Assistito

xxxxxxxxxxxxxxxxxxxxTesto
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nato il: 29/12/2007 sesso: MAS
c.f.: BYTDLN07T29L424E
c.r.a.: L82Y79

Accesso

09/03/2016 13:37

iniziato la visita alle ore 14:19 del 09/03/2016 dal dr. BARBI EGIDIO
per causa Malattia inviato da Accesso diretto; arrivato con Mezzi Propri, proveniente da Domicilio

Visita

Situazione attuale

Da 5 giorni febbre (TC max 40°C) e vomiti alimentari (non biliare, non ematico). Lamenta anche dolore muscolare, alla schiena e alla pancia (periombelicale). Ieri una scarica sfatta. Diuresi conservata. Ultimo peso (2 mesi fa): 36 kg.
Durante l'attesa ha bevuto alcuni cucchiaini di SRO senza vomitarla.

Bambino di aspetto sofferente, roseo, eupnoico, febbrile. Non rigor. Mucose asciutte. Cute ben idratata. TR < 2 sec. Ascoltazione cardiaca: FC 150/min, ritmico, non soffi. Al torace ingresso d'aria chiaro e simmetrico, non rumori aggiunti. Faringe iperemico. Addome globoso per adipe, dolente e dolorabile alla palpazione dei quadranti addominali inferiori. Blumberg debolmente positivo a destra. Balzello positivo. Peristalsi torpida. durante la visita riferisce dolore al rachide in sede dorso-lombare. Giordano dubbio. MMTT indenni bilateralmente. Testicoli in sede, non dolenti alla palpazione.
Peso 37 kg

XXXXXXXXXXXXXXXXXX

Data Nascita: 29/12/2007 Sesso M

Richiesta: **30098702** del: **09/03/2016** Ore: 14:38 **Urgenza**

Prelievo del: 09/03/2016 Ore: 14:38

(BU)-Pronto Soccorso

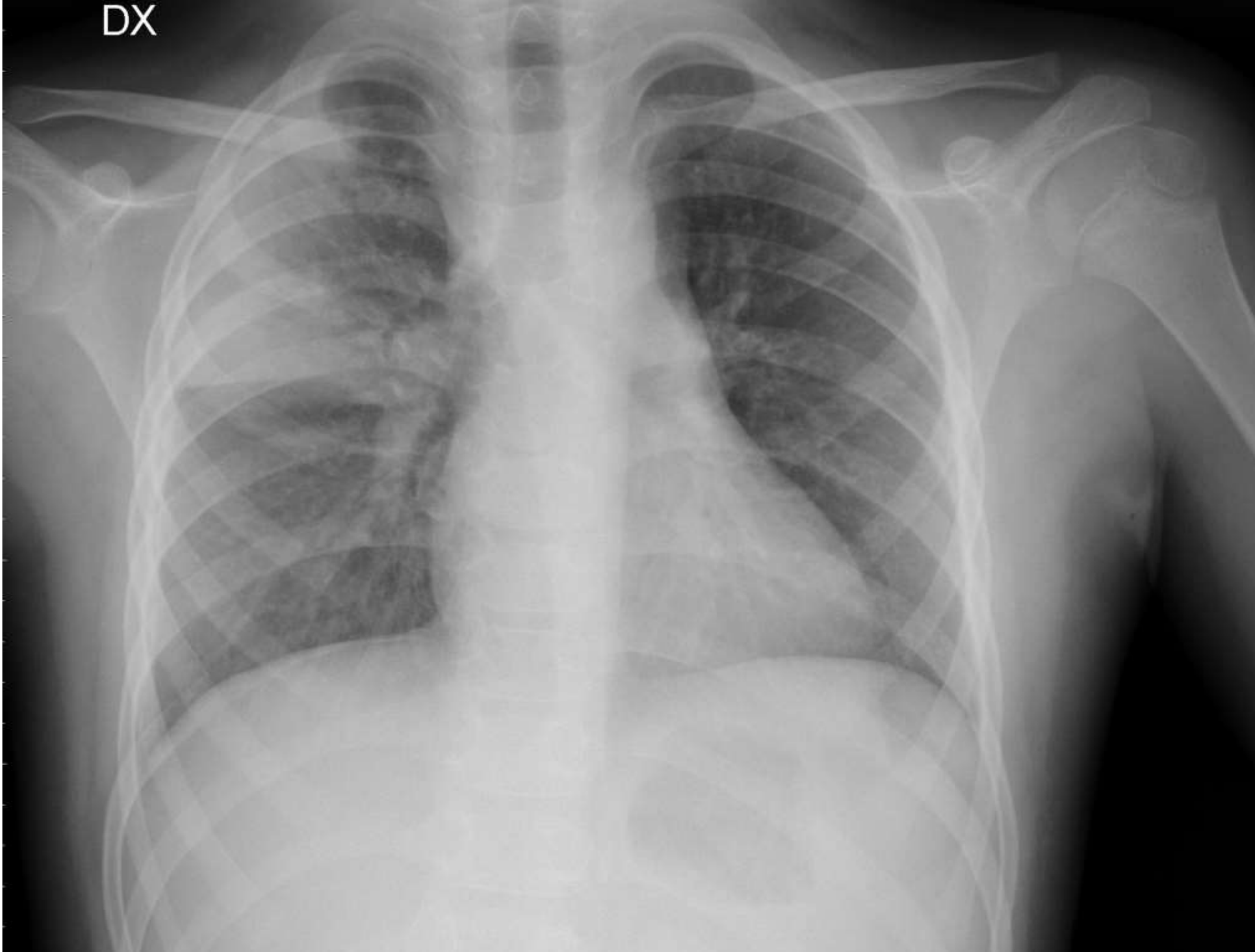
Referto Completo

Esame	*Esito*		*U.M.*	*Intervallo di riferimento*
Emocromo				
Leucociti (WBC)	**17.88**	>	x 10 ^3 / µL	4.50 - 13.50
Eritrociti (RBC)	**3.71**	<	x 10^6 /µL	4.00 - 5.40
Emoglobina (HB)	**10.8**	<	g/dL	12.0 - 14.0
Ematocrito (HTC)	**31.3**	<	%	37.0 - 45.0
MCV	**84**		fL	77 - 91
MCH	**29.1**		pg	27.0 - 32.0
MCHC	**34.5**		g/dL	30.0 - 35.0
RDW	**13.5**		%	13.0 - 14.2
Piastrine (PLT)	**276**		x 10 ^3 / µL	150 - 450
MPV	**9.2**		fL	7.5 - 9.5
PDW	**9.4**		%	
PCT	**0.25**		%	
Formula leucocitaria				
Neutrofili (%)	**79.8**		%	
Linfociti (%)	**9.5**		%	
Monociti (%)	**10.5**		%	
Eosinofili (%)	**0.1**		%	
Basofili (%)	**0.1**		%	
Neutrofili (#)	**14.3**	>	x 10 ^3 / µL	1.5 - 8.0
Linfociti (#)	**1.7**		x 10 ^3 / µL	1.5 - 6.5
Monociti (#)	**1.9**	>	x 10 ^3 / µL	0.0 - 0.8
Eosinofili (#)	**0.02**		x 10 ^3 / µL	0.00 - 0.35
Basofili (#)	**0.0**		x 10 ^3 / µL	0.0 - 0.2
Granulociti immaturi (%)	**0.30**		%	
Granulociti immaturi (#)	**0.06**	>	x 10 ^3 / µL	0.00 - 0.04

VES

115	>	mm/h	2 - 20
104		mg/dL	70 - 105
37.95	>	mg/dL	0.00 - 0.50
12		U/L	10 - 44
15		U/L	10 - 34

PCR


DX

Quaderni acp 2013; 20(3): 100-108

La polmonite in età evolutiva: dalla diagnosi alla terapia

Luciano de Seta, Fortunato Pannuti, Federica de Seta
UOC Pediatria e Patologia Neonatale, Ospedale "San Paolo", Napoli

- Incidenza :
- **30-40 su 1000 sotto i 5 anni**
- 11-16 su 1000 sopra i 5 anni
- **ospedalizzazione 3-10 su 1000 < 5 anni**
- mortalità : zero, 20% in paesi poveri

fattori di rischio

- socializzazione precoce
- **fumo passivo**
- **uso di anti acidi**
- **cerebropatia**
- wheezing

Tabella 1: principali batteri che causano CAP a seconda dell'età

	GRUPPI DI ETÀ		
Batteri	1-3 mesi	3 mesi - 5 anni	5-19 anni
Streptococcus pneumoniae	+++	++++	+++
Streptococcus piogenes	+	+	+
Staphylococcus aureus	++	+	+
Mycoplasma pneumoniae	+	+ +	++++
Chlamydia pneumoniae	+	+	++
Chlamydia trachomatis	++	-	-
Bordetella pertussis	±	++	

(++++ indica molto comune; +++ comune; ++ relativamente comune; + raro; ± molto raro; - assente)

Da: Esposito S, et al. (modificata) [14]

Hospital admission rates for meningitis and septicaemia caused by *Haemophilus influenzae, Neisseria meningitidis,* and *Streptococcus pneumoniae* in children in England over five decades: a population-based observational study

Natalie G Martin, Manish Sadarangani, Andrew J Pollard, Michael J Goldacre

For children ages 3 to 36 months with fever without source in the pre-conjugate era, bacteremia rates ranged **from 2 to 3.4% vs. 0.34%** in the post-conjugate era

ORIGINAL ARTICLE
RESPIRATORY INFECTIONS

Aetiology of paediatric pneumonia after the introduction of pneumococcal conjugate vaccine

Mohamed A. Elemraid[1,2], Andrew D. Sails[3], Gary J.A. Eltringham[3], John D. Perry[4], Stephen P. Rushton[5], David A. Spencer[6], Matthew F. Thomas[5,6], Katherine M. Eastham[7], Fiona Hampton[8], Andrew R. Gennery[1,2] and Julia E. Clark[1,2] on behalf of the North East of England Paediatric Respiratory Infection Study Group

Eur Respir J 2013; 42: 1595–1603

- diminuzione globale ospedalizzazioni polmonite dopo PCV 7
- tasso di infezioni pneumococciche in reltà comparabile con rimpiazzo altri sierotipi
- 98% sierotipi empiemi non PCV 7 in UK e USA per lo più contenuti in PCV 13
- aumento di empiemi e mastoiditi segnalato in più lavori

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Community-Acquired Pneumonia Requiring Hospitalization among U.S. Children

N Engl J Med 2015;372:835-45.

