Acute mastoiditis - a surgical or medical disease? An 18-year retrospective study in a Danish county from 1993 to 2010

Kjell Tveterås
Svanhild Hansen
Mikkel Attermann Bruhn
Michael Gaihede

AALBORG SYGEHUS
ÅRHUS UNIVERSITETSHOSPITAL

Århus Universitetshospital

Introduction

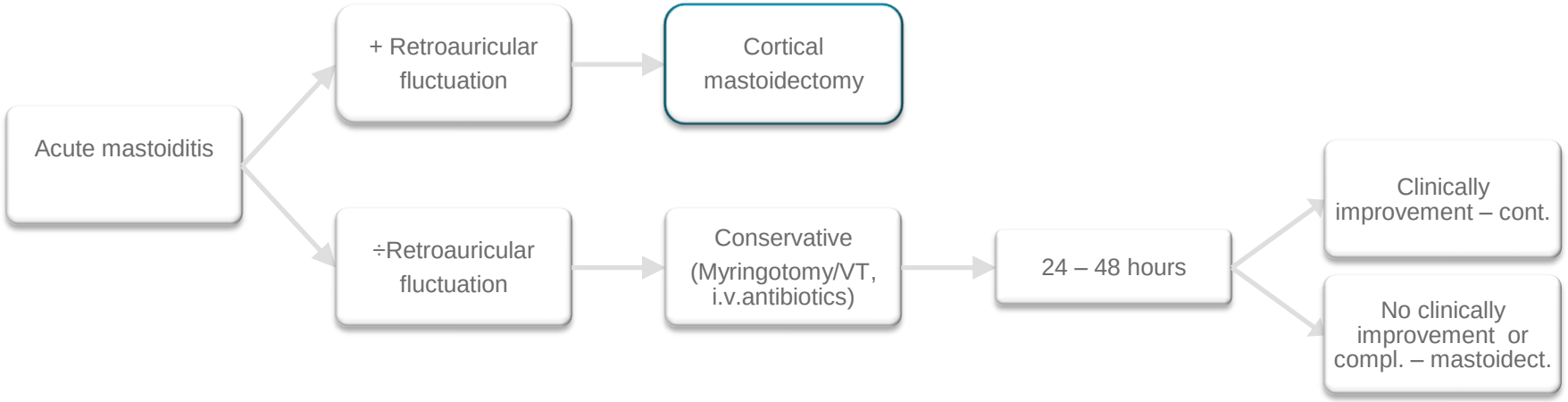
- The aim of this study:
  - To review the outcome of acute mastoiditis (AM) treated according to the described algorithm and discuss the future treatment modality – conservative or surgical?

Methods and Materials

- Retrospective study in Northern Jutland from 1993 to 2010
  - Average population size 578,000
  - Average population size <16 years 96,700

- The only ENT department in the region (unselected study population)

