

Acute mastoiditis in Eastern Denmark 1998-2007

- development in a country employing
conservative management of acute otitis media

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Acute mastoiditis in children: - a 10-year retrospective and validated multicenter study

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Pediatr Infect Dis J. 2013 May;32(5):436-40.

Why this study?

Conservative guidelines for prescription of antibiotics for acute otitis media in Denmark

– more complications, mastoiditis?

Some studies indicate increasing incidence of acute mastoiditis

Lack of consensus on diagnostic criteria



Objective



Evaluation of:

- Changes in incidence of acute mastoiditis
 - Clinical and microbiological findings
 - Treatment
 - Complications
- and to propose diagnostic criteria

Material and methods



- All children with acute mastoiditis (IDC H 70.0) 1998-2007 in Eastern Denmark (2.2 mio inhabitants)
- Two-way approach:
 - data from the National Patient Registry
 - data from all local hospital registries
- Patient file retrieval and review

Patients

National Registry + local hospital registries:

333 children aged 0-15 years with acute mastoiditis

Excluded by reviewing patient files:

- Not meeting diagnostic criteria: 49
- Double registration: 29
- Cholesteatoma: 9
- Not admitted: 2
- Files not found: 28

216 children included



Criteria for the diagnosis acute mastoiditis

A) Clinical signs of or recent AOM (within two weeks)

B) At least three of the following four clinical findings

- 1) Protrusion of the pinna
- 2) Retroauricular redness
- 3) Retroauricular pain on palpation
- 4) Retroauricular swelling with or without fluctuation / subperiosteal abscess

C) And/or operative findings of acute mastoiditis

D) Exclusion of other conditions

e.g. external otitis, perichondritis, retroauricular swelling of lymph nodes, insect bite, erysipelas, other types of abscesses