1802 (81%) su 2222 con conferma diagnostica

- 66% uno o più virus
- 8% batteri
- 7% batteri e virus

- RSV < 5 anni (37% vs 8%)
- Mycoplasma > 5 anni (19% vs 3%)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Community-Acquired Pneumonia Requiring Hospitalization among U.S. Children

Table 1. Characteristics of Children with Community-Acquired Pneumonia Requiring Hospitalization.

Characteristic	Children with Radiographic Evidence of Pneumonia (N=2358)
Age group — no. (%)	
<2 yr	1055 (45)
2–4 yr	595 (25)
5–9 yr	422 (18)
10–17 yr	286 (12)

NB 33% avevano asma compresente !!!

Detection of Viruses in Young Children With Fever Without an Apparent Source

AUTHORS: Joshua M. Colvin, MD,[a] Jared T. Muenzer, MD,[a] David M. Jaffe, MD,[a] Avraham Smason, BS,[a] Elena Deych, MS,[b] William D. Shannon, PhD,[b] Max Q. Arens, PhD,[a] Richard S. Buller, PhD,[a] Wai-Ming Lee, PhD,[c] Erica J. Sodergren Weinstock, PhD,[d] George M. Weinstock, PhD,[d] and Gregory A. Storch, MD[a]

Departments of [a]Pediatrics, and [b]Medicine, and [d]the Genome Institute, Washington University School of Medicine, St Louis, Missouri; and [c]Biological Mimetics, Inc, Frederick, Maryland

KEY WORDS

fever, viral infection, polymerase chain reaction

ABBREVIATIONS

ED—emergency department
HHV-6—human herpesvirus 6
PCR—polymerase chain reaction

WHAT'S KNOWN ON THIS SUBJECT: Fever without an apparent source is common in children. Currently in the United States, serious bacterial infection is uncommonly the cause. Most cases are assumed to be viral, but the specific viral causes have not been delineated. Antibiotics are frequently prescribed.

WHAT THIS STUDY ADDS: By using polymerase chain reaction, we detected pathogenic viruses frequently in children with fever without an apparent source. Adenovirus, human herpesvirus-6, enterovirus, and parechovirus were predominant. Testing of blood had high yield. Better recognition of viral etiologies may help reduce unnecessary antibiotic use.

- 75 bambini 2-36 mesi con febbre senza causa
- 76 % (60 bambini FWS) hanno un virus (adeno, HH6, entero, parechovirus)
- 40% di 15 bambini con febbre e infezione batterica hanno un virus concomitante

La febbre che non supera i 38.5°C suggerisce una eziologia virale

(Thorax; 2002:57 (suppl 1): i1-i24)

La tosse può mancare all'esordio nella polmonite da pneumococco cosi come il reperto stetoacustico.

(Lancet. 1991;338:928-30)

LE POLMONITI

L’osservazione clinica può essere più indicativa dell’obiettività toracica.

(JAMA. 1998;279:308-13)

La frequenza respiratoria (da misurare a bambino tranquillo e per un minuto intero) è poco sensibile e poco specifica nei primi tre giorni di malattia.

(Arch Dis Child. 2000;82:41-5)

Il “fischio espiratorio” nel bambino di età prescolare è il criterio più forte per escludere un’eziologia batterica. Mentre nei bambini più grandicelli accompagna il 30 % delle polmoniti da Mycoplasma e può rendere difficile la diagnosi differenziale con l’asma bronchiale.

(Broughton RA., Pediatr Infect Dis. 1986;5:71-85)

CRITERI DI GRAVITÀ	Lieve o moderata	Grave
Lattanti	Temperatura < 38,5 °C Alimentazione normale	Temperatura > 38,5 °C Incapacità ad alimentarsi
	Rientramenti intercostali lievi	Rientramenti intercostali da moderati a gravi
	FR < 50 arpm	FR > 70 arpm
		Alitamento delle pinne nasali
		Cianosi
		Apnea intermittente
		Respirazione rumorosa
		Tachicardia
		Tempo di refill > 2 s
Bambini più grandi	Temperatura < 38,5 °C	Temperatura > 38,5 °C
	FR < 50 arpm	FR > 50 arpm
	Dispnea moderata	Grave difficoltà di respirazione
	Assenza di vomito	Alitamento delle pinne nasali
		Cianosi
		Respirazione rumorosa
		Segni di disidratazione
		Tachicardia (in relazione all'età e alla temperatura corporea)
		Tempo di refil capillare > 2 s

Da: Harris M, Clark J, Coote N, et al.

INDICAZIONI AL RICOVERO

(Segni di gravità: Thorax; 2002:57 (suppl 1): i1-i24)

Infants	Older children
Febbre > 38,5° C	
F.R. > 70/min	F.R. > 50/min
Rientramenti	Grave dispnea
Alitamento delle pinne nasali	
Cianosi / sat. O_2 δ 92%	
Apnea intermittente	
Respiro appoggiato con "grunting"	
Non mangia	Disidratazione

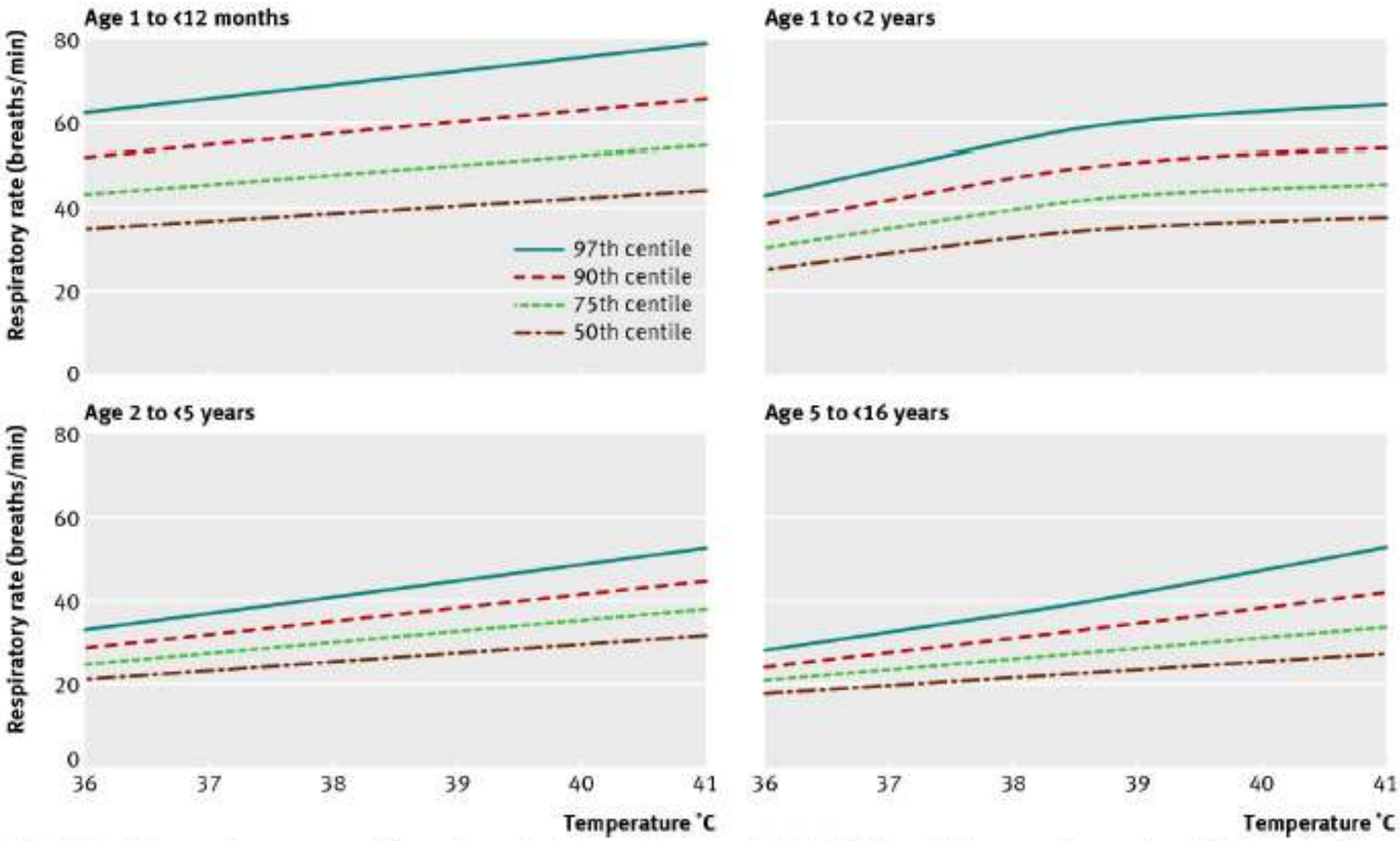
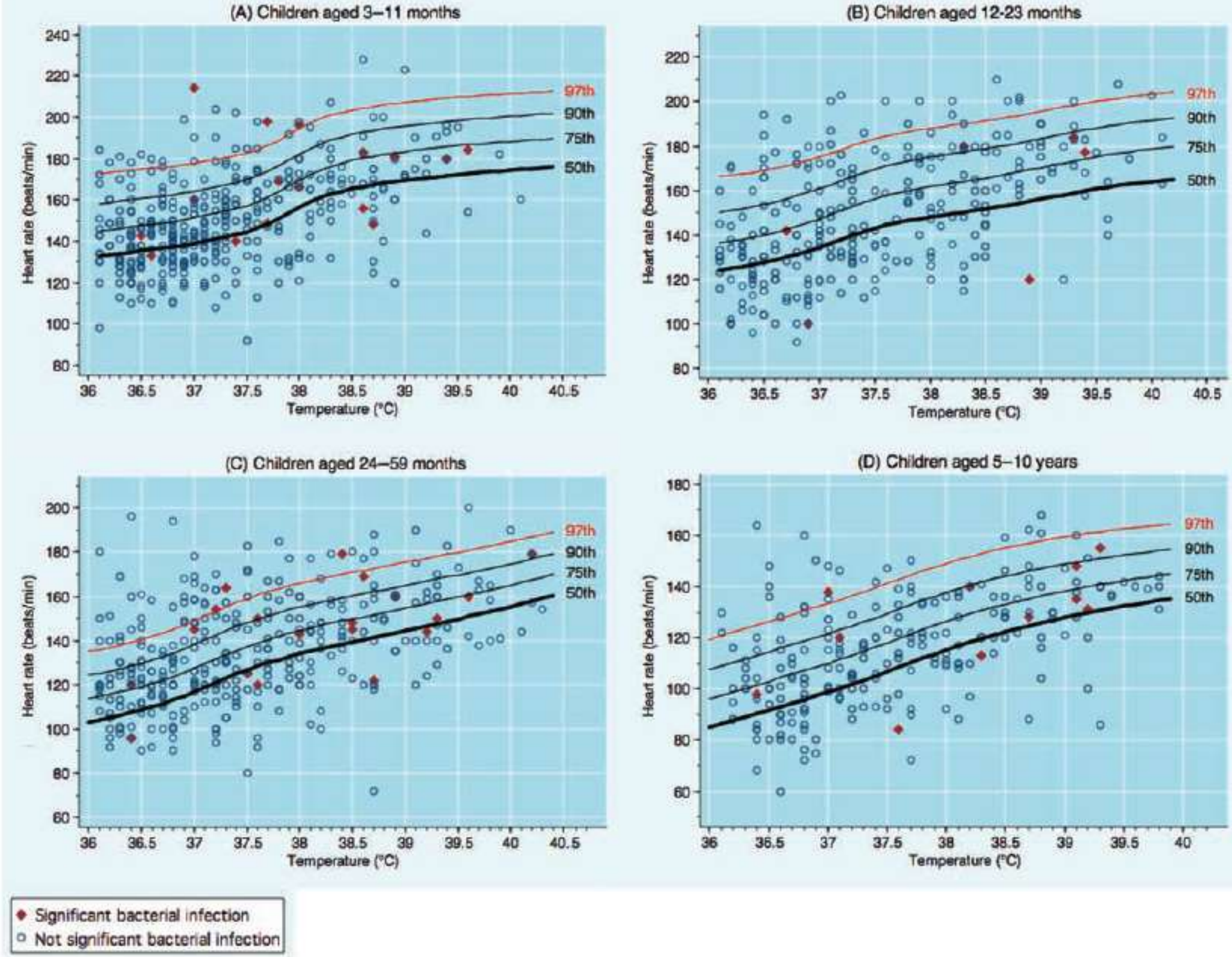


