Cuando los cuadros respiratorios se repiten…

- Voy a la guardia y mi hijo ¿siempre tiene neumonitis? ¿neumonía y neumonitis son lo mismo?

Neumonía-Neumonitis

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Nomenclatura

“El uso apropiado y preciso de un vocabulario específico sobre un área de conocimiento es crucial para la comunicación entre los especialistas en ese campo, y la medicina no es una excepción “ (Sempere)

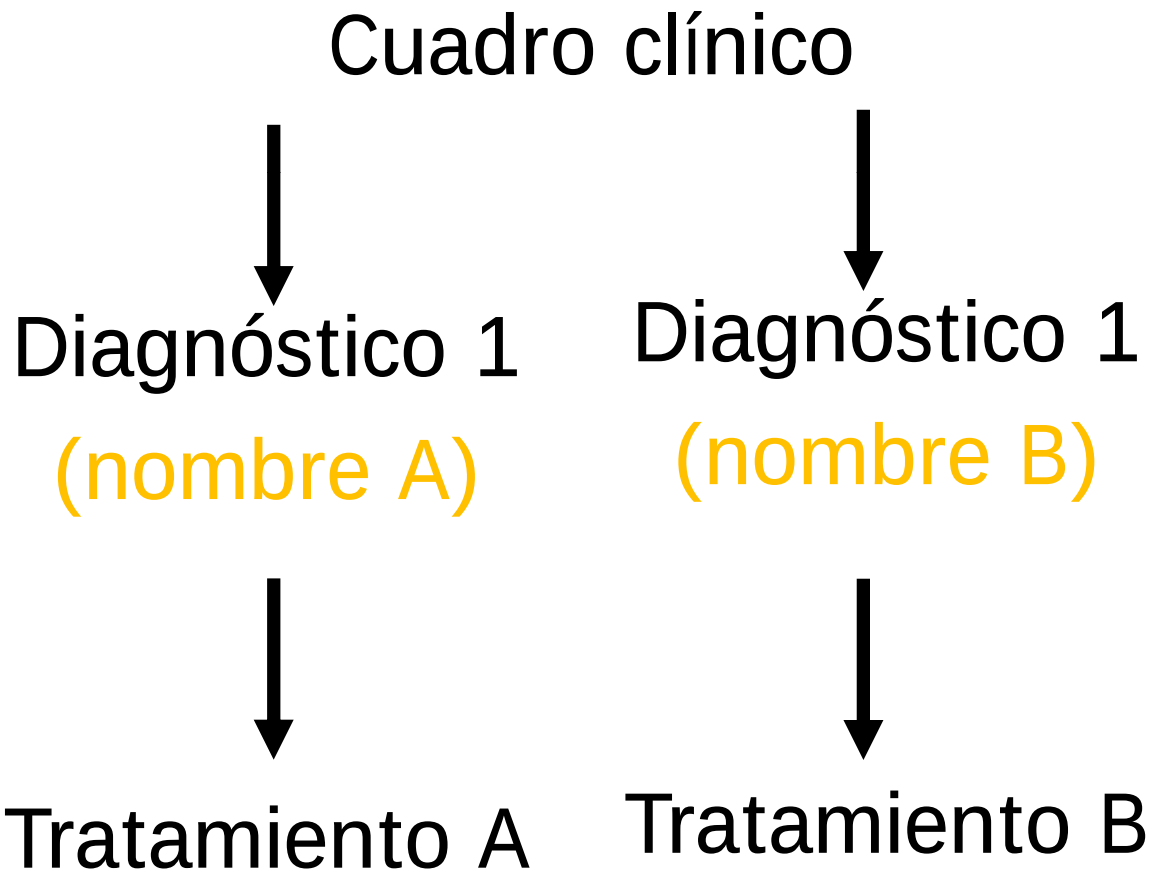
Diagnóstico

Cuadro clínico

Diagnóstico

Tratamiento

Diagnóstico



Cuál corresponde?

- Neumonía
- Neumonitis
- Neumonía atípica
- Neumopatía
- Infección respiratoria baja aguda (IRAB)

Neumonía

"...solidificación exudativa (consolidación) del tejido pulmonar..."

Kumar V, Abbas A, Fausto N, Mitchell R. Robbins, Patología Humana. 8ª ed; Elsevier, 2008.

