

\* Otitis Media Aguda  
OMA

Dra. Adriana Soto

# \* OMA

- \* Enfermedad de la primera infancia
- \* Complicaciones supuradas y no supurativas
- \* Mal diagnóstico, uso indiscriminado de antibióticos
- \* Emergencia de resistencia antibiótica
- \* Presión selectiva de los otopatógenos con el uso de Vacuna Prevenar®

# \* OMA

- \* **Infección bacteriana más frecuente en Pediatría**
- \* **Consulta más frecuente en la práctica ambulatoria**
- \* **Mayor incidencia entre 6-36 meses (6-18 meses)**
- \* **Nuevo pico entre los 5 y 7 años (ingreso escolar)**

# \* OMA

- \* Al año de edad, un 25% de los lactantes han padecido un episodio de OMA
- \* A los 3 años de vida el 60 % de los niños habrá tenido 1 o más episodios de OMA
- \* Una tercera parte tendrá 3 o más
- \* En Argentina: 1,3 millones de episodios por año en menores de 7 años

# \* Otitis Media Aguda

## Factores de riesgo asociados

- \* Enfermedades virales del tracto respiratorio superior
- \* Ausencia de lactancia materna o menor a 4 meses
- \* Uso de chupete
- \* Hermanos mayores, especialmente con antecedentes de OMA
- \* Desnutrición
- \* Fisura palatina
- \* Síndrome de Down

# \* Otitis Media Aguda

## Factores de riesgo asociados

- \* Precocidad del primer episodio
- \* Bajo nivel socio-económico, hacinamiento
- \* Asistencia a guarderías, jardines maternos
- \* Tabaquismo, exposición a alérgenos y contaminación ambiental
- \* Estacionalidad: otoño/invierno

# \* OMA

## Controversias

- \* **Diagnóstico: características clínicas y otoscópicas**
- \* **Efecto de la vacunación con Prevenar ® en la epidemiología y los patrones de sensibilidad/resistencia**
- \* **Tratamiento: opciones de tratamiento antibiótico vs tratamiento observacional**

# \* OMA

## Diagnóstico

- \* Comienzo agudo de los síntomas
- \* Presencia de líquido en el oído medio
- \* Signos de inflamación aguda del oído medio

# \* OMA Diagnóstico

## \* Comienzo agudo de los síntomas

- \* Laine et al: 237/469 pacientes diagnóstico de OMA
- \* McCormick et al: score de síntomas 3 vs 5 items
- \* Shaikh et al: score de síntomas 7 items

**NO hay ningún síntoma patognomónico de OMA**

# \* OMA Diagnóstico

## \* Otoscopia / Otoscopia neumática

\* Karma et al: 2911 niños de 6 meses a 2,5 años

Predictor	Sensibilidad	Especificidad
Motilidad disminuída	<b>95%</b>	<b>85%</b>
MT opaca	74%	<b>93%</b>
MT bombé	51%	<b>97%</b>

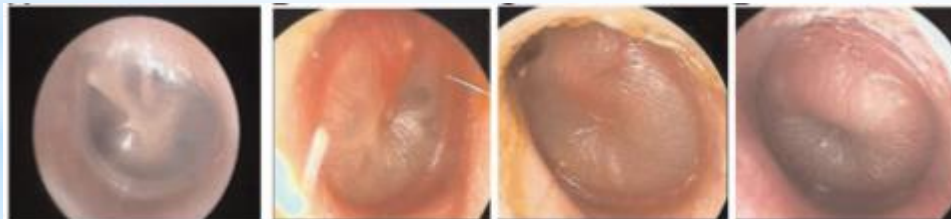


TABLE 2 Otitoscopic Findings in Children With Acute Symptoms and MEE<sup>a</sup>

TM Finding in Acute Visits With MEE	Group I (Tampere, Finland), %	Group II (Oulo, Finland), %
<b>Color</b>		
Distinctly red	69.8	65.6
Hemorrhagic	81.3	62.9
Strongly red	87.7	68.1
Moderately red	59.8	66.0
Slightly red	39.4	16.7
Cloudy	95.7	80.0
Normal	1.7	4.9
<b>Position</b>		
Bulging	96.0	89
Retracted	46.8	48.6
Normal	32.1	22.2
<b>Mobility</b>		
Distinctly impaired	94.0	78.5
Slightly impaired	59.7	32.8
Normal	2.7	4.8

<sup>a</sup> Totals are greater than 100%, because each ear may have had different findings.<sup>45</sup>