Fig 2 Median and upper centiles of respiratory rate expected at different temperatures for children of different age groups


(A) Children aged 3–11 months
(B) Children aged 12-23 months
(C) Children aged 24–59 months
(D) Children aged 5–10 years
Heart rate (beats/min)
Temperature (°C)
97th
90th
75th
50th
Significant bacterial infection
Not significant bacterial infection

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Prediction of Pneumonia in a Pediatric Emergency Department

Mark I. Neuman, Michael C. Monuteaux, Kevin J. Scully and Richard G. Bachur

Pediatrics 2011;128;246; originally published online July 11, 2011;
DOI: 10.1542/peds.2010-3367

studio prospettico 2574 pazienti con sospetta polmonite che fanno Rx

- questionario strutturato
- riviste cartelle
- 422 (16%) “radiographic pneumonia”
- 199 (8%) “definite pneumonia”

TABLE 2 Triage and Clinical Predictors of Pneumonia in Multivariate Analyses

Predictors	Prevalence in Full Sample ($n = 2352$)[a], n (%)	Model 1: Definite Pneumonia, OR (95% CI)	Model 2: Radiographic Pneumonia, OR (95% CI)
Difficulty breathing[b]	1143 (47)	0.74 (0.50–1.09)	0.98 (0.74–1.29)
Chest pain[b]	243 (10)	2.89 (1.90–4.41)	1.52 (1.08–2.16)
Wheezing on examination	698 (30)	0.57 (0.36–0.90)	0.73 (0.54–0.98)
Respiratory distress	620 (26)	0.86 (0.53–1.38)	0.91 (0.66–1.27)
Tachypnea at triage	487 (21)	1.01 (0.68–1.51)	1.17 (0.88–1.55)
Retractions on examination	513 (22)	1.42 (0.86–2.35)	1.17 (0.83–1.66)
Grunting on examination	68 (3)	1.27 (0.50–3.20)	1.25 (0.65–2.39)
Focal decreased breath sounds	292 (12)	1.14 (0.74–1.76)	1.32 (0.96–1.82)
Rales (diffuse or focal)	710 (30)	0.68 (0.42–1.10)	0.88 (0.64–1.21)
Focal rales	360 (15)	2.27 (1.33–3.88)	1.66 (1.14–2.42)
Focal wheeze	78 (3)	1.14 (0.41–3.15)	0.75 (0.35–1.59)
Duration of fever			
None (referent)	624 (27)	—	—
≤72 hours	1359 (58)	1.83 (1.11–3.02)	1.80 (1.29–2.52)
>72 hours	369 (16)	3.62 (2.05–6.39)	3.35 (2.24–5.00)
Duration of cough			
None (referent)	129 (8)	—	—
≤72 hours	1257 (53)	0.72 (0.40–1.31)	1.19 (0.74–1.92)
>72 hours	903 (38)	0.87 (0.48–1.57)	1.26 (0.78–2.04)
Temperature at triage (≥38°)	852 (36)	1.41 (1.01–1.96)	1.24 (0.97–1.58)
Oxygen saturation at triage			
97%–100% (referent)	1647 (70)	—	—
93%–96%	588 (25)	1.62 (1.13–2.35)	1.37 (1.05–1.79)
≤92%	117 (5)	3.69 (1.99–6.82)	3.58 (2.28–5.64)

fattori di rischio

- dolore toracico
- durata febbre maggiore 3 giorni
- rantoli focali
- desaturazione < 92% e < 95%
- tachipnea, retrazioni, e sibilo espiratorio non con polmonite

DIAGNOSI RADIOLOGICA

1. La radiografia del torace non va fatta nei casi non gravi (da non ricoverare) a diagnosi certa.

(Thorax; 2002:57 (suppl 1): i1-i24.)

2. Vi è grande correlazione tra segni clinici e radiologici.

(Lancet 1991; 338: 928)

3. Il quadro radiologico è uno scarso indicatore dell'eziologia.

(Clin Pediatr. 1989;28:261-4)

4. La radiografia del torace tanto più piccolo è il bambino tanto più è soggetta ad una grande variabilità di lettura tra diversi radiologi.

(Pediatr Infect Dis J. 1996;15:600-4)

Quadri di atelettasia sono comuni (fino al 25%) nelle bronchiti asmatiformi e non sempre è agevole distinguerli da una addesamento broncopneumonico.

(J Paediatr Child Health. 1990; 26: 209-11)

Per la diagnosi di BP la laterale del torace è di norma inutile

(Ann Med. 1996;28: 69-72)

TABELLA 3: QUANDO RICHIEDERE LA RADIOGRAFIA DEL TORACE NELLE CAP DEL BAMBINO

POLMONITE	Rx torace	Motivazioni
Diagnosi certa Sintomi certi con EO positivo	NO	Non serve
Diagnosi fortemente sospetta Sintomi respiratori con EO negativo	NO	Comunque si tratta
Solo ipotesi di sospetto Nessun sintomo respiratorio con EO negativo, ma febbre elevata e leucocitosi (febbre *sine materia*)	SÌ	25% di polmoniti

Di fatto sostituibile da ecografia nel 95% dei casi

ECO TORACE

Siamo dei visionari?

Ultrasound diagnosis of pneumonia in children
R. Copetti, L. Cattarossi
Emergency Department, TOLMEZZO
Radiol Med 2008

Obiettivo

- Confrontare l'accuratezza diagnostica dell'ecografia polmonare con la radiografia del torace in bambini con sospetta polmonite.

Materiali e metodi

- 79 bambini
- età tra 6 mesi e 16 anni
- con segni clinici suggestivi di polmonite.
- Tutti hanno eseguito una ecografia polmonare ed una radiografia del torace.

Risultati

- L’ecografia polmonare + in 60
- RX + in 53.
- In 4 pazienti con RX - ed ECO+ la polmonite è stata confermata dalla TAC (ricorrenza episodio)
- Negli altri 3 pazienti con RX - ed ECO+ il decorso clinico è stato compatibile con una polmonite.

Conclusioni

- L’ecografia polmonare è una metodica semplice ed affidabile che può essere utilizzata in ambito clinico nel sospetto di polmonite.
- È affidabile quanto la radiografia del torace, può essere ripetuta facilmente al letto del paziente e non espone a radiazioni ionizzanti.