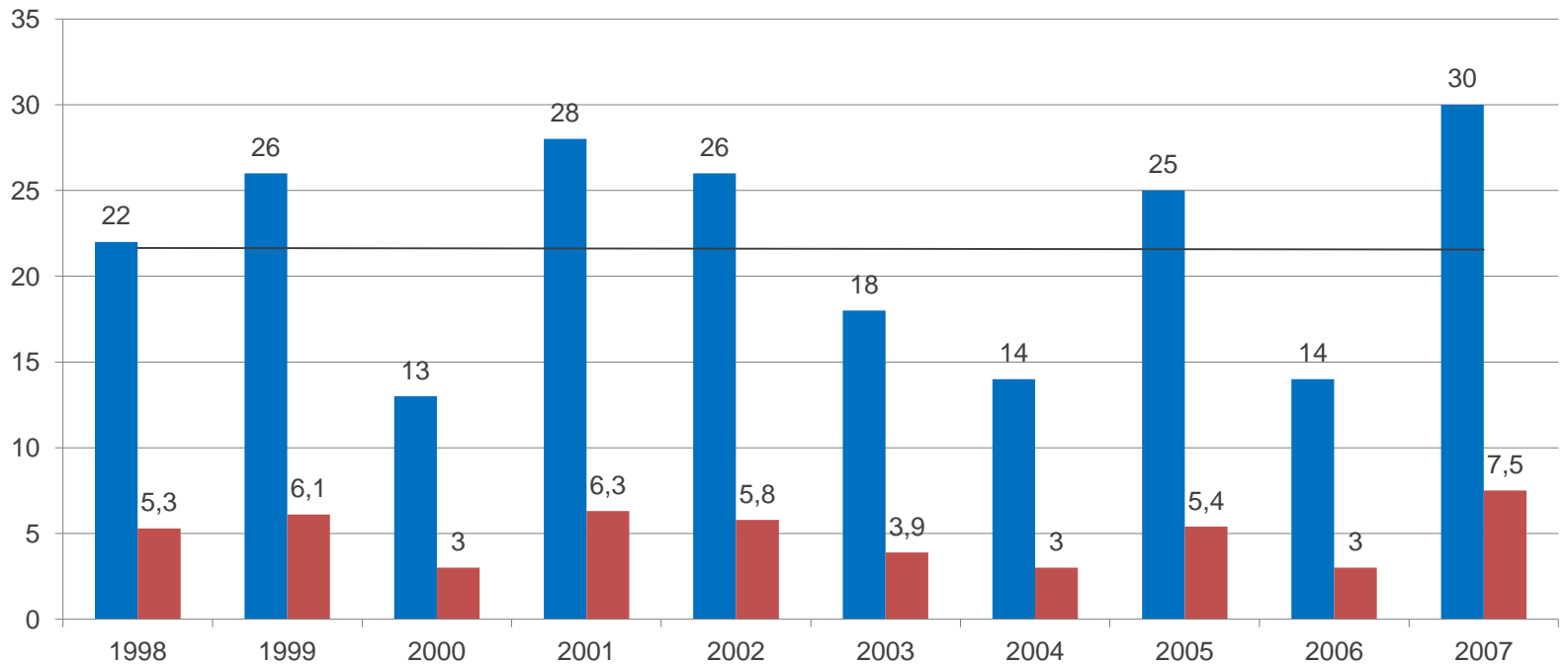
Results - epidemiology

- 216 children aged 0-15 years
- Median age 1.3 years
- 62 (29%) \geq 2 years
154 (71%) $<$ 2 years.