Karma PH, et al. Otitoscopic diagnosis of middle ear effusion in acute and non-acute otitis media. I. The value of different otoscopic findings. *Int J Pediatr Otorhinolaryngol.* 1989;17(1):37-49

# **\* OMA**

## **Tratamiento sintomático**

- \* Tratamiento de la otalgia:**
  - \* ibuprofeno, paracetamol**
  - \* Gotas óticas de benzocaína, procaína, lidocaína (> 5 años)**
  - \* Homeopatía (estudios no controlados)**
  - \* Analgesia narcoléptica: codeína**
  - \* Timpanostomía**

# \* OMA

## ¿Tratamiento antibiótico?

### A Placebo-Controlled Trial of Antimicrobial Treatment for Acute Otitis Media

Paula A. Tähtinen, M.D., Miia K. Laine, M.D., Pentti Huovinen, M.D., Ph.D., Jari Jalava, Ph.D., Olli Ruuskanen, M.D., Ph.D., and Aino Ruohola, M.D., Ph.D.

#### ABSTRACT

#### BACKGROUND

The efficacy of antimicrobial treatment in children with acute otitis media remains controversial.

#### METHODS

In this randomized, double-blind trial, children 6 to 35 months of age with acute otitis media, diagnosed with the use of strict criteria, received amoxicillin-clavulanate (161 children) or placebo (158 children) for 7 days. The primary outcome was the time to treatment failure from the first dose until the end-of-treatment visit on day 8. The definition of treatment failure was based on the overall condition of the child (including adverse events) and otoscopic signs of acute otitis media.

#### RESULTS

Treatment failure occurred in 18.6% of the children who received amoxicillin-clavulanate, as compared with 44.9% of the children who received placebo ( $P < 0.001$ ). The difference between the groups was already apparent at the first scheduled visit (day 3), at which time 13.7% of the children who received amoxicillin-clavulanate, as compared with 25.3% of those who received placebo, had treatment failure. Overall, amoxicillin-clavulanate reduced the progression to treatment failure by 62% (hazard ratio, 0.38; 95% confidence interval [CI], 0.25 to 0.59;  $P < 0.001$ ) and the need for rescue treatment by 81% (6.8% vs. 33.5%; hazard ratio, 0.19; 95% CI, 0.10 to 0.36;  $P < 0.001$ ). Analgesic or antipyretic agents were given to 84.2% and 85.9% of the children in the amoxicillin-clavulanate and placebo groups, respectively. Adverse events were significantly more common in the amoxicillin-clavulanate group than in the placebo group. A total of 47.8% of the children in the amoxicillin-clavulanate group had diarrhea, as compared with 26.6% in the placebo group ( $P < 0.001$ ); 8.7% and 3.2% of the children in the respective groups had eczema ( $P = 0.04$ ).

#### CONCLUSIONS

Children with acute otitis media benefit from antimicrobial treatment as compared with placebo, although they have more side effects. Future studies should identify patients who may derive the greatest benefit, in order to minimize unnecessary antimicrobial treatment and the development of bacterial resistance. (Funded by the Foundation for Paediatric Research and others; ClinicalTrials.gov number, NCT00299455.)

### Treatment of Acute Otitis Media in Children under 2 Years of Age

Alejandro Hoberman, M.D., Jack L. Paradise, M.D., Howard E. Rockette, Ph.D., Nader Shaikh, M.D., M.P.H., Ellen R. Wald, M.D., Diana H. Kearney, R.N., C.C.R.C., D. Kathleen Colborn, B.S., Marcia Kurs-Lasky, M.S., Sonika Bhatnagar, M.D., M.P.H., Mary Ann Haralam, C.R.N.P., Lisa M. Zoffel, C.R.N.P., Carly Jenkins, R.N., Marcia A. Pope, R.N., Tracy L. Balentine, R.N., and Karen A. Barbadora, M.T.

Department of Pediatrics, University of Pittsburgh School of Medicine, Children's Hospital of Pittsburgh of the University of Pittsburgh Medical Center (A.H., J.L.P., N.S., E.R.W., D.H.K., D.K.C., S.B., M.A.H., L.M.Z., C.J., M.A.P., T.L.B., K.A.B.), and the Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh (H.E.R., M.K.-L.) — both in Pittsburgh

#### Abstract

**Background**—Recommendations vary regarding immediate antimicrobial treatment versus watchful waiting for children younger than 2 years of age with acute otitis media.

