INSELGRUPPE

Skin infections in children

SSDV Pediatric dermatology course 20.01.2022

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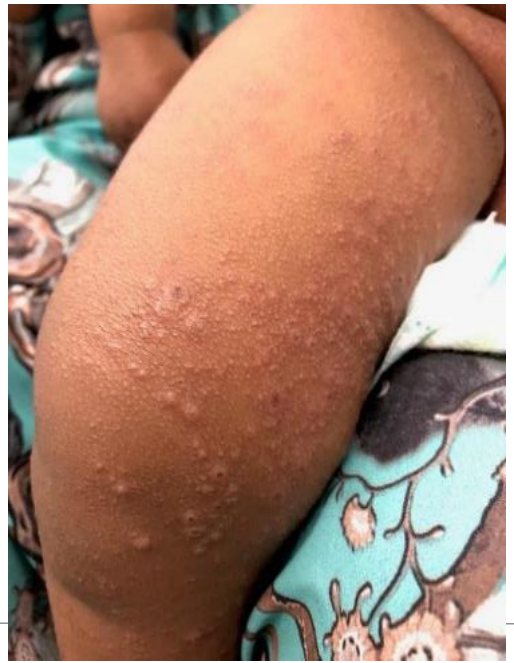
For this handout, case sensitive pictures were removed and partially replaced by publicly accessible pictures.

Case 1+2

Differentials:

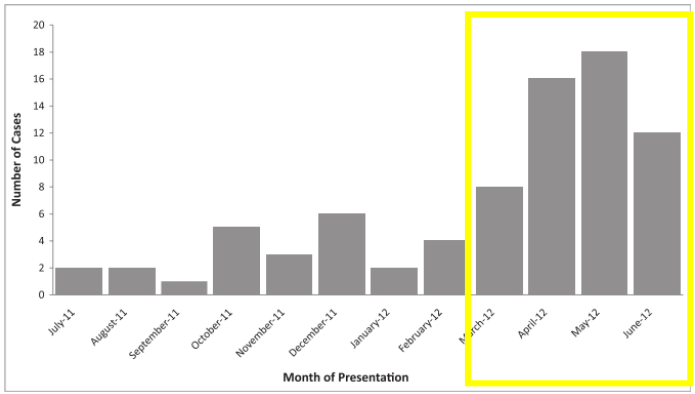
- Herpes simplex virus
- Enterovirus
- Impetigo / bacterial infection in AD
- Gianotti-Crosti Syndrome
- Erythema multiforme
- Autoimmunobullous dermatosis

→ *atypical Hand-Foot-Mouth disease*



HAND-FOOT-MOUTH DISEASE

- children < 5 y
- oral erosions; gray-white oval vesicles on erythematous base on hands, feet, buttocks
- mild extracutaneous symptoms (fever)



HAND-FOOT-MOUTH DISEASE

- u.a. Coxsackievirus (CV)-A16, Enterovirus 71 →→ **CV-A6**, CV-A10

→ *cutaneous manifestations of CV-A6 assoziated HFMD more extensive and variable than classical HFMD !*

› Pediatrics. 2013 Jul;132(1):e149-57. doi: 10.1542/peds.2012-3175. Epub 2013 Jun 17.

"Eczema coxsackium" and unusual cutaneous findings in an enterovirus outbreak

HFMD. Four distinct morphologies characterize this exanthem: (1) widespread vesiculobullous and erosive lesions, (2) "eczema coxsackium," (3) an eruption similar to Gianotti-Crosti, and (4) purpuric lesions.

Mathes et al, Pediatrics 2013; Hubiche et al., Pediatr Infect Dis J 2014

HAND-FOOT-MOUTH DISEASE – diagnostics + treatment

- *clinical* diagnosis
- if uncertain: swab from vesicular fluid (or throat, stool) for Enterovirus PCR
- think of and rule out differentials:
- Treatment: symptomatic

TABLE 4 Clinical Features and Differential Diagnosis of Severe CVA6-Associated HFMD

Findings Suggestive of HFMD [a]: 1) Fever, 2) Oral erosions, 3) Mild gastrointestinal symptoms, 4) Oval vesicles on hands and feet, 5) Known sick contacts