Lung ultrasound: its role in neonatology and pediatrics

Luigi Cattarossi*

Department of Neonatology, Azienda Ospedaliero Universitaria S. Maria della Misericordia, Udine, Italy

Early Human Development 89S1 (2013) S17–S19

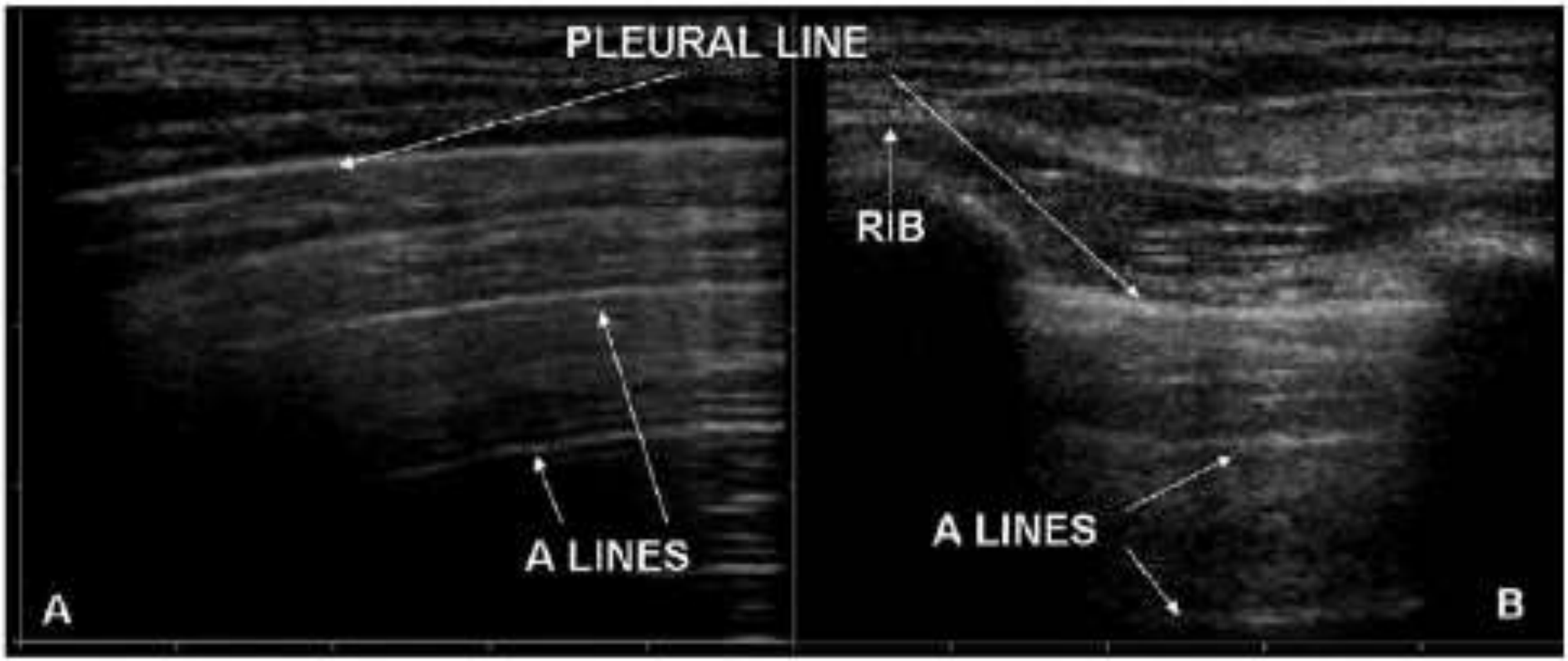


Fig. 1.

PLEURA CHE SCORRE (SLINDING DOORS)
LINEE A: ARTEFATTI ORRIZZONTALI EQUIDISTANTI (NORMALI)

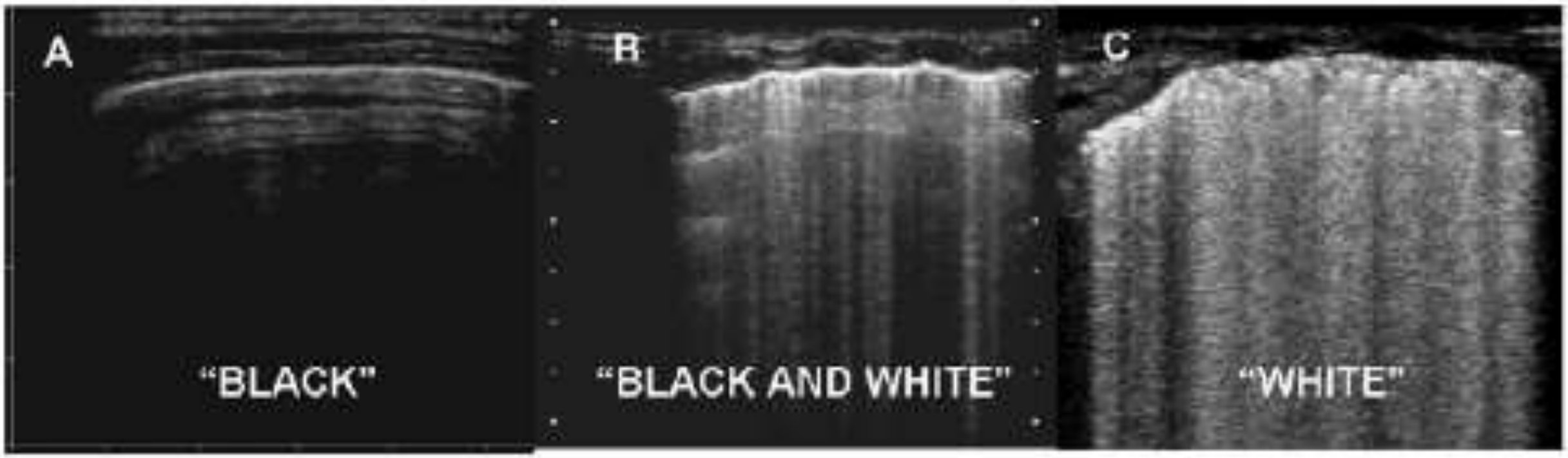


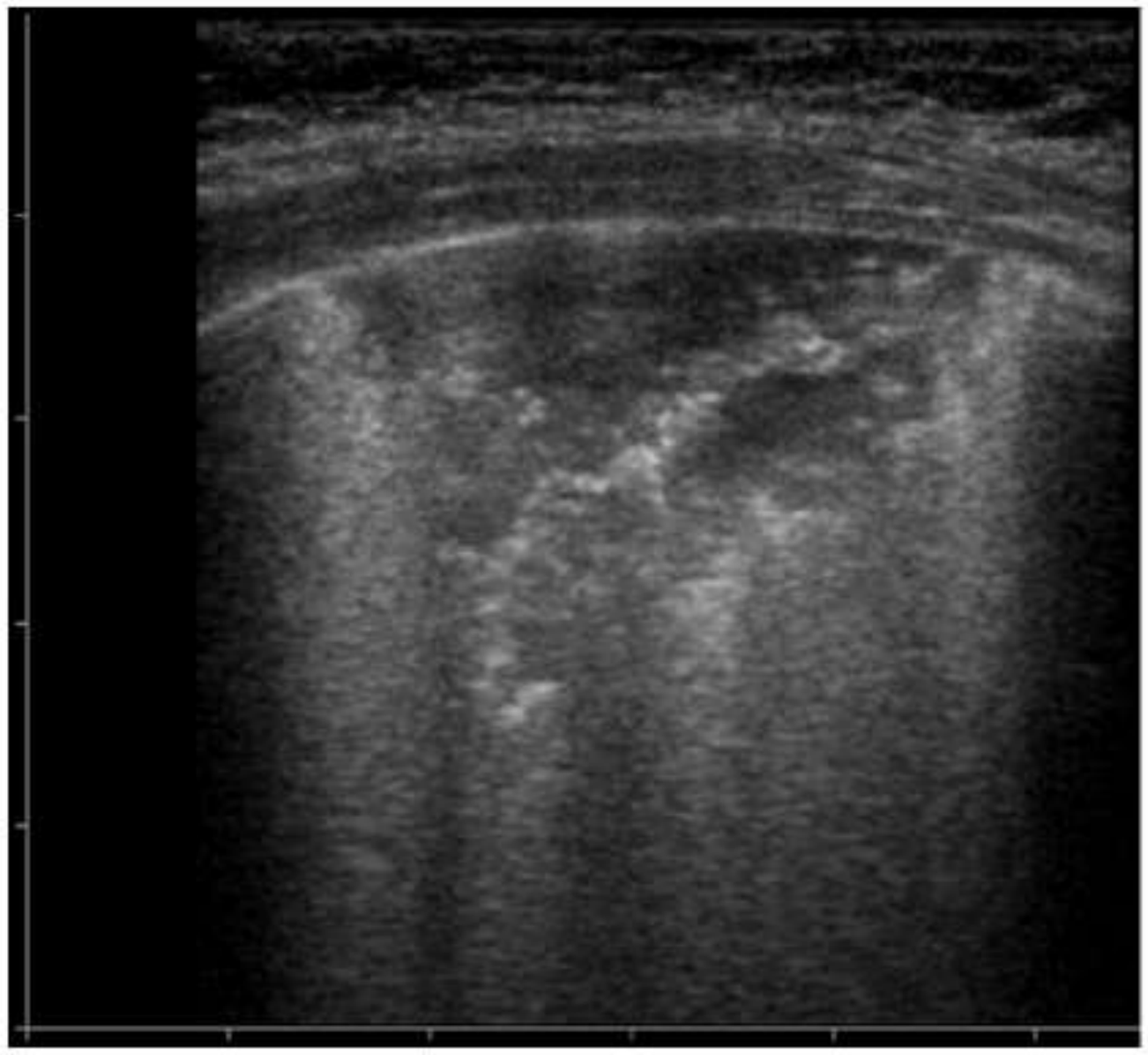
Fig. 2.

NORMALE

INTERSTIZIALE
LINEE B VERTICALI

EDEMA ALVEOLARE

POLMONITE



BRONCOGRAMMA AEREO + EVENTUALE VERSAMENTO

A DIFFERENT VIEW

Lung ultrasound for paediatric pneumonia diagnosis: internationally officialized in a near future?