- Mean incidence of AM: 4.8/100.000 children/year



Incidence

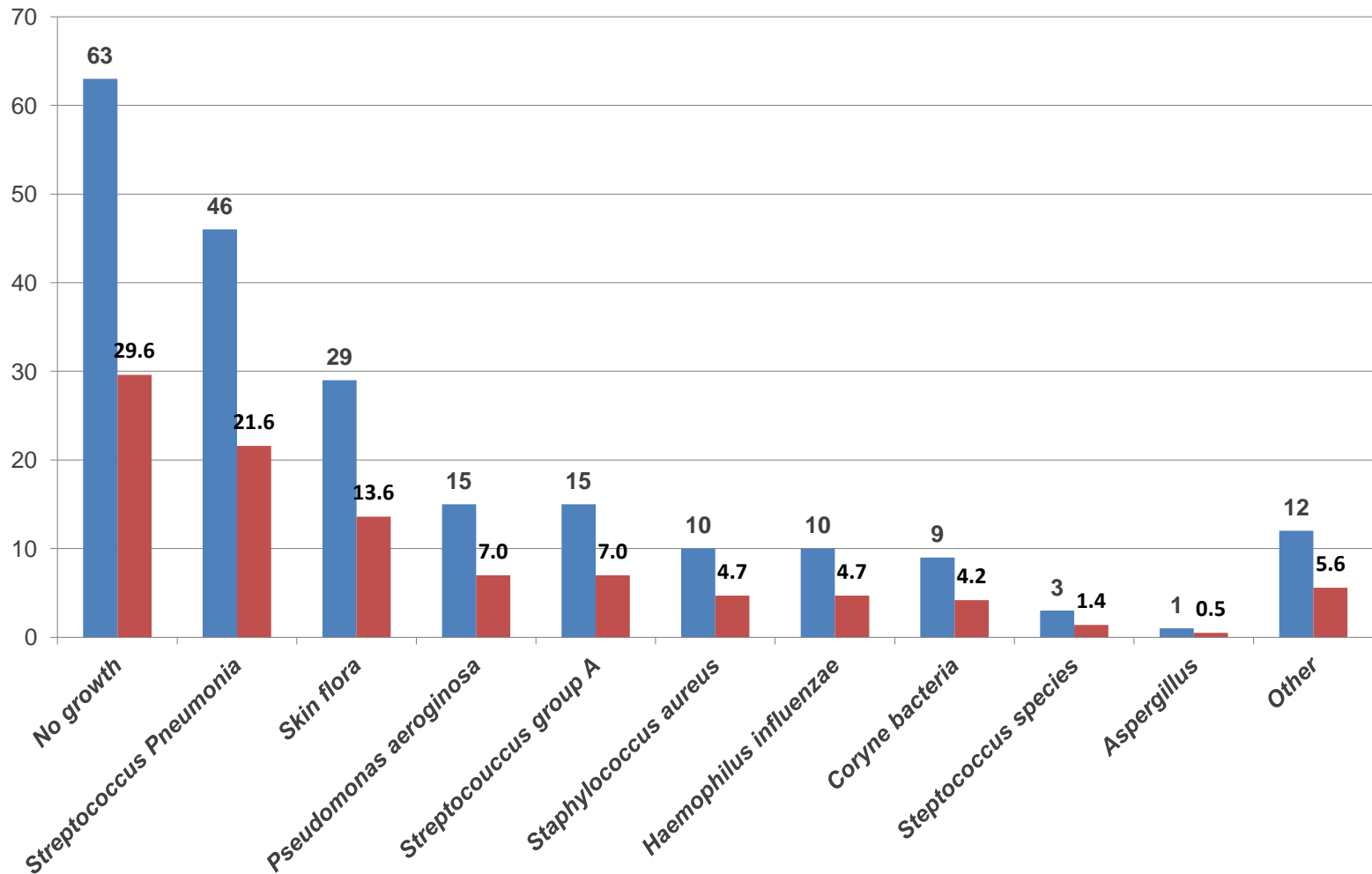
Number of children (blue) and incidence pr. 100.00 children aged 0-15 years (red)