Treatment algorithm during study period

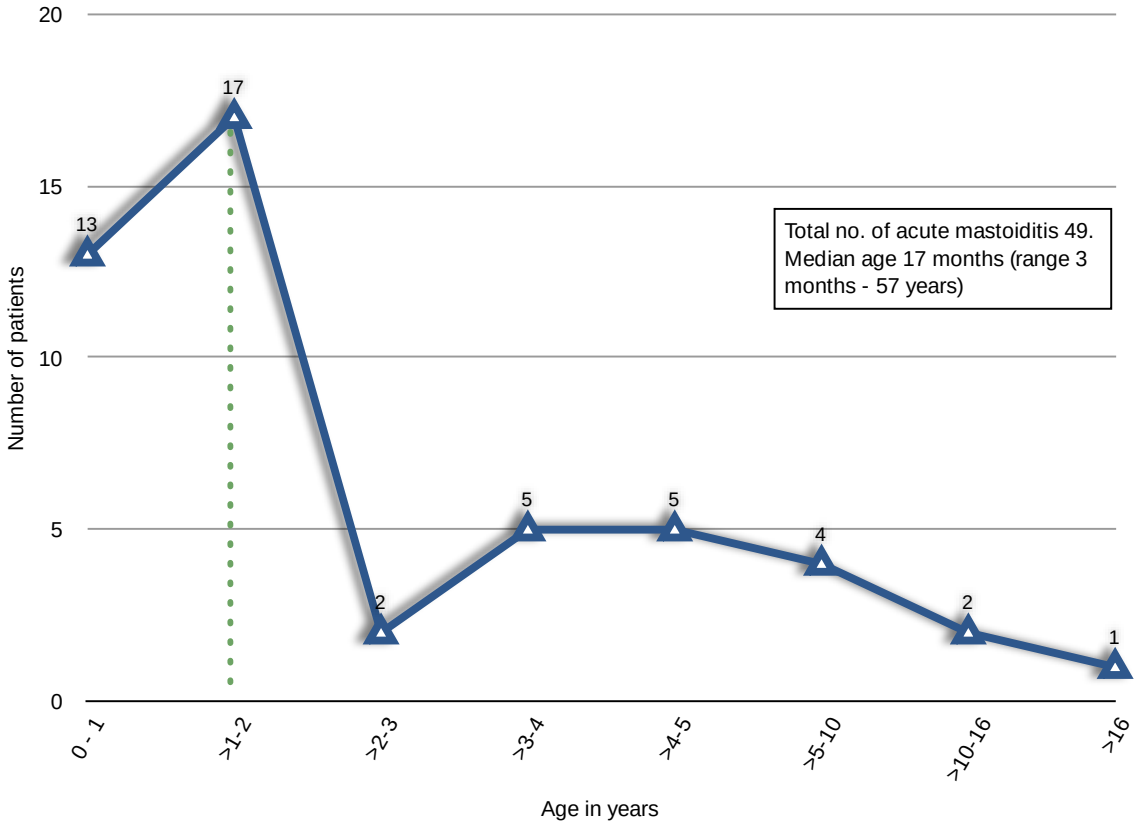


Results

- Total number of acute mastoiditis:
  - 49 patients (range 3 months to 57 years)
  - 11 patients were excluded
    - 9 with cholesteatomas
    - 1 with meningitis and 1 with meningitis and sinus thrombosis, both admitted from other departements
  - Avg. number of mastoiditis per year: 49/18 = 2,7
  - Median age 17 months
  - Female/male rate: 25/24
  - Patients < 16 years: 48/49 = 98%
- Incidence of acute mastoiditis:
  - 0.5/100,000 per year