Neumonía

"...cuadro que comprende una constelación de síntomas y signos (fiebre, escalofríos, tos, dolor pleurítico, producción de esputo, matidez a la percusión, respiración bronquial, egofonía, estertores crepitantes, roce pleural) en combinación con, por lo menos, opacidades en los campos pulmonares en la radiografía de tórax."

Fauci A, Braunwald E, Kasper D, Hauser S, Longo D, Jameson J, Loscalzo J (ed). Harrison, Principios de Medicina Interna. 17ª ed, McGraw-Hill, 2009.

Neumonía

- OMS
  - Tos + taquipnea = Neumonía

(Technical Bases for the WHO Recommendations on the Management of Pneumonia in Children at First Level Health Facilities. World Health Organization: Programme for the Control of Acute Respiratory Infections. Geneva, Switzerland: WHO; 1991. WHO/ARI/91.20.)

  - Empleo algoritmo OMS-AIEPI redujo 40% la mortalidad específica por neumonía en escenarios de escaso acceso a cuidado médico.

Sazawal S, Black RE. Effect of pneumonia case management on mortality in neonates, infants, and preschool children: a meta-analysis of community-based trials. Lancet Infect Dis 2003;3(9):547-56.

  - (Sensibilidad: 94%, Especificidad 20%)

Cardoso MR et al. Arch Dis Child 2011 96: 58-61

Neumonía

"Afección respiratoria aguda baja acompañada de infiltrados radiológicos compatibles con la presencia de un proceso inflamatorio a nivel del espacio alveolar, el intersticio pulmonar o ambos"

(OMS, 2001)

El problema ...

NEUMONIA = BACTERIA = ANTIBIOTICO

El problema

NEUMONIA = BACTERIA = ANTIBIOTICO

Neumonía

GRIPE Y NEUMONIA (10 088 J10-J18)	
J12	**Neumonía viral, no clasificada en otra parte**
J12.0	Neumonía debida a adenovirus
J12.1	Neumonía debida a virus sincitial respiratorio
J12.2	Neumonía debida a virus parainfluenza
J12.8	Neumonía debida a otros virus
J12.9	Neumonía viral, no especificada
J13	**Neumonía debida a Streptococcus pneumoniae**
J14	**Neumonía debida a Haemophilus influenzae**
J15	**Neumonía bacteriana, no clasificada en otra parte**
J15.0	Neumonía debida a Klebsiella pneumoniae
J15.1	Neumonía debida a Pseudomonas
J15.2	Neumonía debida a estafilococos
J15.3	Neumonía debida a estreptococos del grupo B
J15.4	Neumonía debida a otros estreptococos
J15.5	Neumonía debida a Escherichia coli
J15.6	Neumonía debida a otras bacterias aerobicas gramnegativas
J15.7	Neumonía debida a Mycoplasma pneumoniae
J15.8	Otras neumonías bacterianas
J15.9	Neumonía bacteriana, no especificada
J16	**Neumonía debida a otros microorganismos infecciosos, no clasificados en otra parte**
J16.0	Neumonía debida a clamidias
J16.8	Neumonía debida a otros microorganismos infecciosos especificados
J17	**Neumonía en enfermedades clasificadas en otra parte**
J17.0	Neumonía en enfermedades bacterianas clasificadas en otra parte
J17.1	Neumonía en enfermedades virales clasificadas en otra parte
J17.2	Neumonía en micosis
J17.3*	Neumonía en enfermedades parasitarias
J17.8*	Neumonía en otras enfermedades clasificadas en otra parte
J18	**Neumonía, organismo no especificado**
J18.0	Bronconeumonía, no especificada
J18.1	Neumonía lobar, no especificada
J18.2	Neumonía hipostática, no especificada
J18.8	Otras neumonías, de microorganismo no especificado
J18.9	Neumonía, no especificada

“Neumonitis”