**Methods**—We randomly assigned 291 children 6 to 23 months of age, with acute otitis media diagnosed with the use of stringent criteria, to receive amoxicillin-clavulanate or placebo for 10 days. We measured symptomatic response and rates of clinical failure.

**Results**—Among the children who received amoxicillin-clavulanate, 35% had initial resolution of symptoms by day 2, 61% by day 4, and 80% by day 7; among children who received placebo, 28% had initial resolution of symptoms by day 2, 54% by day 4, and 74% by day 7 ( $P = 0.14$  for the overall comparison). For sustained resolution of symptoms, the corresponding values were 20%, 41%, and 67% with amoxicillin-clavulanate, as compared with 14%, 36%, and 53% with placebo ( $P = 0.04$  for the overall comparison). Mean symptom scores over the first 7 days were lower for the children treated with amoxicillin-clavulanate than for those who received placebo ( $P = 0.02$ ). The rate of clinical failure — defined as the persistence of signs of acute infection on otoscopic examination — was also lower among the children treated with amoxicillin-clavulanate than among those who received placebo: 4% versus 23% at or before the visit on day 4 or 5 ( $P < 0.001$ ) and 16% versus 51% at or before the visit on day 10 to 12 ( $P < 0.001$ ). Mastoiditis developed in one child who received placebo. Diarrhea and diaper-area dermatitis were more common among children who received amoxicillin-clavulanate. There were no significant changes in either group in the rates of nasopharyngeal colonization with nonsusceptible *Streptococcus pneumoniae*.

**Conclusions**—Among children 6 to 23 months of age with acute otitis media, treatment with amoxicillin-clavulanate for 10 days tended to reduce the time to resolution of symptoms and reduced the overall symptom burden and the rate of persistent signs of acute infection on otoscopic examination. (Funded by the National Institute of Allergy and Infectious Diseases; ClinicalTrials.gov number, NCT00377260.)

# \* OMA

## ¿Tratamiento antibiótico?

\* Resolución espontánea:

\* 19% OMA por *S pneumoniae*

\* 48% OMA por *H influenzae*

\* 75% OMA por *M catarrhalis*

**Nonsevere acute otitis media: a clinical trial comparing outcomes of watchful waiting versus immediate antibiotic treatment**

*McCormick D P, Chonmaitree T, Pittman C, Saeed K, Friedman N R, Uchida T, Baldwin C D*

# \* OMA

## ¿Tratamiento antibiótico?

Edad	OMA con otorrea	OMA uni o bilateral con síntomas severos	OMA bilateral sin otorrea	OMA unilateral sin otorrea
6 meses a 2 años	Tto antibiótico	Tto antibiótico	Tto antibiótico	Tto antibiótico vs observacional
> 2 años	Tto antibiótico	Tto antibiótico	Tto antibiótico vs observacional	Tto antibiótico vs observacional

# \* OMA

## Etiología

\* >96% de los casos de OMA se puede aislar los microorganismos causales:

- \* 66% bacterias y virus
- \* 27% sólo bacterias
- \* 4% sólo virus

Bacterias
<i>S pneumoniae</i> 43,5%: 19F y 23F (25%) 14 y 6B (6-18%) 6A, 19A y 9V (5-10%)
<i>H influenzae</i> no tipificable 30%
<i>M catarrhalis</i> 6,4%
<i>S pyogenes</i> 4,8%

Virus
Virus syncitial respiratorio
Influenza
Adenovirus
Rhinovirus
Coronavirus
Enterovirus
Parainfluenza
Metapneumovirus

\* OMA

# Vacuna neumocócica conjugada

## \* Emergence of a Multiresistant Serotype 19A Pneumococcal Strain Not Included in the 7-Valent Conjugate Vaccine as an Otopathogen in Children

Michael E. Pichichero, MD; Janet R. Casey, MD

to capsular serotypes and antibiotic susceptibility, following the introduction of a pneumococcal 7-valent conjugate vaccine (PCV7).

**Design, Setting, and Patients** Prospective cohort study using tympanocentesis to identify *S pneumoniae* strains that caused AOM in children receiving PCV7 between September 2003 and June 2006. All children were from a Rochester, New York, pediatric practice.