	Atypical Cutaneous Morphology	Clinical Differential Diagnosis
Vesiculobullous and erosive eruption	• Widespread (>5% BSA distribution) • Perioral, acral, buttock predilection • Bullae more common aged <1year	• Bullous impetigo • Varicella • Primary immunobullous disorders
Eczema coxsackium	• Vesicles and erosions in areas of eczematous dermatitis	• Eczema herpeticum • Secondary bacterial infection in setting of AD
Gianotti Crosti-like eruption	• Acrofacial papulovesicles and erosions with relative sparing of the trunk similar to Gianotti-Crosti syndrome	• Gianotti Crosti syndrome • Other viral exanthems • Urticaria multiforme
Petechial and purpuric rash	• Most often seen in patients > 5 years of age • Often acral	• Leukocytoclastic vasculitis • Glove and stocking purpura (parvovirus infection)

Mathes et al., Pediatrics 2013

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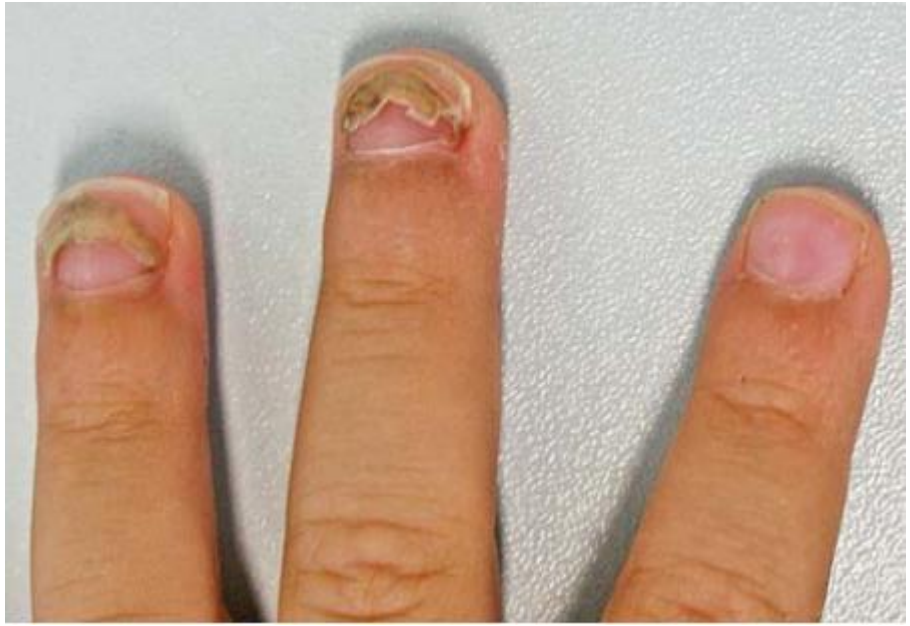


Kolde G., Akt Dermatol 2014

Onychomadesis

Case 3

Differentials:

- Herpes simplex virus
- Varizella zoster virus
- Enterovirus
- Impetigo / bacterial infection in AD
- Gianotti-Crosti Syndrome
- Autoimmunobullous dermatosis

HERPES SIMPLEX VIRUS (HSV)

CAVE
HSV encephalitis
HSV keratitis

- HSV Type 1 / 2
- *wide spectrum of clinical disease !*

asymptomatic acquisition ⟷ life-threatening disease

- age at infection: intrauterine --- neo-/perinatal --- postnatal
  - asymptomatic
  - Herpetic gingivostomatitis
  - Ocular herpes infection
  - Herpes labialis
  - Genital herpes
  - Cutaneous herpes and eczema herpeticum
  - Herpetic whitlow
  - Herpes gladiatorum
  - …

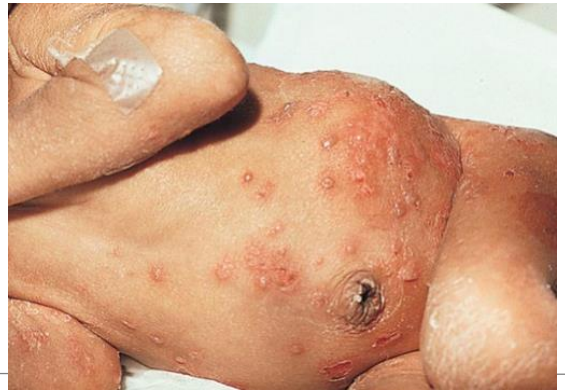
Yousuf et al., BMJ Global Health 2020
Eichenfield and Frieden,Neonatal and Infant Dermatology Third Edition

Neonatal HSV

- Risk approx. 40-50% with primary genital herpes, <3% with recurrent herpes
- 3 different types:
  1. **Skin**, eye and mouth (SEM)
  2. CNS
  3. Disseminated (mortality >50%)