ENFERMEDADES PULMONARES DEBIDAS A SUSTANCIAS EXTRAÑAS (J60-J70)	
J60	**Neumoconiosis de los mineros del carbón**
J61	**Neumoconiosis debida al asbesto y a otras fibras minerales**
J62	**Neumoconiosis debida a polvo de sílice**
J62.0	Neumoconiosis debida a polvo de talco
J62.8	Neumoconiosis debida a otros polvos que contienen sílice
J63	**Neumoconiosis debida a otros polvos inorgánicos**
J63.0	Aluminosis (del pulmón)
J63.1	Fibrosis (del pulmón) debida a bauxita
J63.2	Beriliosis
J63.3	Fibrosis (del pulmón) debida a grafito
J63.4	Siderosis
J63.5	Estañosis
J63.8	Neumoconiosis debida a otros polvos inorgánicos especificados
J64	**Neumoconiosis, no especificada**
J65	**Neumoconiosis asociada con tuberculosis**
J67	**Neumonitis debida a hipersensibilidad al polvo orgánico**
J68	**Afecciones respiratorias debidas a inhalación de gases, humos, vapores y sustancias químicas**
J68.0	Bronquitis y neumonitis debidas a inhalación de gases, humos, vapores y sustancias químicas
J69	**Neumonitis debida a sólidos y líquidos**

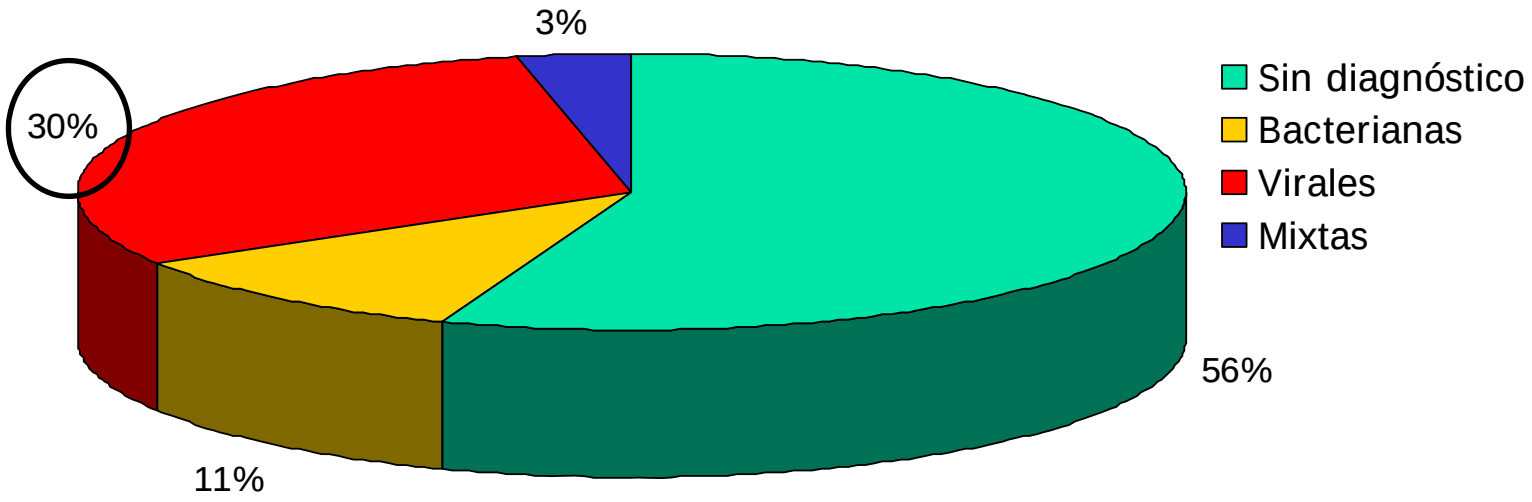
Neumonías virales

- 100.000.000 casos al año en pediatría
- > 50% de las que se arriba a diagnóstico en <5a.
- 10% asociadas a infección bacteriana
- Predominan en < 2 años
- Evolución favorable excepto grupos de riesgo