Year

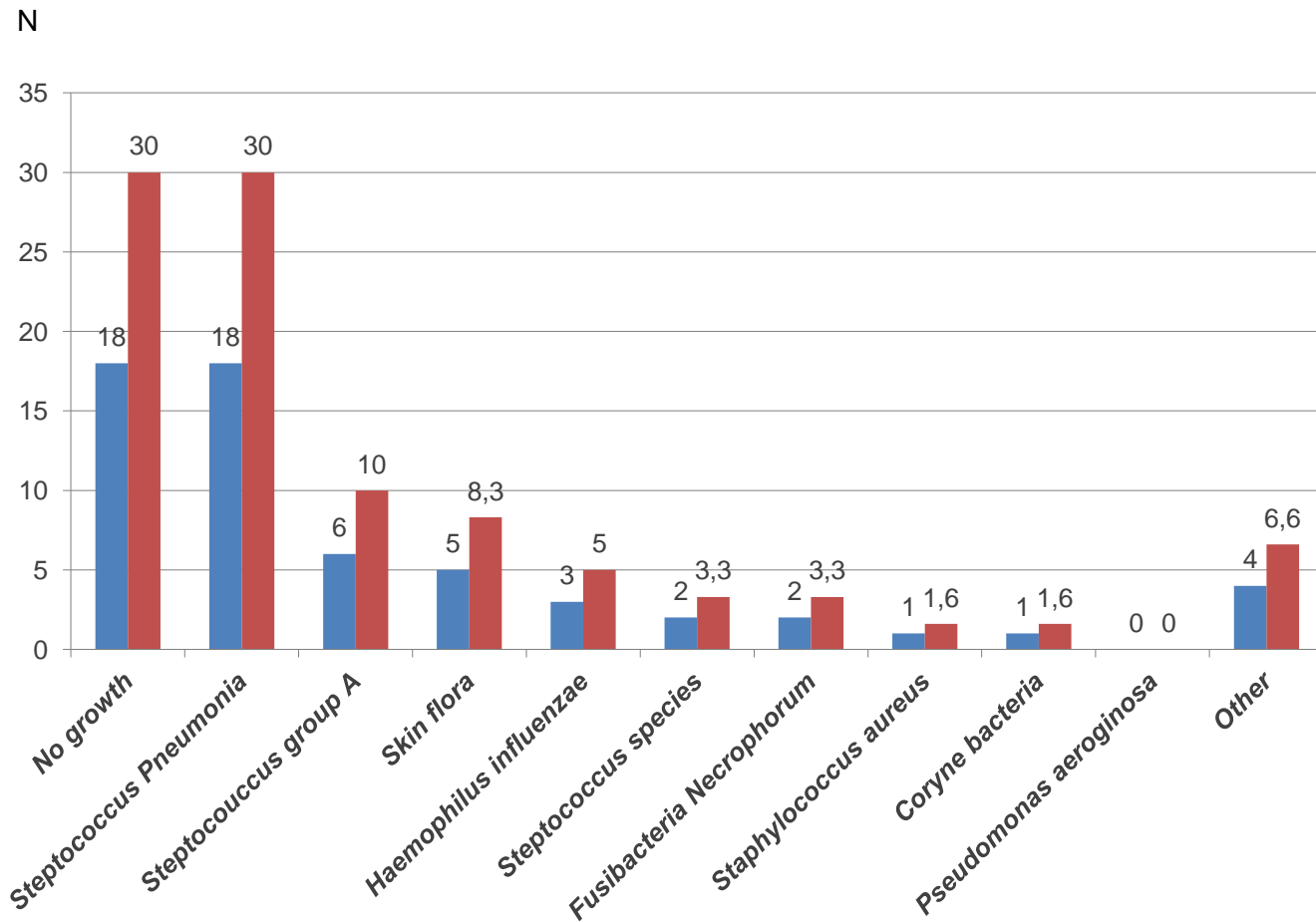
Cultures – ear canal/middle ear

Total 213 cultures. Red = valid %. Blue=N.



Cultures – mastoid

Obtained during surgery or by needle aspiration
N=60. Red = valid %. Blue=N.



Bacterial resistance



Ear canal/middle ear cultures:

- 77% susceptible to penicillin (N=84)
- 81% susceptible to ampicillin (N=77)

Mastoid cultures:

- 94% susceptible to penicillin (N=33)
- 93% susceptible to ampicillin (N=27)

Antibiotics prior to admittance



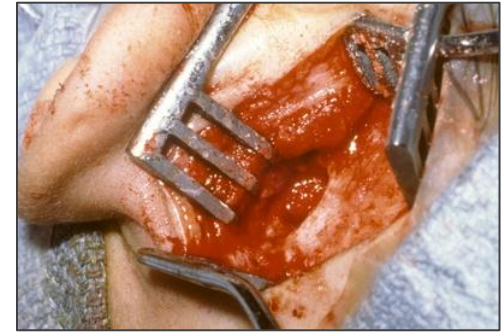
- 35% received antibiotics prior to admittance
- In the group aged 2 or older, 44% received antibiotics prior to admittance
- No difference in occurrence of retroauricular abscess between children receiving or not receiving antibiotics prior to admittance

Antibiotics during admittance



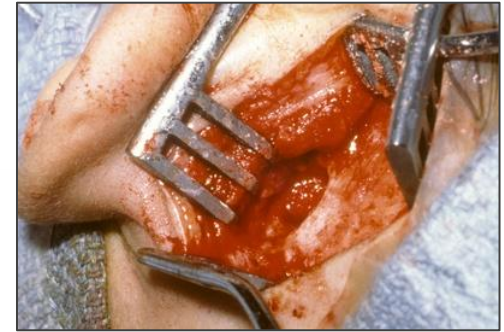
- 16 different antibiotics used
- Penicillin preferred 46%
- Ampicillin 26%
- Cefuroxime 21%

Surgery



	N	%
Myringotomy	184	85.6
No surgery (ex. simple myringotomy i LA)	122	56.5
Tubulation	68	30.1
Tubulation only	21	9.7
Mastoidectomy	67	31
Mastoidectomy, no tubulation	13	5.6
Simple absces incision	1	0.5