Massimiliano Don (max.don@libero.it)[1], Alfredo Barillari[2], Luigi Cattarossi[3], Roberto Copetti[4], on behalf of the "Italian-Slovenian Group on Lung Ultrasound for Pediatric Pneumonia" *

1.Pediatric Care Unit, "Sant'Antonio" General Hospital, San Daniele del Friuli, Udine, Italy
2.Emergency Department, "San Polo" General Hospital, Monfalcone, Gorizia, Italy
3.Neonatal Intensive Care Unit, General University Hospital of Udine, Udine, Italy
4.Emergency Department, Latisana General Hospital, Latisana, Udine, Italy

- 63 PAZIENTI ARRUOLATI CON CLINICA COMPATIBILE
- 57 ECO POSITIVE (53 RX POSITIVI
- 3 pazienti RX + ma ECO neg

Review article

European Journal of Internal Medicine 23 (2012) 391–397

The role of lung ultrasound in the diagnosis and follow-up of community-acquired pneumonia

Angelika Reissig [a,*], Andrea Gramegna [b], Stefano Aliberti [c]

[a] Pneumology & Allergology, Friedrich-Schiller-University Jena, Germany
[b] Dipartimento Toraco-polmonare e Cardiocircolatorio, Università degli studi di Milano, IRCCS Fondazione Cà Granda Ospedale Maggiore Policlinico, Milan, Italy
[c] Dipartimento di Medicina Clinica e Prevenzione, Università degli studi di Milano-Bicocca, Clinica Pneumologica, AO San Gerardo, Monza, Italy

Limiti

- 8% delle polmoniti non sono visualizzabili da ECO (strutture ossee o estensione addesamento non alla pleura)
- Operatore dipendente (ma anche RX…)
- Più la uso più divento bravo…

Accepted Manuscript

Feasibility and Safety of Substituting Lung Ultrasound for Chest X-ray When Diagnosing Pneumonia in Children: A Randomized Controlled Trial

Brittany Pardue Jones, MD, Ee Tein Tay, MD, Inna Elikashvili, DO, Jennifer E. Sanders, MD, Audrey Z. Paul, MD, PhD, Bret P. Nelson, MD, Louis A. Spina, MD, James W. Tsung, MD, MPH

PII: S0012-3692(16)01263-0

DOI: 10.1016/j.chest.2016.02.643

Reference: CHEST 321

To appear in: *CHEST*

Received Date: 8 November 2015

Revised Date: 8 January 2016

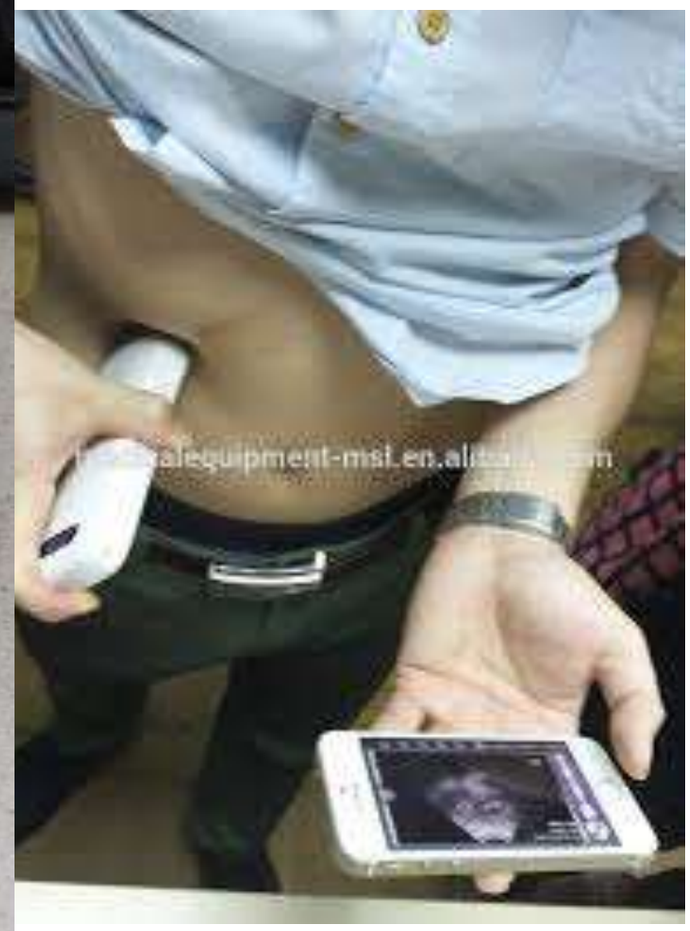
Accepted Date: 2 February 2016

191 bambini, 38% Rx in meno

CONCLUSIONS

It may be feasible and safe to substitute LUS for CXR when evaluating children with suspected pneumonia with no missed cases of pneumonia or increase in rates of adverse events.

FUTURO



ESAMI BIOUMORALI

Nel bambino con polmonite non complicata non vi è indicazione ad alcun test diagnostico (emocromo ed indici di flogosi) come pure non sono indicati gli esami microbiologici.

BTS guidelines
Thorax; 2002:57 (suppl 1): i1-i24

Education & Practice Online First, published on January 2, 2014 as 10.1136/archdischild-2013-305688

In children with respiratory symptoms are *Mycoplasma pneumoniae* PCR and serology clinically significant?

405 bambini asintomatici pre chir

321 bambini con infezione respiratoria

Table 1 *Mycoplasma* PCR results

	PCR positive	PCR negative
Symptomatic	51	263
Asymptomatic	85	281

MAIN RESULTS

Positive *M pneumoniae* PCR results were found in 21.2% of the asymptomatic children and 16.2% of the symptomatic group. The OR of respiratory symptoms with PCR positivity was 0.64 (95% CI 0.44 to 9.9,

p=0.11). There was no significant difference in PCR-positive results or anti-*M pneumoniae* IgM-positive results (p=0.23) between asymptomatic and symptomatic groups. Forty-three positive patients had longitu-

CONCLUSION

M pneumoniae carriage is present in asymptomatic children and a positive respiratory PCR or serum IgM result is not a reliable indicator of clinically significant infection.

Principi chiave ambulatorio/ PS

- diagnosi clinica **NON** radiologica (molto frequenti polmoniti Rx negative)
- Rx non fa **MAI** diagnosi eziologica
- esami ematici **MAI** (o quasi...)
- ricerca eziologica **MAI**
- **un solo antibiotico : amoxicillina 100 mg/kg in 3 somministrazioni**
- **MAI** antivirali

4 mesi – 4 anni	“Aggressivo”	A “step”
S. PNEUMONIAE H. INFLUENZAE MYCOPLASMA	Amoxicillina (75-100 mg/kg/die) + Ac. Clavulanico + Macrolide	Amoxicillina (75-100 mg/kg/die) Macrolide (24 – 48 ore)
5 – 15 anni		
MYCOPLASMA S. PNEUMONIAE	Macrolide + Amoxicillina	Macrolide (forma lieve) (24 – 48 ore) (forma grave) Amoxicillina

- PCR solo debolmente predittiva in metanalisi 1230 bambini (Flood GR et al , Ped Infect Dis 2008)
- **Amoxi-clavulanico : bronchite batterica protratta, emofilo in non vaccinato**

Comparative Effectiveness of Empiric Antibiotics for Community-Acquired Pneumonia

AUTHORS: Mary Ann Queen, MD,[a] Angela L. Myers, MD,[b] Matthew Hall, PhD,[c] Samir S. Shah, MD, MSCE,[d] Derek J. Williams, MD, MPH,[e] Katherine A. Auger, MD, MSc,[f] Karen E. Jerardi, MD, Med,[f] Angela M. Statile, MD, Med,[f] and Joel S. Tieder, MD, MPH[g]

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WHAT'S KNOWN ON THIS SUBJECT: Broad-spectrum antibiotics are frequently used to empirically treat children hospitalized with community-acquired pneumonia despite recent national recommendations to use narrow-spectrum antibiotics.

WHAT THIS STUDY ADDS: Narrow-spectrum antibiotics are similar to broad-spectrum antibiotics for the treatment of children hospitalized with community-acquired pneumonia in terms of clinical outcomes and resource utilization. This study provides scientific evidence to support national consensus guidelines.