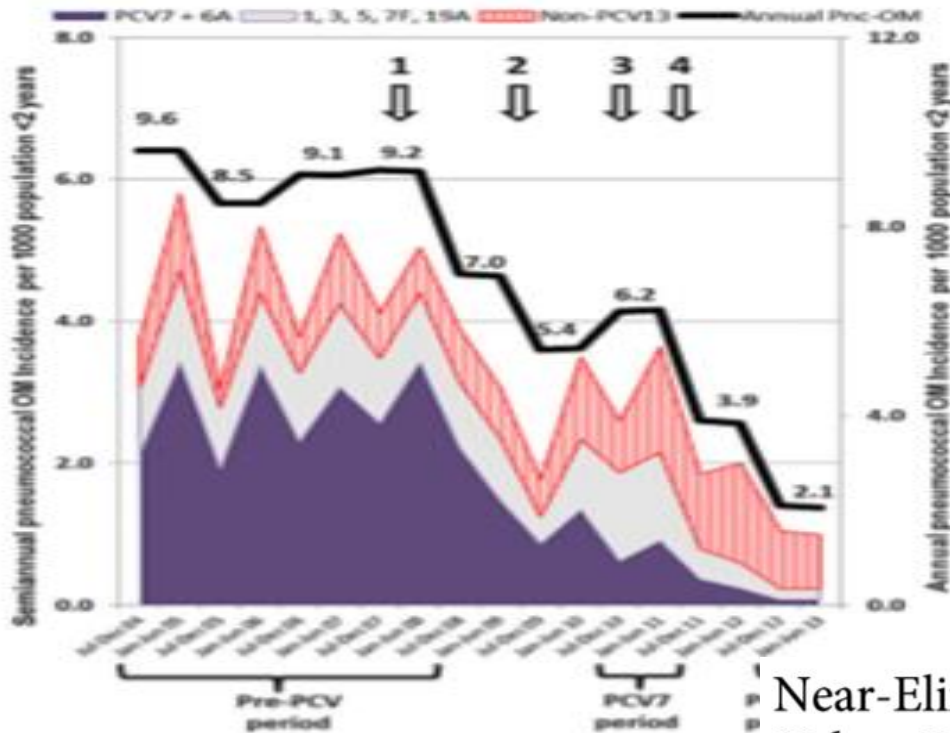
**Main Outcome Measure** Determination of serotypes and antibiotic susceptibility of *S pneumoniae* causing AOM.

**Results** Among 1816 children in whom AOM was diagnosed, tympanocentesis was performed in 212, yielding 59 cases of *S pneumoniae* infection. One strain of *S pneumoniae* belonging to serotype 19A was a new genotype and was resistant to all antibiotics approved by the FDA for use in children with AOM. This strain was identified in 9 cases (2 in 2003-2004, 2 in 2004-2005, and 5 in 2005-2006). Four children infected with this strain had been unsuccessfully treated with 2 or more antibiotics, including high-dose amoxicillin or amoxicillin-clavulanate and 3 injections of ceftriaxone; 3 had recurrent AOM; and for 2 others, the infection was their first in life. The first 4 cases required tympanostomy tube insertion after additional unsuccessful antibiotic therapies. Levofloxacin was used in the subsequent 5 cases, with resolution of infection without surgery.

**Conclusion** In the years following introduction of PCV7, a strain of *S pneumoniae* has emerged in the United States as an otopathogen that is resistant to all FDA-approved antibiotics for treatment of AOM in children.

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## Vacuna neumocócica conjugada



**Figure 1.** Annual and semiannual incidences per 1000 of (Pnc) otitis media (OM) episodes in children aged <2 years in Southern Israel, July 2004–June 2013. Arrows indicate (1) 7-valent conjugate vaccine (PCV7) in private market; (2) PCV7 in Israeli National Immunization Plan (NIP); (3) 13-valent pneumococcal conjugate vaccine (PCV13) introduced to the Israeli NIP; (4) >75% of children aged 7–11 months received ≥2 doses of PCV13. Abbreviations: PCV, pneumococcal conjugate vaccine.

Near-Elimination of Otitis Media Caused by 13-Valent Pneumococcal Conjugate Vaccine (PCV) Serotypes in Southern Israel Shortly After Sequential Introduction of 7-Valent/13-Valent PCV

Shalom Ben-Shimol,<sup>1,3</sup> Noga Givon-Lavi,<sup>1,3</sup> Eugene Leibovitz,<sup>1,3</sup> Simon Raiz,<sup>2,3</sup> David Greenberg,<sup>1,3</sup> and Ron Dagan<sup>1,3</sup>

<sup>1</sup>Pediatric Infectious Disease Unit, <sup>2</sup>Department of Otolaryngology, Soroka University Medical Center, and <sup>3</sup>The Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel

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## Sensibilidad antibiótica

- \* ***S pneumoniae***:
  - \* 83-87% son sensibles a la amoxicilina
  - \* 70-80% son sensibles a cefuroxima
  - \* Altas dosis de amoxicilina exceden la CIM se los serotipos sensibles e intermedios
  - \* Prevenir 13: reducción de la enfermedad y del uso de altas dosis de amoxicilina
  
- \* ***H influenza* no tipificable**:
  - \* 58% al 82% son sensibles a altas dosis de amoxicilina
  - \* 98% son sensibles a cefuroxima
  - \* Disminución de la producción de  $\beta$  lactamasas
  
- \* ***M catarrhalis***:
  - \* 100%son resistentes a amoxicilina
  - \* No produce complicaciones supuradas

# \* OMA

## Tratamiento inicial

\*

Tratamiento inicial de elección		
Antibiótico	Dosis	Intervalo
Amoxicilina	80-90 mg/K/día	12 horas
Amoxicilina-ácido clavulánico 14:1	90mg/K/día	12 horas
Tratamiento alternativo (alergia a la penicilina)		
Cefdinir	14mg/K/día	12-24 horas
Cefpodoxima	10mg/K/día	12 horas
Cefuroxima	30mg/K/día	12 horas
Ceftriaxona	50mg/K/día IM o EV	24 horas 1 a 3 dosis

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## Tratamiento por fallo

\*

### Tratamiento por falla del tratamiento inicial, a las 48-72 horas

Antibiótico	Dosis	Intervalo
Amoxicilina-ácido clavulánico 14:1	90mg/K/día	12 horas
Ceftriaxona	50mg/K/día IM o EV	24 horas 3 dosis

### Tratamiento alternativo

Clindamicina	30-40mg/K/día	8 horas
Cefalosporinas + Clindamicina	50mg/K/día IM o EV 30-40mg/K/día	24 horas 3 dosis 8 horas
Ceftriaxona + Clindamicina + Timpanocentesis	50mg/K/día IM o EV 30-40mg/K/día	24 horas 3 dosis

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## Tratamiento

- \* Sin resolución de los síntomas:
  - \* Otras opciones antibióticas: levofloxacina, linezolid  
¿*S pneumoniae* serotipo 19A multiresistente?
  - \* Timpanocentesis: cultivo y antibiograma
  - \* Cultivo nasofaríngeo: VPN 95%-99% para las 3 bacterias  
VPP 22-44% *S pneumoniae*  
50-71% *H influenzae*  
17-19% *M catarrhalis*

# \*OMA

## Duración del tratamiento

Edad	Duración
< 2 años	10 días
OMA severa	10 días
2 a 5 años OMA leve o moderada	7 días
> 6 años OMA leve o moderada	5 a 7 días

# \* OMA

## Seguimiento

- \* **Reevaluación del paciente**
- \* **Otoscopia/otoscopia neumática**
  - \* **Persistencia de líquido en oído medio:**
    - \* **60-70% a los 10-14 días,**
    - \* **40% al mes**
    - \* **A los 3 meses entre 10-25%**

# \* OMA Prevención

- \* No se requiere profilaxis antibiótica
- \* Colocación de tubos de timpanostomía en OMA recurrente?
- \* Xylitol
- \* Lactancia materna exclusiva 6 primeros meses de vida.  
Evitar la posición supina cuando se administra biberón
- \* Eliminar la exposición pasiva al tabaco
- \* ↓ la incidencia de catarros, evitar las guarderías

# \* OMA Prevención

## \* Vacuna para virus influenza:

- \* 30% al 55% de eficacia en prevención de OMA durante la estación de influenza

## \* Vacuna neumocócica conjugada 13 valente:

- \* ↓ 60% de todos los episodios de OMA recurrente o complicada
- \* ↓ 85% de los episodios de OMA por *S pneumoniae*

# \* OMA

## Conclusiones

- \* **Patología prevalente de la infancia**
- \* **Ausencia del «gold estándar» diagnóstico**
- \* **Cambios en la epidemiología**
- \* **Cambios en las opciones terapéuticas**
- \* **Importancia de la prevención**

 **Muchas gracias**

# \* OMA

## Complicaciones y secuelas

### \* Intratemporales

- \* Pérdida de la audición
- \* Perforación MT
- \* Mastoiditis/petrositis
- \* Laberintitis
- \* OMA crónica supurada
- \* Parálisis del nervio facial
- \* Colesteatoma
- \* Timpanoesclerosis

### \* Intracraneales

- \* Meningitis
- \* Absceso cerebral
- \* Trombosis del seno lateral