Ruuskanen O et al. Viral pneumonia. Lancet 2011; 377:1264

Neumonía viral

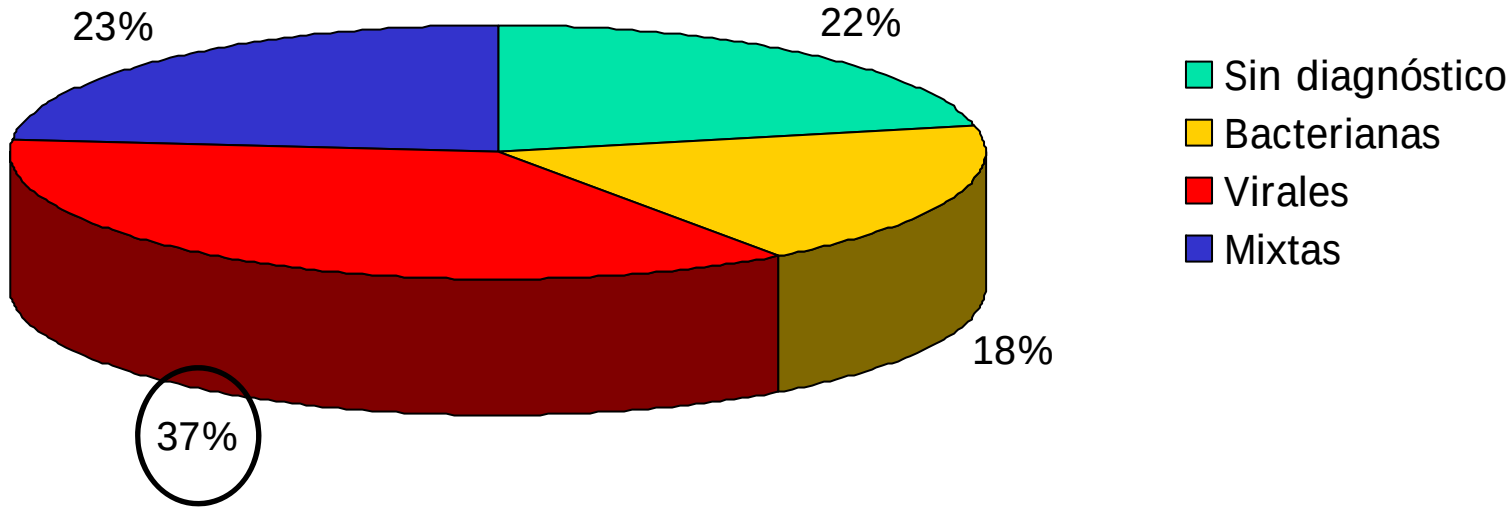
Etiologic and clinical evaluation of acute lower respiratory tract infections in young Argentinian children.
Argentina, 1984-1987. Edad= 0-5 n = 1003



Weissenbacher M et al. Rev Infect Dis 1990; 12(suppl 8):s889-898

Neumonía viral

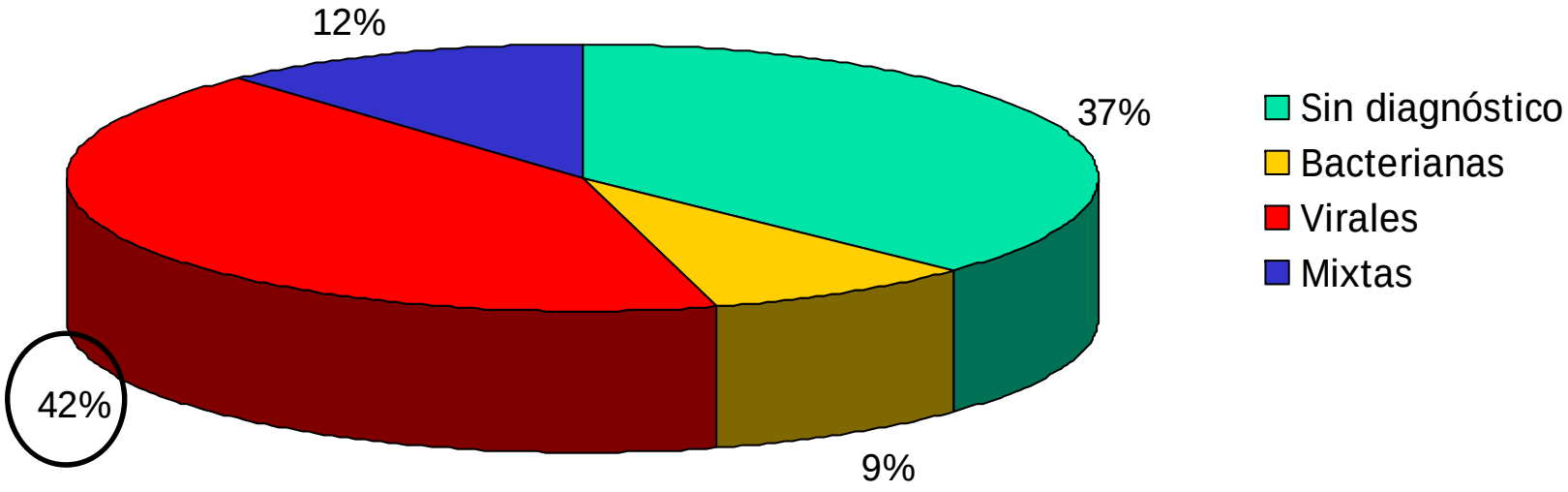
The role of respiratory viral infections among children hospitalized for Community-acquired pneumonia in a developing country
Brasil, 2003-2005. Edad= 0-5 n = 184