  } + **skin** lesions in 60-80%
- Cutaneous lesions: vesicular rash

Switzerland:
Incidence 1.6/100'000
- 14% SEM
- 71% CNS
- 15% disseminated



Neonatal and Infant Dermatology, 3rd edition

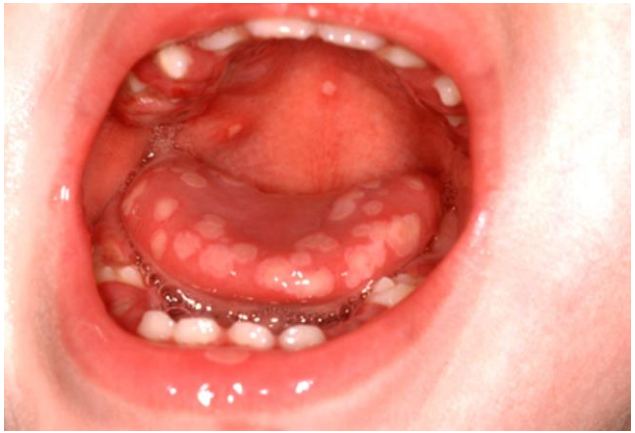
Therapy:
Aciclovir i.v. (60mg/kg/d for 21 days)

Pascual et al., Clin Microbiol Infect 2011
Pinninti et al, Seminars in Perinatology, 2018
Eichenfield and Frieden, Neonatal Dermatology
Chayavichitsilp et al. Pediatrics in Review, 2009

Gingivostomatitis herpetica

→ most frequent primary HSV infection in childhood is asymptomatic

- small children 10 mts – 5y
- vesicles on erythematous base → grayish erosions/ulcers
- Systemic symptoms
- Therapy: *supportive*
  - Pain control, hydration, avoid superinfection
  - Aciclovir/Valaciclovir in immunocompromised



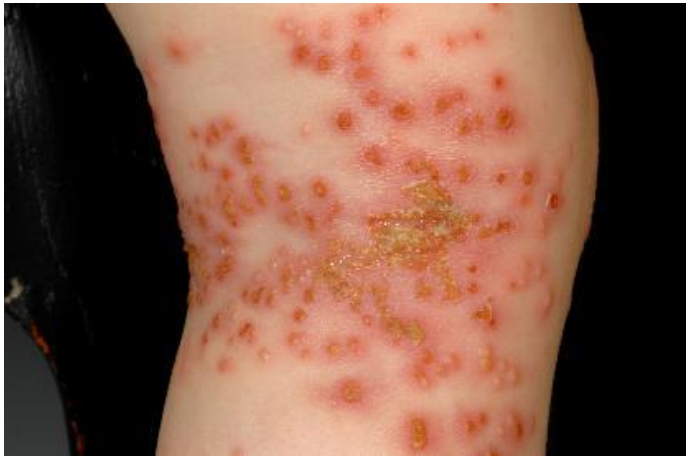
www.rch.org.au/clinicalguide

Cutaneous Herpes

- can occur on any body surface! → *think of it*
- grouped vescles/erosions on erythematous base
- sometimes prodromi only (edema, redness)
- Diagnostics: PCR (fast!), culture

Eczema herpeticum

- Patients with AD (or other chronic skin disease)
- abrupt onset
- punched-out lesions
- Therapy:
  - *systemic Aciclovir/Valaciclovir*
  - Hydration
  - Prevent/treat bacterial superinfection
  - Treat eczema, emollients



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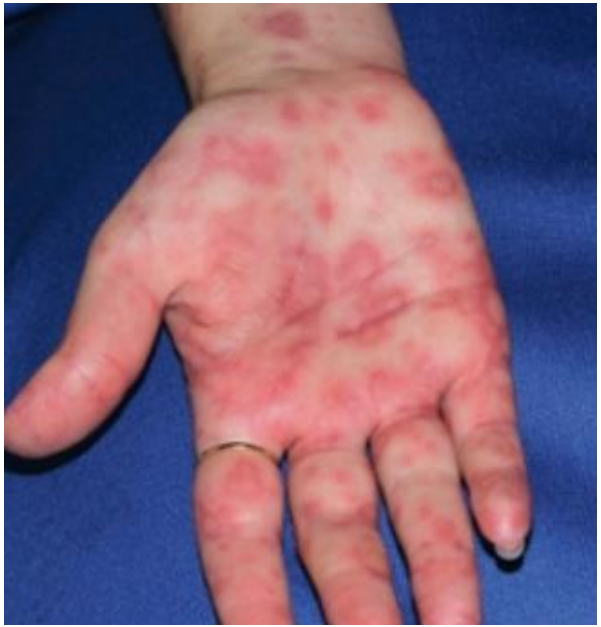