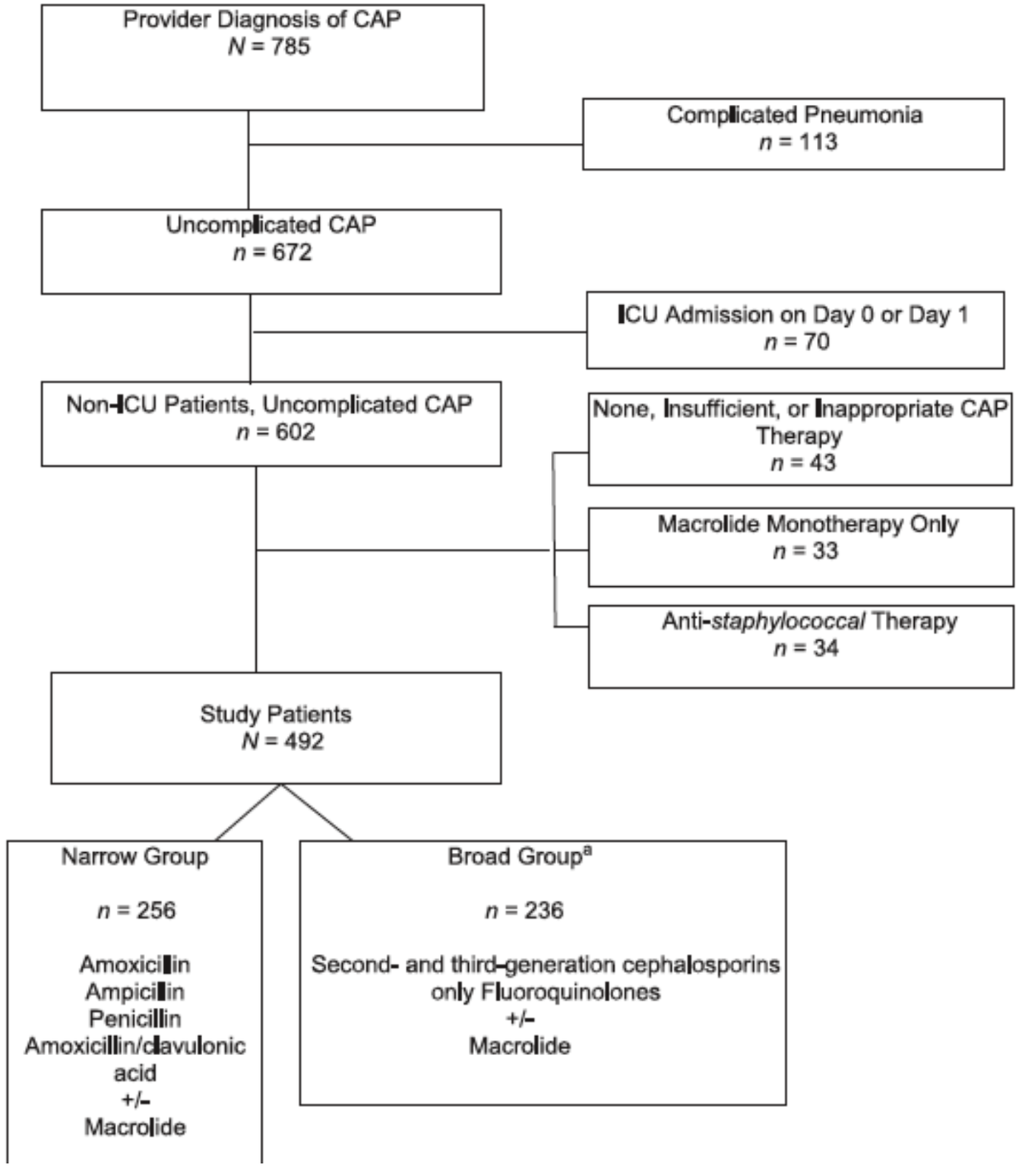

Provider Diagnosis of CAP
N = 785
Complicated Pneumonia
n = 113
Uncomplicated CAP
n = 672
ICU Admission on Day 0 or Day 1
n = 70
Non-ICU Patients, Uncomplicated CAP
n = 602
None, Insufficient, or Inappropriate CAP Therapy
n = 43
Macrolide Monotherapy Only
n = 33
Anti-staphylococcal Therapy
n = 34
Study Patients
N = 492
Narrow Group
n = 256
Amoxicillin
Ampicillin
Penicillin
Amoxicillin/clavulonic acid
+/-
Macrolide
Broad Group[a]
n = 236
Second- and third-generation cephalosporins only Fluoroquinolones
+/-
Macrolide

TABLE 2 Adjusted Outcomes

	Narrow-Spectrum ($n = 256$)	Broad-Spectrum ($n = 236$)	*P*
LOS, h	43 (39–46)	52.3 (48–57)	.04
Duration of supplemental oxygen, h	15.6 (12–20)	21.8 (17–29)	.18
Duration of fever, h	6.5 (5–9)	9.1 (7–12)	.23
Standardized cost per day, $	2209 (2088–2338)	2160 (2042–2286)	.62
Standardized pharmacy cost per day, $	170 (153–188)	188 (170–208)	.26
Readmission within 7 days[a]	Reference	5.1 (0.3–83.6)	.25

Data are least-squares means (95% CI) unless otherwise indicated and were adjusted for age, gender, race, government insurance, concurrent diagnosis of asthma or reactive airway disease, previous antibiotic therapy, atypical antibiotic therapy, presence of effusion on chest radiograph, diagnosis of viral lower respiratory tract infection, admission to the ICU, blood culture utilization, presence of a positive blood culture, baseline hospital rates for cephalosporin use, tachypnea, fever, and abnormal WBC.

[a] Data are adjusted odds ratios (95% CI) for broad-spectrum/penicillin therapy.

Published in final edited form as:
Pediatr Infect Dis J. 2014 April ; 33(4): 387–392. doi:10.1097/INF.0000000000000119.

Comparative Effectiveness of Ceftriaxone in Combination with a Macrolide Compared with Ceftriaxone Alone for Pediatric Patients Hospitalized with Community Acquired Pneumonia

In our unadjusted analysis, LOS was not significantly different between the groups; both had a mean length of stay of 2.4 days and a median of 2 days (IQR 1–3 days). However, unadjusted total hospital costs were significantly higher in the combination therapy group; mean total cost was 4317 USD (median 3362 USD, IQR 2304–5099) in the combination therapy group and 3831 USD in the ceftriaxone alone group (median 3023 USD, IQR 2083–

Results—4701 children received combination therapy and 8892 received ceftriaxone alone. Among children 1–4 years of age, adjusted models revealed no significant difference in length of stay, with significantly higher costs in the combination therapy group(cost ratio 1.08 (95% CI 1.05 – 1.11)). Among children 5–17 years of age, children receiving combination therapy had a shorter length of stay(RR 0.95 (95% CI, 0.92– 0.98)), with no significant difference in costs(cost ratio 1.01 (95% CI, 0.98 –1.04)).

Outcome	Ceftriaxone alone (n=8892)	Ceftriaxone + macrolide (n=4701)	p-value
Ages 5–17 years			
Length of stay, days (mean, SD) Median (IQR)	2.60 (1.72) 2 (2–3)	2.48 (1.56) 2 (1–3)	0.02
Total hospital costs, USD (mean, SD) Median (IQR)	$4173 (3874) 3258 (2191–4896)	$4306 (5330) 3366 (2328–4979)	0.03
Transfer to intensive care unit >= day 2 (n, %)	26 (1.3%)	13 (0.7%)	0.71
Inpatient mortality (n, %)	0 (0%)	1 (0.04%)	0.30
All cause < 30 d readmission (n, %)	28 (1.1%)	16 (.7%)	0.10
Pneumonia-related <30 d readmission (n, %)	12 (0.5%)	11 (0.6%)	0.96

Durata più corta del 5%

Devo trattare 7 bambini perchè 1 stia 1 giorno in meno in ospedale

Treatment of Mycoplasma Pneumonia: A Systematic Review

AUTHORS: Eric Biondi, MD,[a] Russell McCulloh, MD,[b] Brian Alverson, MD,[c] Andrew Klein, BS,[a] Angela Dixon, BSN, MLS, AHIP,[a] and Shawn Ralston, MD[d]

[a]Department of Pediatrics, University of Rochester, Rochester, New York; [b]Department of Pediatrics, Children's Mercy Hospitals & Clinics, Kansas City, Missouri; [c]Department of Pediatrics, Hasbro Children's Hospital, Providence, Rhode Island; and

abstract

BACKGROUND AND OBJECTIVE: Children with community-acquired lower respiratory tract infection (CA-LRTI) commonly receive antibiotics for *Mycoplasma pneumoniae*. The objective was to evaluate the effect of treating *M. pneumoniae* in children with CA-LRTI.

L'incidenza di polmoniti da mycoplasma è riportata tra il 10 e 40% **(20%)**

Review di tutti i lavori in cui è usato un farmaco anti-mycoplasma versus farmaco non attivo

PEDIATRICS Volume 133, Number 6, June 2014

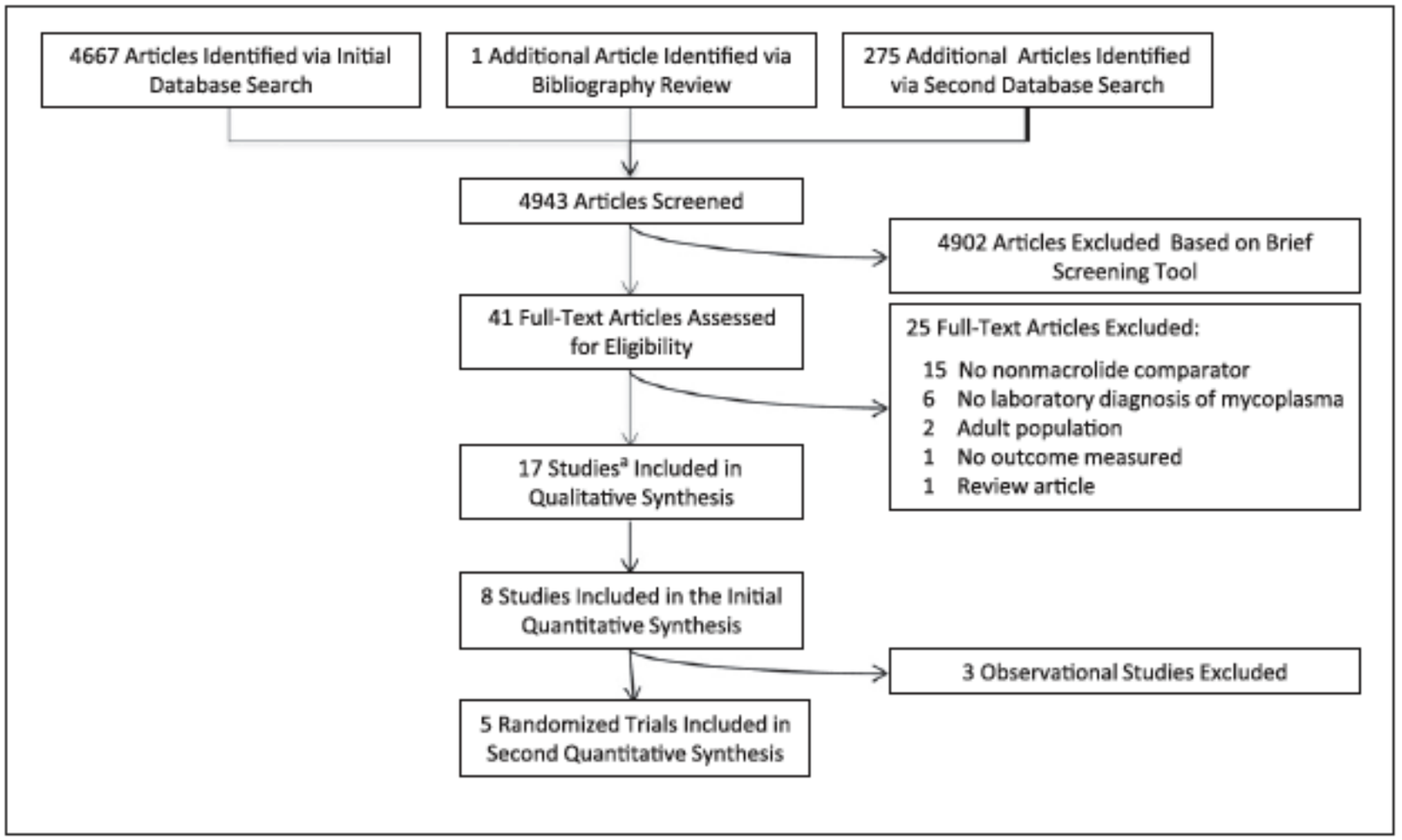


FIGURE 1
Flowchart for included studies. [a] One article[20] used 2 different outcome metrics at 2 different time periods and was therefore treated as 2 separate studies.

