
Motion: forehead - moderate to good function; eye - complete closure with minimum effort; mouth - slight asymmetry.
- Grade III - Moderate Dysfunction**  
Gross: obvious but not disfiguring difference between two sides; noticeable but not severe synkinesis, contracture, and/or hemi-facial spasm.  
At rest: normal symmetry and tone  
Motion: forehead - slight to moderate movement; eye - complete closure with effort; mouth - slightly weak with maximum effort.
- Grade IV - Moderate Severe Dysfunction**  
Gross: obvious weakness and/or disfiguring asymmetry  
At rest: normal symmetry and tone  
Motion: forehead - none; eye - incomplete closure; mouth - asymmetric with maximum effort.
- Grade V - Severe Dysfunction**  
Gross: only barely perceptible motion  
At rest: asymmetry  
Motion: forehead - none; eye - incomplete closure; mouth - slight movement
- Grade VI - Total Paralysis**  
No movement

House, J.W., Brackmann, D.E. Facial nerve grading system. *Otolaryngol. Head Neck Surg.* [93] 146-147. 1985.

Figure 1.

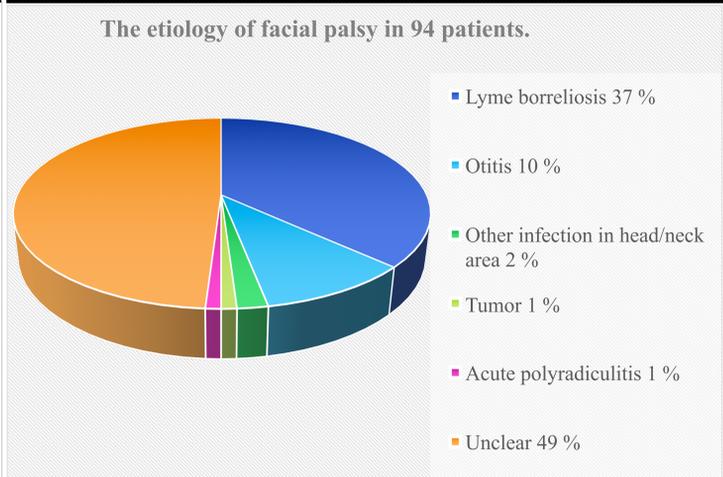


Figure 2.

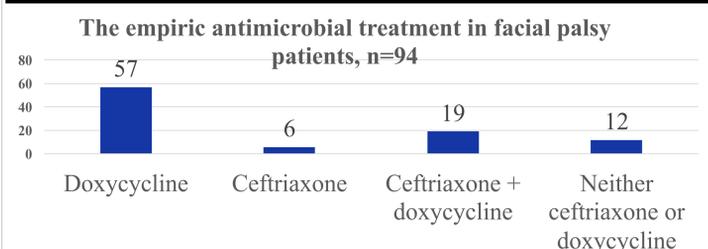


Figure 3.