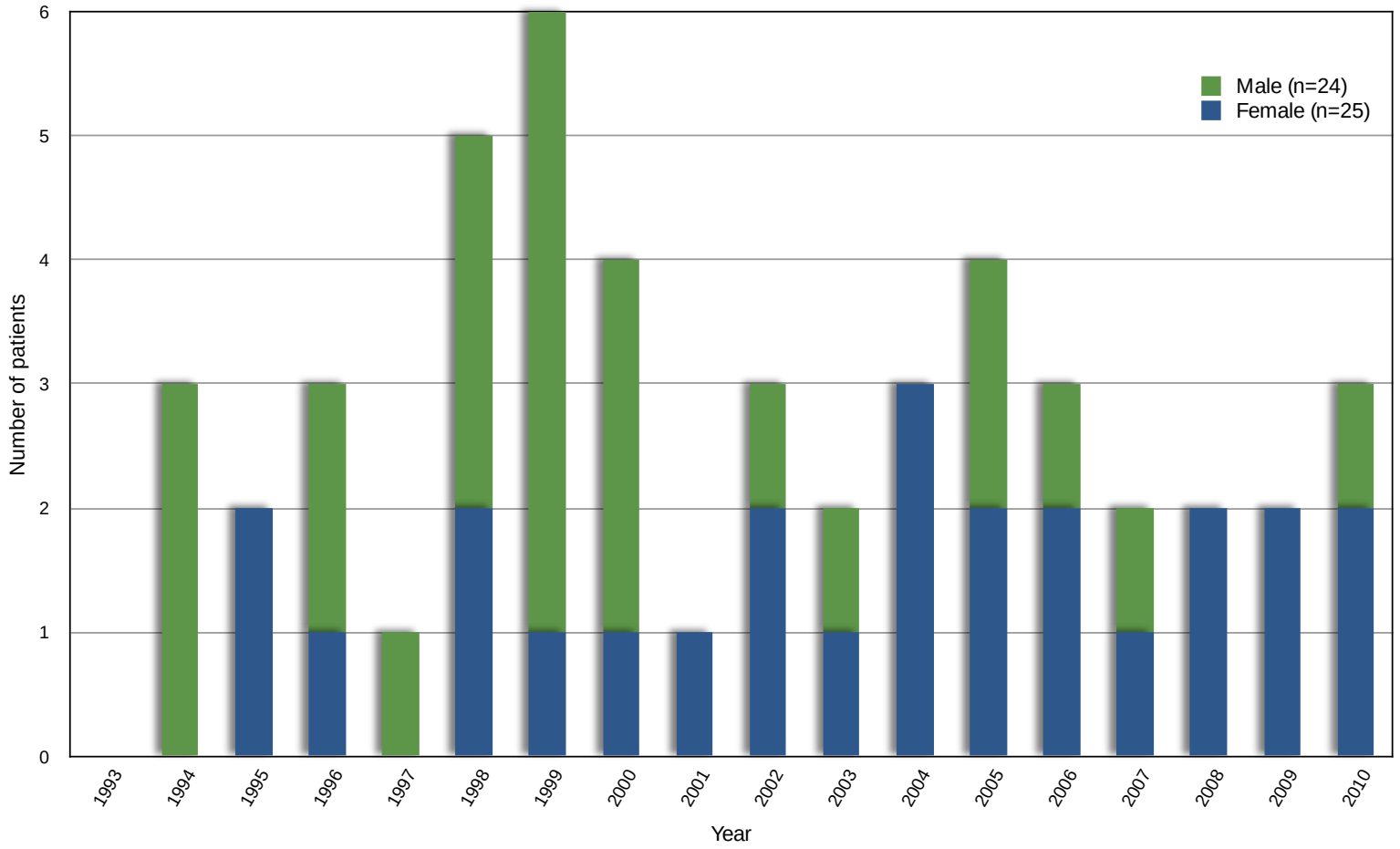
Results

Fig. 1. Age distribution of people with acute mastoiditis in the period 1993-2010