Hurwitz Clinical Pediatric Dermatology, 5th edition

target lesions

Erythema multiforme

TAKE HOME #1

HAND-FOOT-MOUTH DISEASE:

- typical vs. atypical / generalized manifestation
- if uncertain: PCR
- do not miss eczema herpeticum

HERPES SIMPLEX VIRUS:

- wide spectrum of clinical disease
- can occur on any body surface
- do not miss eczema herpeticum

Case 4+5

Differentials:

- Herpes simplex virus
- Varizella zoster virus
- Impetigo
- Bacterial superinfection in AD
- Gianotti-Crosti Syndrome
- Autoimmunobullous dermatosis

IMPETIGO CONTAGIOSA

non-bullous

- most common form
- Papule – vesicle – pustule – yellow crust
- ***face, extremities*** > other
- Staph. aureus > Strep. pyogenes (mostly GAS), both

bullous

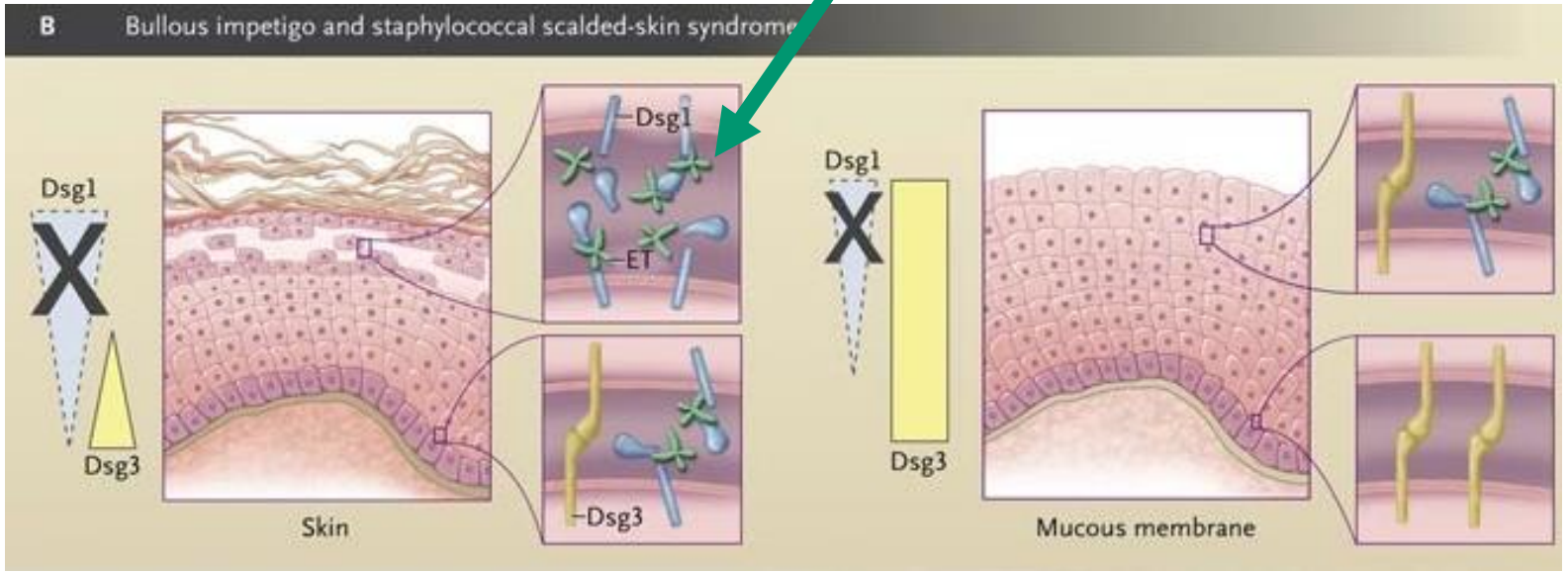
- papule – vesicle – flaccid bullae – brownish crust
- ***trunk*** > other
- Staph. aureus producing Exfoliative Toxin

ecthyma

- ulcerative form
- punched-out ulcers w. yellow crust

BULLOUS IMPETIGO

Exfoliative Toxin A/B



Bildquelle: https://www.nejm.org/doi/full/10.1056/NEJMra061111

IMPETIGO CONTAGIOSA – treatment

- LIMITED DISEASE → ***topical*** *therapy*
  - 1st line: Mupirocin (Bactroban) 3x/d for 5-10 days
  - increased resistance of S. aureus to Fusidin acid