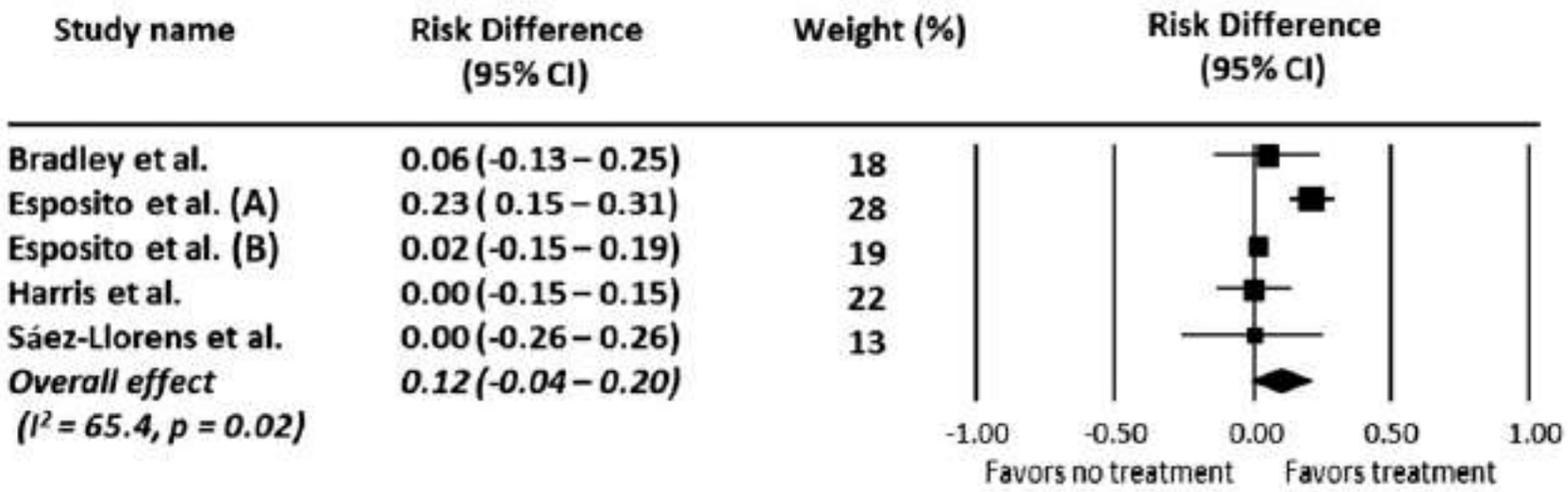


FIGURE 2

Meta-analysis of randomized trials comparing spectrum and nonspectrum treatment of *M. pneumoniae* in children. Studies were weighted by size and degree of heterogeneity. The overall effect (diamond) represents the pooled risk differences of the 5 studies. The confidence interval crosses 0.00, suggesting a lack of statistical significance.

−4% to 20%). This finding suggests that 12% of children treated with a macrolide will have more rapid clinical improvement, corresponding to a number needed to treat of 8.33, but

..12% dei bambini trattati con macrolide avrà miglioramento più rapido ...

NNT pari a 8.33 ...

“the available literature does not currently support treatment of CA-LRTI secondary to Mycoplasma P “

Nelson :

- i macrolidi accorciano la durata di malattia, non dà NNT
- ruolo non stabilito in prevenzione complicanze (encefalite, miocardite, SJ)
- azitro e claritromicina equivalenti (possibilmente meglio claritro, meno resistenze)
- eritromicina meno efficace

Miyashita *et al. BMC Infectious Diseases* 2012, **12**:126
http://www.biomedcentral.com/1471-2334/12/126

BMC
Infectious Diseases

RESEARCH ARTICLE Open Access

Macrolide-resistant *Mycoplasma pneumoniae* in adolescents with community-acquired pneumonia

Naoyuki Miyashita[1*], Yasuhiro Kawai[2], Hiroto Akaike[2], Kazunobu Ouchi[2], Toshikiyo Hayashi[1], Takeyuki Kurihara[1]
Niro Okimoto[1] and the Atypical Pathogen Study Group

In Giappone e Cina riportate percentuali di mycoplasma resistenti ai macrolidi fino al 60%

RIESAMINARE E AGGIORNARE IL WARNING!

STUDIO RETROSPETTIVO

CONTRADDICE RISULTATI DI UNO STUDIO PRECEDENTE

Antibiotics

Macrolides not linked to arrhythmia in older people

The findings of a large study contradict those of a previous study that prompted the US Food and Drug Administration to issue warnings about the risk of QT interval prolongation and fatal ventricular arrhythmia with use of azithromycin. The study matched 503 612 patients who used macrolide antibiotics with 503 612 controls who used other antibiotics that were not associated with ventricular arrhythmias (amoxicillin or cefuroxime) or with weak pro-arrhythmic potential (levofloxacin). The study found no difference in the development of ventricular arrhythmias at 30 days (doi:10.1136/bmj.i1083).

FDA

NEL 2013 WARNING SU PRESCRIZIONE AZITROMICINA!!

503.612 pz tx con MACROLIDE
503.612 pz tx con ALTRI ANTIBIOTICI (AMOXI, CEFUROXIME,LEVOFLOXACINA)

IN 260 PZ ARITMIE VENTRICOLARI
(SENZA DIFFERENZA SIGNIFICATIVA TRA I DUE GRUPPI)

ANALISI SOTTOGRUPPI
PZ CON IRC
CO-TX CON FARMACI PRO-ARITMICI

NON DIFFERENZE IN ARITMIE VENTRICOLARI

TABELLA 5: COMPLICANZE DELLE POLMONITI

Polmonari
- versamento pleurico o empiema
- ascesso polmonare
- polmonite necrotizzante

Metastatiche
- ascesso del SSN
- endocardite
- artrite settica

Sistemiche
- risposte infiammatorie sistemiche o setticemie
- sindrome uremico-emolitica

Da: Harris M, Clark J, Coote N, et al.

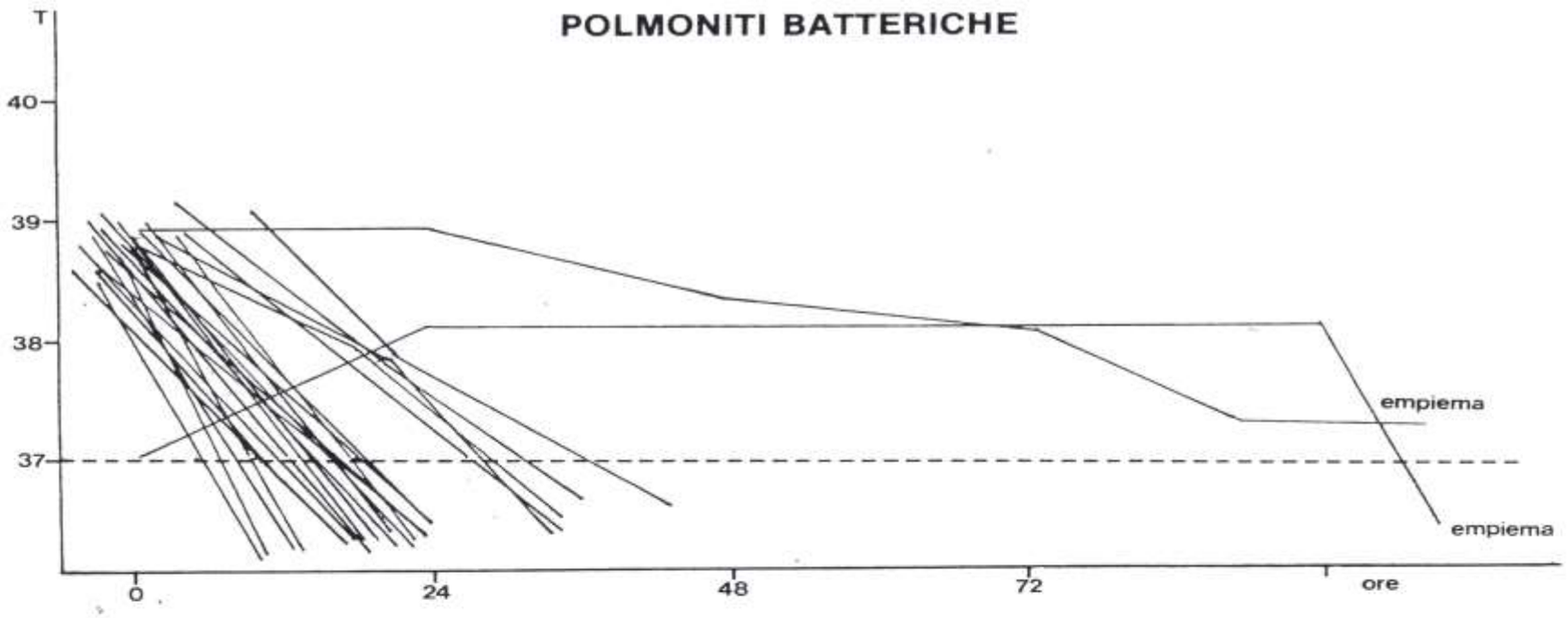


Figura 2. Andamento della febbre nelle polmoniti batteriche.