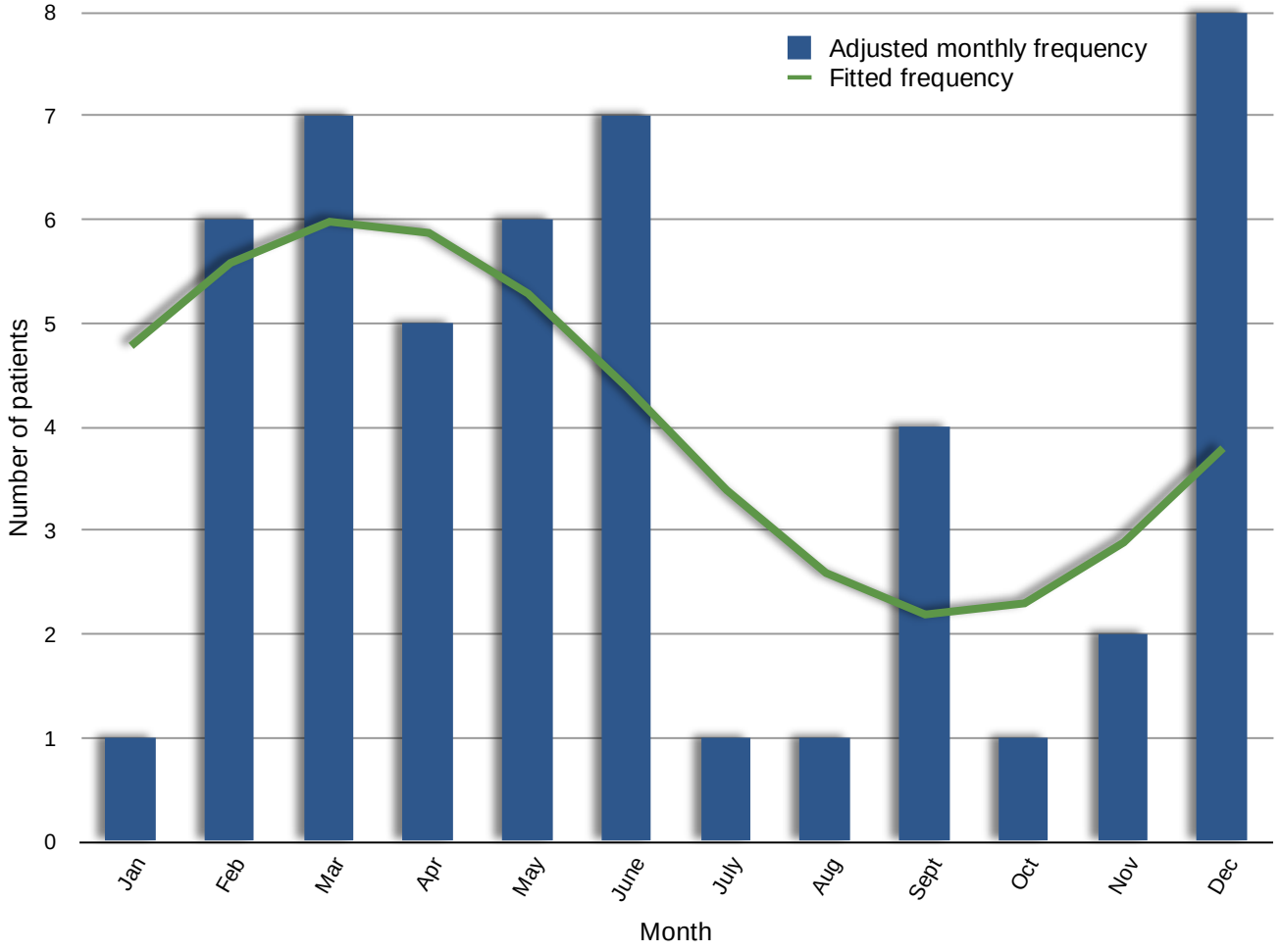
Results

Fig. 2. Number of patients per year



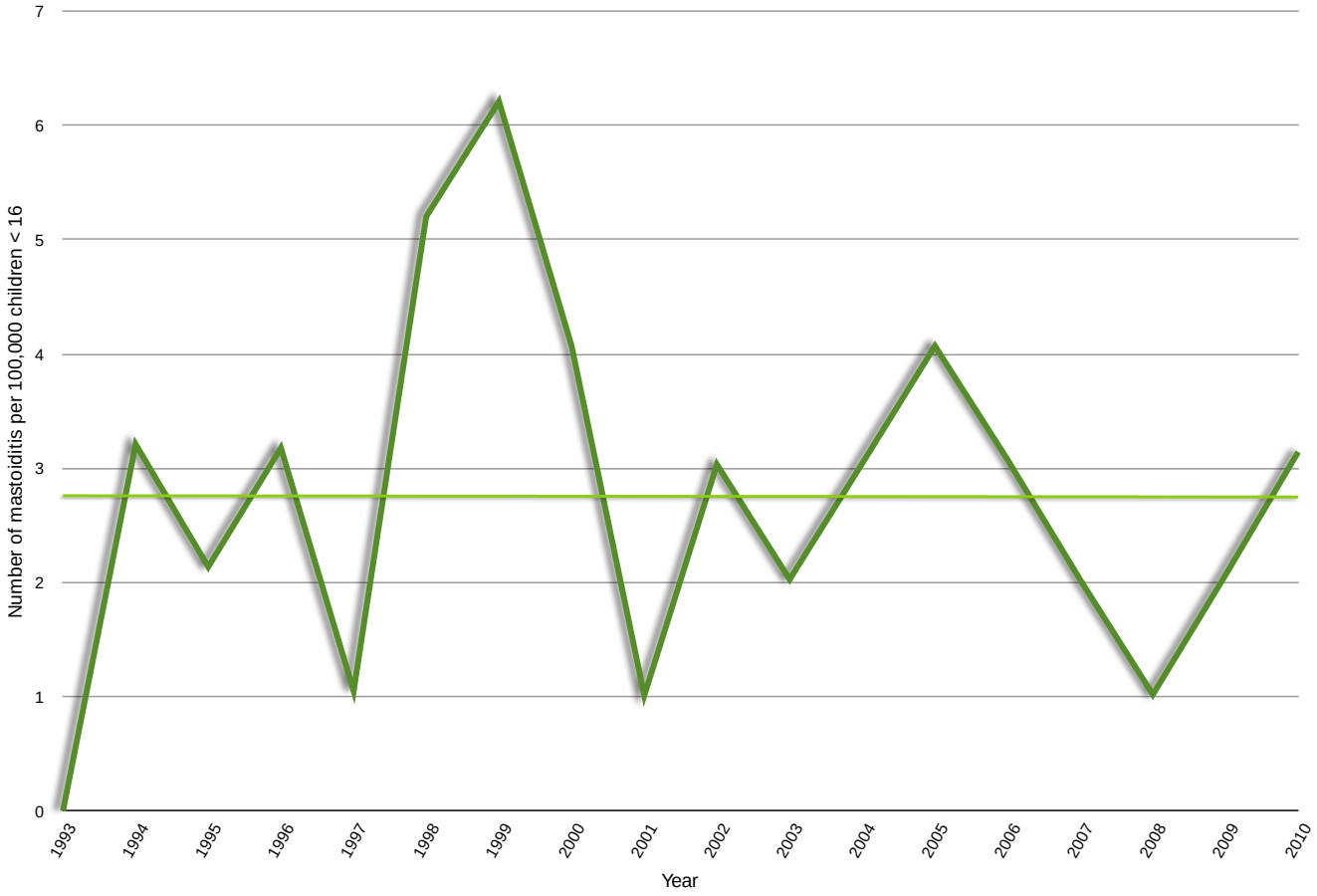
Results

Fig. 3. Seasonel variation of acute mastoiditis



Results

Fig. 5. Incidens rate per 100,000 children < 16 years



Results – Antibiotic treatment before hospitalization