- EXTENSIVE DISEASE → ***systemic*** *therapy* (7 days)

  → *Microbiologic culture/antibiogram guided therapy!*
  - Co-Amoxicillin (70-80mg/kgKG/d), Flucloxacillin (only Tablets availabe), ev. Clarithromycin/Erythromycin

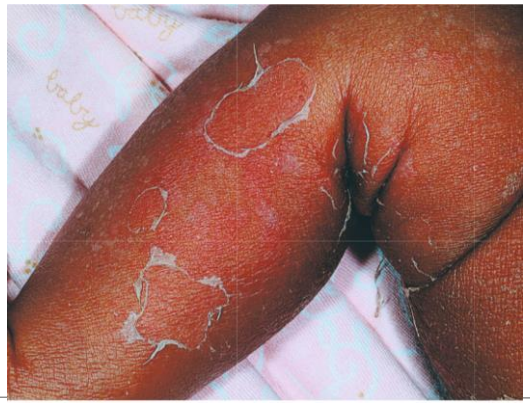
→ *return to school/daycare:* ***24h*** *after initiation of antibiotic treatment*

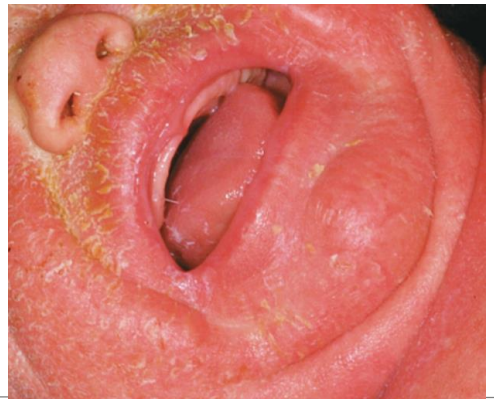
 Schachner L. et al. Treatment of Impetigo in the pediatric population, JDD 2020; Uptodate.com

CAVE

SSSS (Staphylococcal scalded skin syndrome)

- *disseminated* variant of infection with S. aureus → Exfoliative Toxin A/B
- periorificial radial fissures → generalized eruption; Nikolski +
- systemic symptoms (fever, malaise, irritability,…)
- Therapy: Co-Amoxicillin **i.v.,** hydration, antiseptic measurements, analgetics



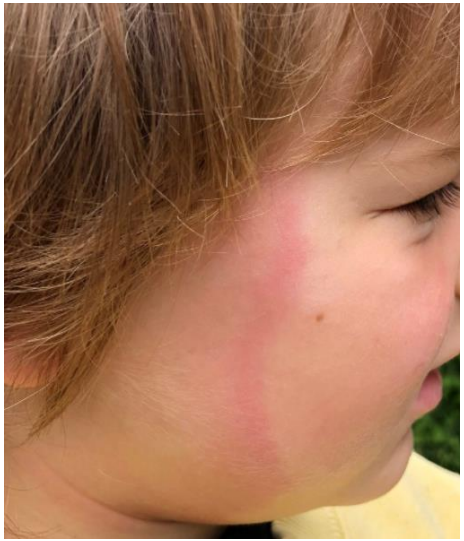


Hurwitz Clinical Pediatric Dermatology, 5th edition

Case 6

Differentials:

- Ringworm
- Lymphangitis
- Cellulitis
- Borrelia burgdorferi
- Child abuse

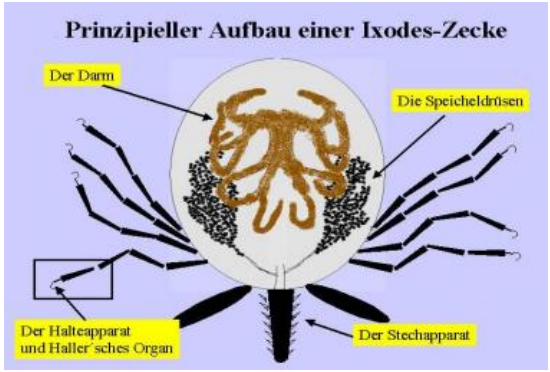


https://en.wikipedia.org/wiki/Erythema_migrans

→ *Erythema chronicum migrans*

BORRELIOSIS (Lyme disease)