Nascimento-Carvalho CM et al. Pediatr Infect Dis J 2008; 27:939-941

Neumonía viral

Perfil etiológico de la neumonía adquirida en la comunidad en niños de 2 a 59 meses en dos zonas ecológicamente distintas del Perú. Edad= 0-6. n = 193



Padilla J et al. Arch Argent Pediatr 2010; 108:516-523

Origen de los datos

BOSTID

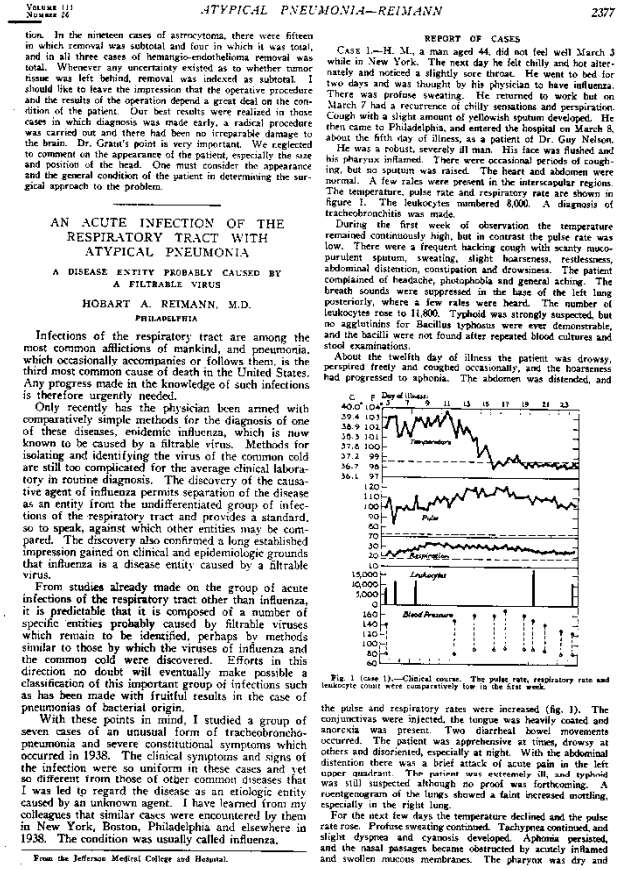
- Selwyn BJ. The epidemiology of acute respiratory tract infection in young children: comparison of findings from several developing countries. Coordinated Data Group of BOSTID Researchers. Rev Infect Dis. 1990; 12 Suppl 8:S870-88.

PERCH

- Levine OS, O'Brien KL, Deloria-Knoll M, Murdoch DR, Feikin DR, DeLuca AN, Driscoll AJ, Baggett HC, Brooks WA, Howie SR, Kotloff KL, Madhi SA, Maloney SA, Sow S, Thea DM, Scott JA. The Pneumonia Etiology Research for Child Health Project: a 21st century childhood pneumonia etiology study. Clin Infect Dis. 2012; 54 Suppl 2:S93-101.

Neumonía “atípica”

Reimann H. An acute infection of the respiratory tract with atypical pneumonia. A disease entity probably caused by a filtrable virus. JAMA 1938 1938;111:237



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ATYPICAL PNEUMONIA—REIMANN

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tion. In the nineteen cases of astrocytoma, there were fifteen in which removal was subtotal and four in which it was total, and in all three cases of hemangio-endothelioma removal was total. Whenever any uncertainty existed as to whether tumor tissue was left behind, removal was indexed as subtotal. I should like to leave the impression that the operative procedure and the results of the operation depend a great deal on the condition of the patient. Our best results were realized in those cases in which diagnosis was made early, a radical procedure was carried out and there had been no irreparable damage to the brain. Dr. Grant's point is very important. We neglected to comment on the appearance of the patient, especially the size and position of the head. One must consider the appearance and the general condition of the patient in determining the surgical approach to the problem.