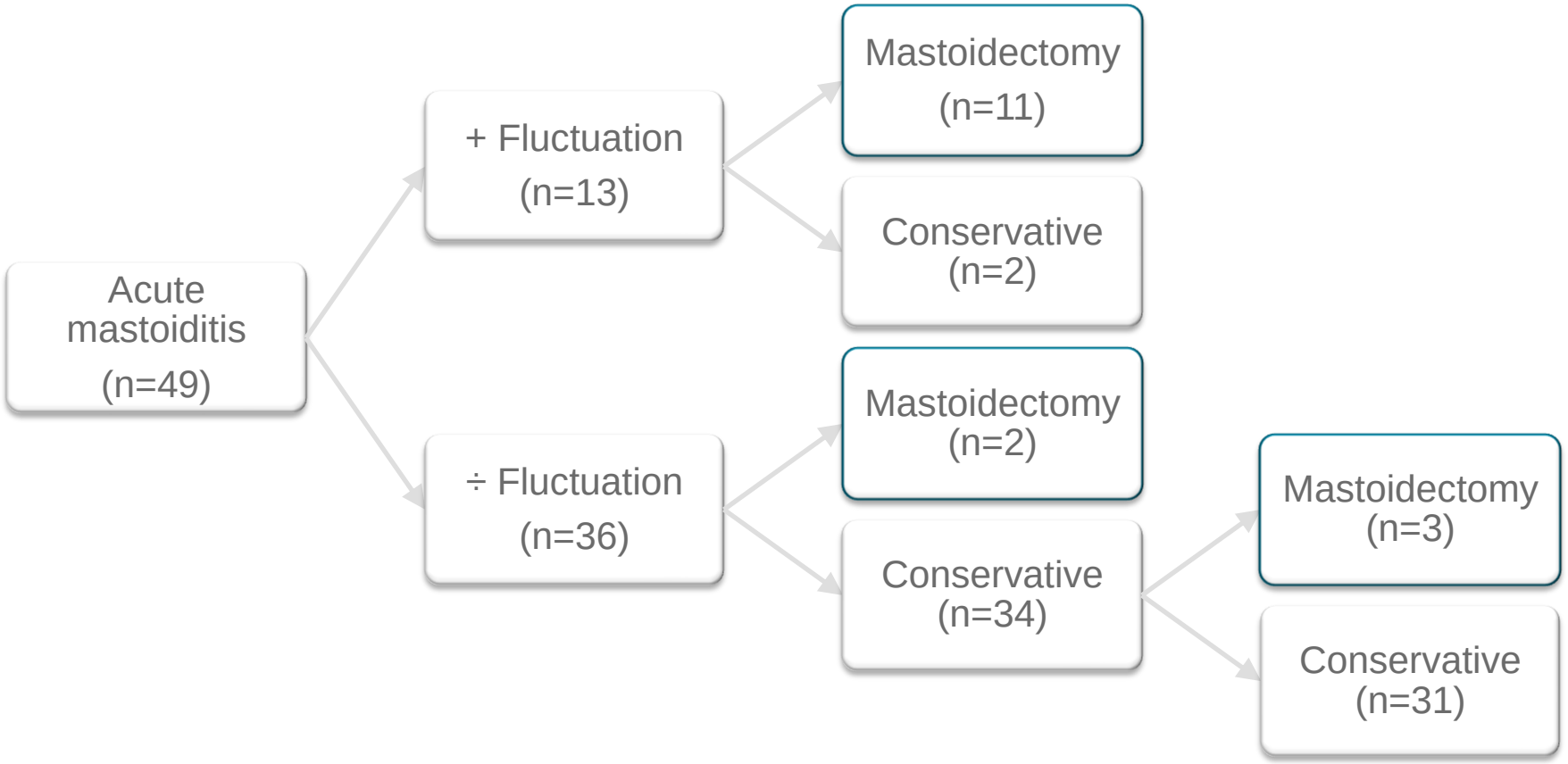
	Patients (% of all)
Penicillin	6 (12,2%)
Amoxicillin*	7 (14,3%)
Macrolide	1 (2,0%)
2 antibiotics**	6 (12,2%)
Total	20 (40,9%)
No antibiotics	29 (59,1%)

* 5 patients under age of 2
**All patients initially treated with penicillin

Clinical findings

Patients (49)	Redness of skin	Retroauricular swelling	Protrusion of ear	Retroauricular fluctation	Spontaneus eardrum perforation
Total	80% (39)	94% (46)	96% (47)	27% (13)	43% (21)
Mastoidectomy (16)	81% (13)	100% (16)	94% (15)	69% (11)	50% (8)
Conservative (33)	79% (26)	91% (30)	97% (32)	6% (2)	39% (13)