Complications

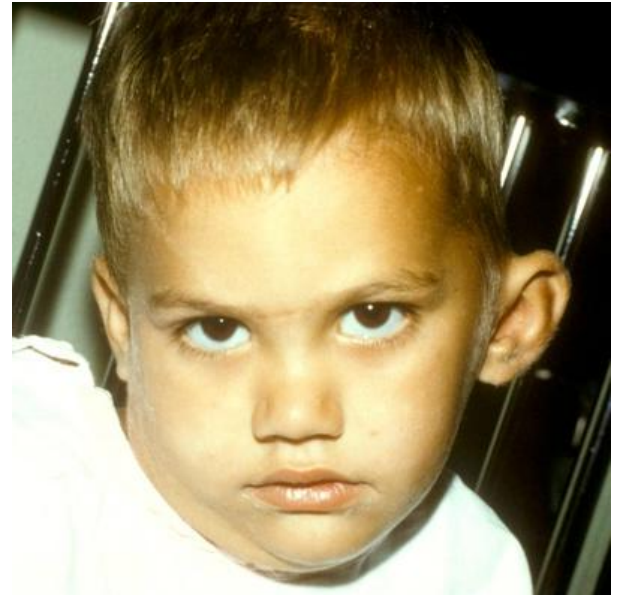


	N	%
Vertigo	1	0.5
Cerebral/cerebellar absces	0	0
Septicaemia	0	0
Spreading of infection to eye and facial region	1	0.5
Meningitis	0	0
Facial paresis	1	0.5
Sinus thrombosis	0	0
Large perforation of tympanic membrane	1	0.5
<u>Complications total</u>	<u>4</u>	<u>1.9</u>

Conclusions

- No evidence of increasing incidence
- Most common: *Streptococcus pneumoniae*
- Recommended: Penicillin
- Mastoidectomy: 31%
- Complications are rare (1.9%)





Thank you for listening!

”Questionnaire Mastoiditis”

1. Years of experience as oto-surgeon?

2, 4, 5, 6, 11, 12, 15, 23, 24, 28, 33, 40

”Questionnaire Mastoiditis”

2. What do you believe are needed for the diagnosis of mastoiditis?
Please rate the signs by numbers!

112223344x	clinical signs of acute otitis media (ongoing or within 14 days
1111112222xx	≥2 retroauricular signs of infection
233333444	sagging of the ear canal
4455555x	positive findings at imaging (MRI and/or CT)
1122345x	discharge/acute infection in mastoid process at mastoidectomy
36x	other? Retroaur swelling, certain or uncertain fluctuation retroaur

”Questionnaire Mastoiditis”

3. What is the immediate intervention?

111122xxxxx	iv antibiotics
12233xxxx	paracentesis
22344xx	grommets
11234xx	incision/aspiration
46	CT/MRI
3455x(x)	mastoidectomi
5	other?

”Questionnaire Mastoiditis”

4. If mastoidectomy is not performed immediately, what would be the indication for operative intervention?

- 11111xxxx deteriorating general condition
- 22222xxxx no improvement of general condition
- 2333xxxx fever – rising or persisting
- 33344x(x) CRP or WBC rising
- 5xx other (please write)? Recurrent retroaur absces

”Questionnaire Mastoiditis”

5. For how long would you observe for change of the condition?

123x 12 h

11112xxx 24 h depend individual case

112233 48 h

longer?

”Questionnaire Mastoiditis”

6. Would you always perform preoperative imaging?

No, no, no, no, no, never, no, no

CT or MRI?

”Questionnaire Mastoiditis”

7. What bacteriological studies should be made?

	nasopharyngeal culture
11112xxxxxx	middle ear fluid culture (but hardly sufficient)
3xxx	anaerobic culture?
122xxx	bacterial growth from bone at operation?

”Questionnaire Mastoiditis”

8. What follow-up is recommended?

1111xxxxxx clinical? daily, 1w, 1w, 1-3w, 1w and 1mo, 10-14d, 2 w, 1mo,
1mo

222xxxxx audiological? 1w and 1mo, <1mo, 1 mo, 1mo, 1mo, 2mo, 2mo

x other? Depend if chol found – uncompl cases in infants 1 w,
discharge to private ENT