AN ACUTE INFECTION OF THE RESPIRATORY TRACT WITH ATYPICAL PNEUMONIA

A DISEASE ENTITY PROBABLY CAUSED BY A FILTRABLE VIRUS

HOBART A. REIMANN, M.D.
PHILADELPHIA

Infections of the respiratory tract are among the most common afflictions of mankind, and pneumonia, which occasionally accompanies or follows them, is the third most common cause of death in the United States. Any progress made in the knowledge of such infections is therefore urgently needed.

Only recently has the physician been armed with comparatively simple methods for the diagnosis of one of these diseases, epidemic influenza, which is now known to be caused by a filtrable virus. Methods for isolating and identifying the virus of the common cold are still too complicated for the average clinical laboratory in routine diagnosis. The discovery of the causative agent of influenza permits separation of the disease as an entity from the undifferentiated group of infections of the respiratory tract and provides a standard, so to speak, against which other entities may be compared. The discovery also confirmed a long established impression gained on clinical and epidemiologic grounds that influenza is a disease entity caused by a filtrable virus.

From studies already made on the group of acute infections of the respiratory tract other than influenza, it is predictable that it is composed of a number of specific entities probably caused by filtrable viruses which remain to be identified, perhaps by methods similar to those by which the viruses of influenza and the common cold were discovered. Efforts in this direction no doubt will eventually make possible a classification of this important group of infections such as has been made with fruitful results in the case of pneumonias of bacterial origin.

With these points in mind, I studied a group of seven cases of an unusual form of tracheobronchopneumonia and severe constitutional symptoms which occurred in 1938. The clinical symptoms and signs of the infection were so uniform in these cases and yet so different from those of other common diseases that I was led to regard the disease as an etiologic entity caused by an unknown agent. I have learned from my colleagues that similar cases were encountered by them in New York, Boston, Philadelphia and elsewhere in 1938. The condition was usually called influenza.

From the Jefferson Medical College and Hospital.

REPORT OF CASES

CASE 1.—H. M., a man aged 44, did not feel well March 3 while in New York. The next day he felt chilly and hot alternately and noticed a slightly sore throat. He went to bed for two days and was thought by his physician to have influenza. There was profuse sweating. He returned to work but on March 7 had a recurrence of chilly sensations and perspiration. Cough with a slight amount of yellowish sputum developed. He then came to Philadelphia, and entered the hospital on March 8, about the fifth day of illness, as a patient of Dr. Guy Nelson.

He was a robust, severely ill man. His face was flushed and his pharynx inflamed. There were occasional periods of coughing, but no sputum was raised. The heart and abdomen were normal. A few rales were present in the interscapular regions. The temperature, pulse rate and respiratory rate are shown in figure 1. The leukocytes numbered 8,000. A diagnosis of tracheobronchitis was made.

During the first week of observation the temperature remained continuously high, but in contrast the pulse rate was low. There were a frequent hacking cough with scanty mucopurulent sputum, sweating, slight hoarseness, restlessness, abdominal distention, constipation and drowsiness. The patient complained of headache, photophobia and general aching. The breath sounds were suppressed in the base of the left lung posteriorly, where a few rales were heard. The number of leukocytes rose to 11,800. Typhoid was strongly suspected, but no agglutinins for Bacillus typhosus were ever demonstrable, and the bacilli were not found after repeated blood cultures and stool examinations.

About the twelfth day of illness the patient was drowsy, perspired freely and coughed occasionally, and the hoarseness had progressed to aphonia. The abdomen was distended, and

Fig. 1 (case 1).—Clinical course. The pulse rate, respiratory rate and leukocyte count were comparatively low in the first week.

the pulse and respiratory rates were increased (fig. 1). The conjunctivas were injected, the tongue was heavily coated and anorexia was present. Two diarrheal bowel movements occurred. The patient was apprehensive at times, drowsy at others and disoriented, especially at night. With the abdominal distention there was a brief attack of acute pain in the left upper quadrant. The patient was extremely ill, and typhoid was still suspected although no proof was forthcoming. A roentgenogram of the lungs showed a faint increased mottling, especially in the right lung.