Treatment


Acute mastoiditis (n=49)
+ Fluctuation (n=13)
÷ Fluctuation (n=36)
Mastoidectomy (n=11)
Conservative (n=2)
Mastoidectomy (n=2)
Conservative (n=34)
Mastoidectomy (n=3)
Conservative (n=31)

Treatment overview

	Patients (n=49) (% of all)
Mastoidectomy as 1. treatment	13 (26,5%)
Mastoidectomy after conservative treatment	3 (6,1%)
Mastoidectomies in total	16 (32,7%)
Conservative treatment	33 (67,3%)

Results – Treatments during 1st and 2nd 9-year periods

	1993-2001 (n=25)	2002-2010 (n=24)
Mastoidectomy as 1. treatment	6	7
Mastoidectomy after conservative treatment	2	1
Mastoidectomies in total	8	8
Conservative treatment	17	16

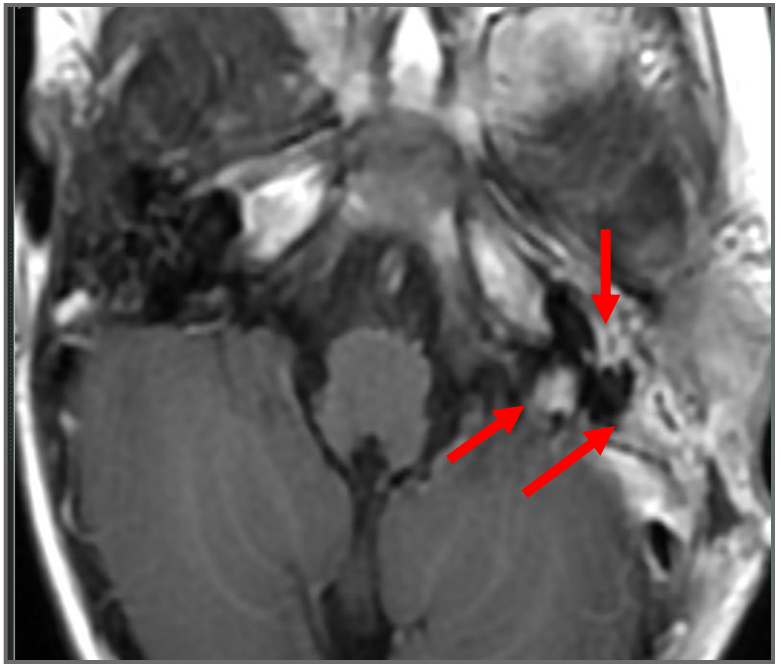
Cultures

Organism	Operative group (n=16)	Conservative group (n=33)	Total (n= 49)
No growth	1	16	17
Streptococcus Pneumonia	5	10	15
Fusobacterium Necrophorum	4	0	4
Staph. Aureus	4	1	5
Pseudomonas auriginosa	1	4	5
Hemophilus Influenzae	2	1	3
Hemolytic streptococcus gr A	2	2	4
Others	1	2	3
	20*	36**	56

*4 ptt. with 2 pos. cultures
**3 ptt. with 2 pos. cultures

Complications

- Intracranial complications – none
  - includes sinus thrombo-phlebitis, meningitis, epidural/cerebral abscess
- Facial nerve palsy – none
- Gradenigo's syndrome – one
  remitted completely within one month



Conclusions

- Acute mastoiditis is a benign disease with only few complications.
- Most patients can be treated conservatively without surgical intervention.
- Indications for mastoidectomy are controversial and many authors have proven that even subperiostal abscess safely can be treated conservatively with incision/puncture, and thus avoid mastoidectomy
- Prospective studies would be desirable

Bakhos D *et al*. Conservative management of acute mastoiditis in children. Arch Otolaryngol Head Neck Surg. 2011 Apr.;137(4):346–350.

Future treatment algorithm ?