- *Borrelia burgdorferi*
- transmission if tick >48h in skin



https://www.lgl.bayern.de/

Tick bite

Stage I
Erythema migrans

Stage II
Multiple Erythema migrans
Lympohocytoma

Stage III
Acrodermattis chronicum atrophicans

days - months

weeks - months

months - years

BORRELIOSIS – Erythema migrans

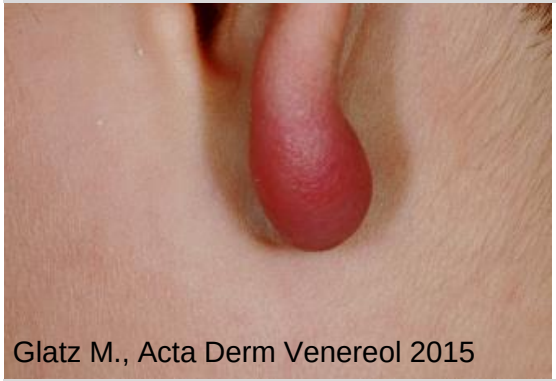
- 7d (3-180d) after tick bite
- asymptomatic
- *in childhood often head and neck!*

BORRELIOSIS – multiple Erythema migrans

- more frequent in children (about 25%)

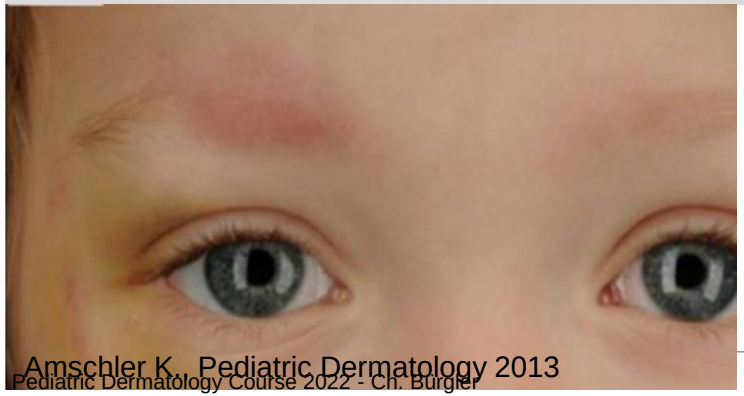
BORRELIOSIS – Borrelia lymphocytoma

***typical** locations*: earlobe, nipple, scrotum



Glatz M., Acta Derm Venereol 2015

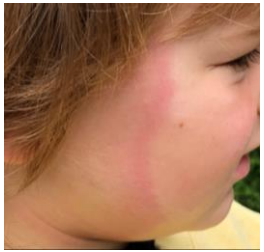
***atypical** locations*: eyebrows, cheeks, neck, earhelix



Amschler K., Pediatric Dermatology 2013

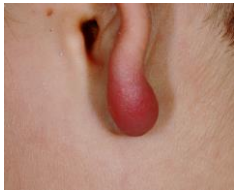
BORRELIOSIS – diagnostics

clinical diagnosis



clinical diagnosis
(ev. serology, biopsy)

clinical + serology
ev. biopsy



Tick bite

Stage I
Erythema migrans

IgM after 1 week
IgG after 1 month

Stage II
Multiple Erythema migrans
Lympohocytoma

Stage III
Acrodermattis chronicum atrophicans

days - months

weeks - months

months - years

Eldin et al. Med Mal Infect 2019; Glatz M., Acta Derm Venereol 2015

BORRELIOSIS – treatment

- Children **> 8** years: Doxycyclin 2x 1-2mg/kgKG p.o., max. 200mg/d
- Children **< 8** years: Amoxicillin 3x 20mg/kgKG p.o., max. 1.5 g/d

Why?

- Enamel hypoplasia
- Permanent teeth dyscoloration

- Duration
  - Erythema migrans solitary / multiple: 14 days / 14-21 days
  - Lymphocytoma: 21-28 days

Evison et al, Guidelines SGINF, 2005; Antibiotikarichtlinien Inselspital

TAKE HOME #2

IMPETIGO:

- topical: mupirocin 1st line
- systemic: Co-Amoxicillin / Flucloxacillin
- SSSS as disseminated variant

BORRELIOSIS (LYME DISEASE):

- EM : clinical diagnosis, head and neck, multiple
- Lymphocytoma : atypical locations
- >8y Doxycycline, <8y Amoxicillin

Thank you for your attention!

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