For the next few days the temperature declined and the pulse rate rose. Profuse sweating continued. Tachypnea continued, and slight dyspnea and cyanosis developed. Aphonia persisted, and the nasal passages became obstructed by acutely inflamed and swollen mucous membranes. The pharynx was dry and

Neumonía por *Mycoplasma pn*

- Eaton MD, Meikeljohn G, Vanherick W, Talbot JC. An infectious agent from cases of atypical pneumonia apparently transmissible to cotton rats. Science 1942; 96(2501):518-9.

- Chanock RM, Hayflick L, Barile MF. Growth on artificial medium of an agent associated with atypical pneumonia and its identification as a PPLO. Proc Natl Acad Sci U S A 1962; 48:41-9.

- Chanock RM. Mycoplasma pneumoniae: proposed nomenclature for atypical pneumonia organism (Eaton agent). Science 1963; 140:662.

Atípicas???????????

"The term atypical pneumonia was originally used to describe an unusual presentation of pneumonia. It is now more widely used in reference to either pneumonia caused by a relatively common group of pathogens, or to a distinct clinical syndrome the existence of which is difficult to demonstrate. As such, the use of atypical pneumonia is often inaccurate, potentially confusing, and of dubious scientific merit. We need to return to the original meaning of atypical pneumonia and restrict its use to describe pneumonia that is truly unusual in clinical presentation, epidemiology, or both."

Murdoch DR, Chambers ST. Atypical pneumonia--time to breathe new life into a useful term? Lancet Infect Dis. 2009 Aug;9(8):512-9.

Consecuencia de terminología inapropiada

- Uso inapropiado de antibióticos
  - 90% de las neumonías y 48% de las bronquiolitis reciben antibióticos
    - *Bernztein R, Drake I, Elordi S. Variabilidad en el manejo de la bronquiolitis en el primer nivel de atención público de la Argentina. Arch Argent Pediatr 2008; 106(3):205-211.*
    - *Bernztein R, Drake I. Neumonía de la comunidad en niños: impacto sanitario y costos del tratamiento en el primer nivel de atención público de la Argentina. Arch Argent Pediatr 2009;107(2):101-110.*
  - 80% de los casos espectro equivocado
    - *Kronman MP, Hersh AL, Feng R, Huang YS, Lee GE, Shah SS. Ambulatory visit rates and antibiotic prescribing for children with pneumonia, 1994-2007. Pediatrics 2011; 127(3):411-8.*

Neumonía

- Antimicrobial therapy is not routinely required for preschool-aged children with CAP, because viral pathogens are responsible for the great majority of clinical disease.

  [strong recommendation; high-quality evidence]

- *Bradley JS, Byington CL, Shah SS, Alverson B, Carter ER, Harrison C, Kaplan SL, Mace SE, McCracken GH Jr, Moore MR, St Peter SD, Stockwell JA, Swanson JT, Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. Executive summary: the management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. Clin Infect Dis. 2011 Oct;53(7):617-30.*

Neumonía

- "...55% to 65% of children with specific signs and symptoms did not have radiologic pneumonia. Treatment of childhood pneumonia on the basis of clinical parameters alone with no chest x-ray confirmation may lead to a large portion of children receiving unnecessary antibiotic therapy."
- *Zimmerman DR, Kovalski N, Fields S, Lumelsky D, Miron D. Diagnosis of childhood pneumonia: clinical assessment without radiological confirmation may lead to overtreatment. Pediatr Emerg Care. 2012 Jul;28(7):646-9.*

- "Clinical outcome in children aged 2–59 months with WHO-defined nonsevere pneumonia is not different when treated with an antibiotic or placebo. Similar trials are needed in countries with a high burden of pneumonia to rationalize the use of antibiotics in these communities."
- *Hazir T, Nisar YB, Abbasi S, Ashraf YP, Khurshid J, Tariq P, Asghar R, Murtaza A, Masood T, Maqbool S. Comparison of oral amoxicillin with placebo for the treatment of world health organization-defined nonsevere pneumonia in children aged 2-59 months: a multicenter, double-blind, randomized, placebo-controlled trial in pakistan. Clin Infect Dis. 2011 Feb 1;52(3):293-300.*

Mycoplasma pn: tratamiento

"There is insufficient evidence to draw any specific conclusions about the efficacy of antibiotics for this condition in children (although one trial suggests macrolides may be efficacious in some children with LRTI secondary to *Mycoplasma*). The use of antibiotics has to be balanced with possible adverse events. There is still a need for high quality, double-blinded RCTs to assess the efficacy and safety of antibiotics for LRTI secondary to *M. pneumoniae* in children."

Mulholland S, Gavranich JB, Gillies MB, Chang AB. Antibiotics for community-acquired lower respiratory tract infections secondary to Mycoplasma pneumoniae in children. Cochrane Database Syst Rev. 2012 Sep 12;9:CD004875.

Consecuencia de terminología inapropiada

- Efectos Adversos
  - Los que reciben antibióticos tienen 60% más riesgo de efectos adversos
  - *NICE clinical guideline 69, 2008*
- Costos
- Incremento de la resistencia bacteriana
  - Los que reciben antibióticos tienen hasta 4 veces más riesgo de desarrollar resistencia bacteriana

Costelloe C, Metcalfe C, Lovering A, Mant D, Hay A.Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. BMJ 2010;340:c2096

Problema generalizado

"El uso innecesario de antibióticos en neumonías virales y el empleo de antibióticos de segunda línea en neumonías bacterianas no complicadas, es frecuente en todos los niveles de atención."

Stein RT, Marostica PJ. Community-acquired pneumonia: a review and recent advances. *Pediatr Pulmonol* 2007;42(12):1095-103.

Terminología apropiada

"... se debería emplear el término neumonía para identificar toda afección infecciosa respiratoria baja aguda acompañada de infiltrados radiológicos compatibles con la presencia de un proceso inflamatorio a nivel del espacio alveolar, intersticial o ambos. Posteriormente se deberá considerar si dicha entidad es "presumiblemente viral" o "presumiblemente bacteriana"."

Gonzalez Pena H, Ferrero F. El difícil diagnóstico de la simple neumonía. Arch Argent Pediatr 2009; 107(6):483-485

Es posible no usar antibióticos en neumonía en lactantes?

- Más de la mitad son virales
- Muy pocas son debidas a My pn
- Macrólidos no probadamente efectivos
- Elementos clínicos pueden orientar
- La radiología puede orientar

- Gracias!

Bacterial Pneumonia Score (BPS)

CARACTERISTICAS			PUNTAJE
Temperatura al ingreso (≥ 39 °C)			3
Edad (≥9 meses)			2
Neutrófilos totales (≥ 8000 /mm³)			2
Neutrófilos en cayado (≥ 5 %)			1
RADIOGRAFIA DE TÓRAX	**INFILTRADO**	Bien definido, lobar, segmentario, subsegmentario (redondeado): 2 Pobremente definido, en parche: 1 Intersticial, peribronquial: -1	-3 a 7
	LOCALIZACION	Un solo lóbulo:1 Múltiples lóbulos en un o ambos pulmones, pero bien definidos como infiltrados: 1 Múltiples localizaciones, perihiliar, pobremente definido: -1	
	LIQUIDO EN ESPACIO PLEURAL	Borramiento mínimo de senos: 1 Derrame evidente: 2	
	ABCESO, BULLA O NEUMATOCELE	Dudoso: 1 Evidente: 2	
	ATELECTASIA	Subsegmentaria (habitualmente múltiple):-1 Lobar (lóbulos superior o medio derechos):-1 Lobar (otros lóbulos):0	

Moreno L, Krishnan J, Duran P, Ferrero F. Development and validation of a clinical prediction rule to distinguish bacterial from viral pneumonia in children. Pediatr Pulmonol 2006; 41:331-337

Desempeño del BPS

BPS $\geq$ 4 puntos predice neumonía bacteriana

- Sensibilidad: 100 (84,6-100)
- Especificidad: 93,9 (87,8-97,5)
- Valor predictivo positivo: 75,9 (56,5-89,7)
- Valor predictivo negativo: 100 (96,6-100)
- Likelihood ratio positivo: 16,6
- Likelihood ratio negativo: 0
- Razón de falsos positivos: 6,14
- Razón de falsos negativos: 0

Desempeño del BPS

- Precisión (internación)
  - Moreno et al (2006): S=100%
  - Karakachoff et al (2008): S=94%
  - Ferrero et al (2008): Rx S=80%; Kappa=0,82
- Seguridad (ambulatorio)
  - Torres et al (2010): igual fracaso al tratamiento con o sin antibióticos
- Eficacia (ambulatorio)
  - Torres et al (2011): menor uso de antibióticos al guiar diagnóstico por BPS (50%)