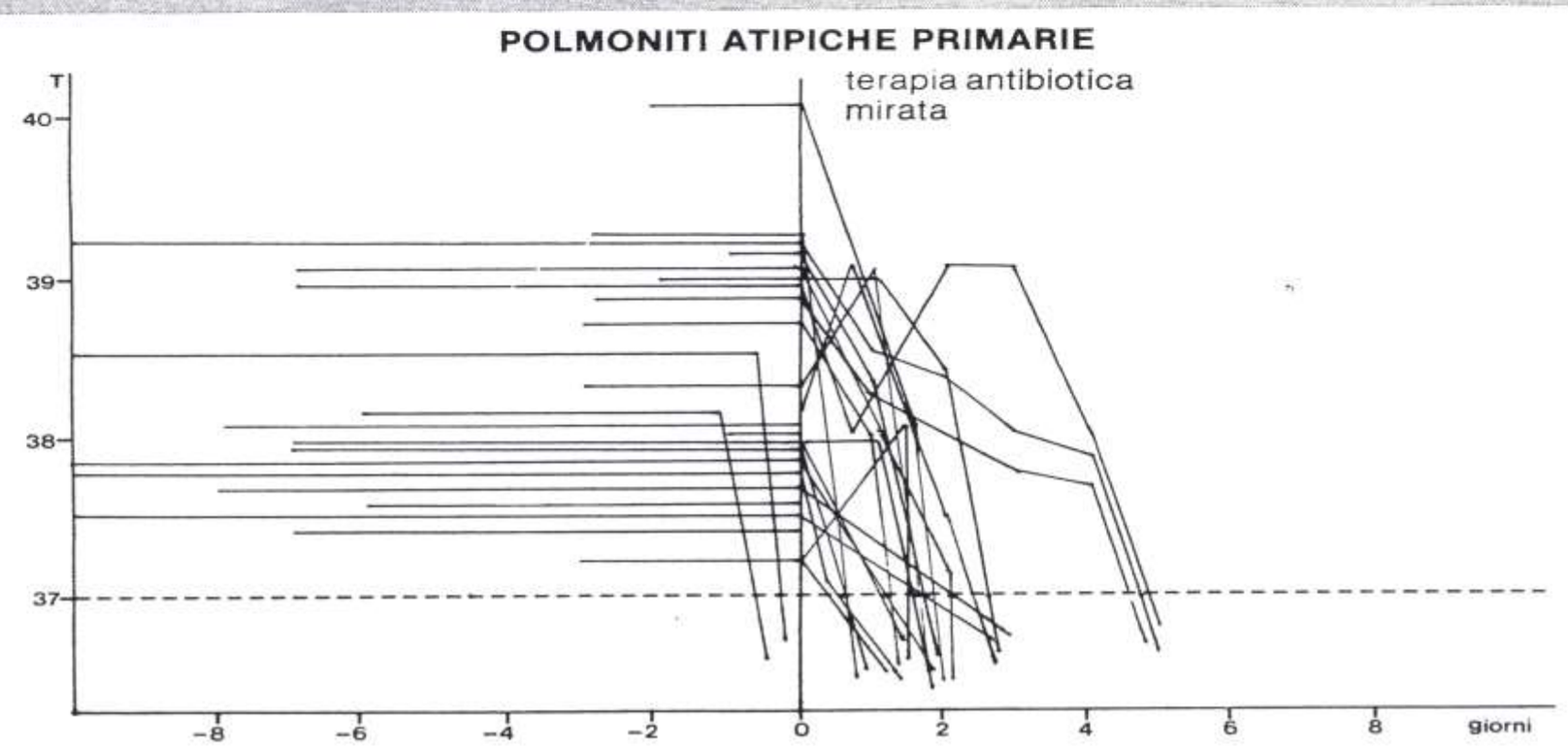


Figura 3. Andamento della febbre nelle polmoniti atipiche primarie.

Rischio empiema 0,6-2% di tutte le polmoniti

Discussione

REVIEW

How has research in the last five years changed my clinical practice?

A Bush

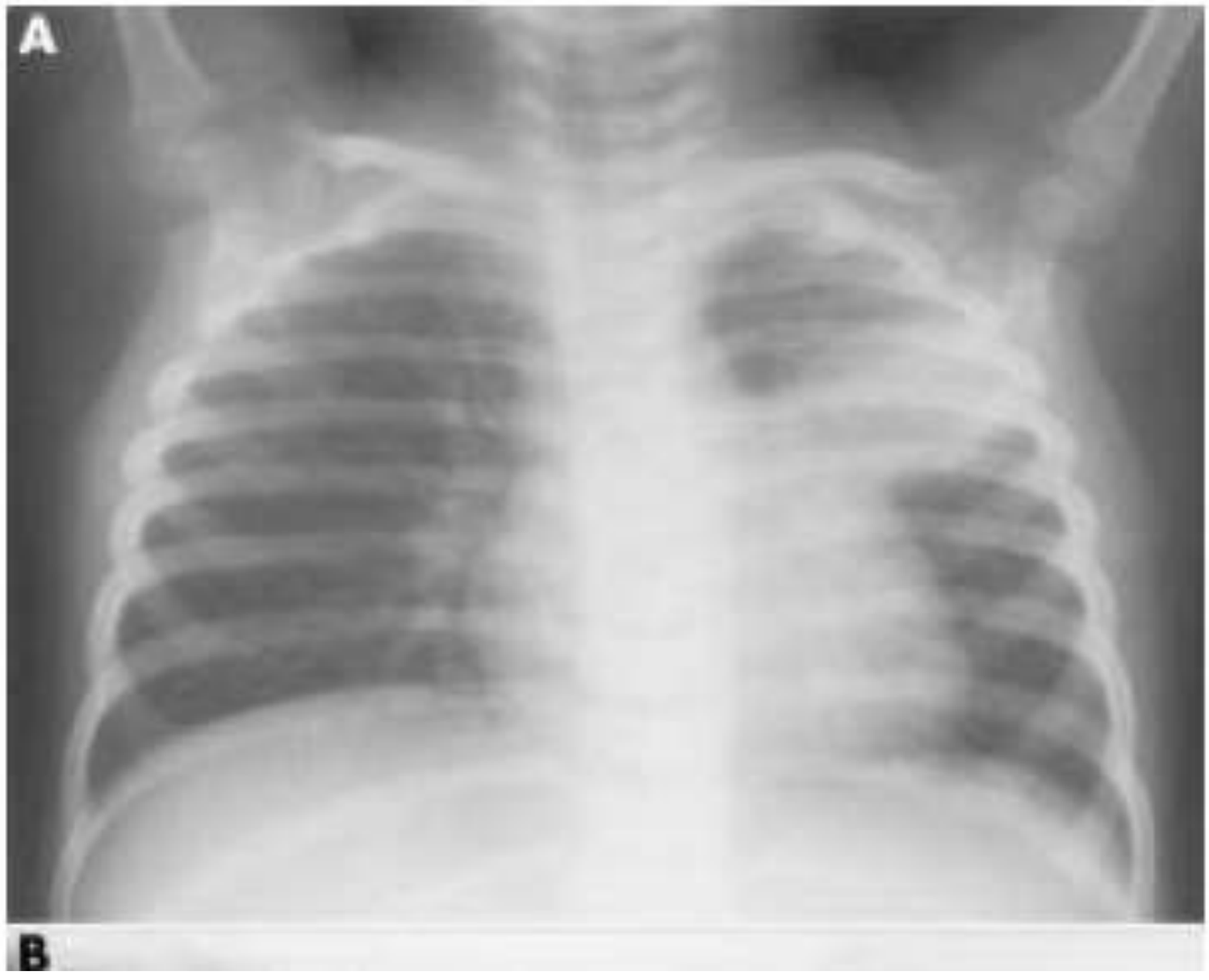
Arch Dis Child 2005;**90**:832–836. doi: 10.1136/adc.2004.066241

EMPYEMA: TH

For reasons tha
rising dramatica
the ending of
mean that some
do not start ant
hypothesis, we
progressed to
therapy. For wh
empyema has ri
early surgical dr
rather than wai
temperature.[43]
difficult operatio
from the pleura
result of a mul
controlled trial[
were randomise
(10 000 for thos
six doses. The e
which was sign
9.5 days, p = 0.
use of small pig
hospital stay, a
children given urokinase through a pigtail drain. It may be that there was a confounding centre effect, given that most of the pigtail drains were used in Oxford, where there was clearly the widest experience with the technique at that stage. Nonetheless, it is difficult from the data to argue that the pigtail drains were inferior, and they are certainly far more comfortable for the children. Having gone over to this protocol, surgical referrals have virtually but not completely disappeared from our institution.

The lessons for paediatricians from this trial are: firstly,

We have changed our practice as a result of a multicentre, randomised, double blind, placebo controlled trial[44] of intrapleural urokinase. Sixty patients were randomised to receive either 40 000 units urokinase (10 000 for those under 1 year of age) or placebo, to a total of six doses. The end point was time to discharge from hospital, which was significantly lower in the urokinase group (7.4 *v* 9.5 days, p = 0.027).


A
B

CASE REPORT

"Unresolving pneumonia" as the main manifestation of atypical Kawasaki disease

Y Uziel, P J Hashkes, E Kassem, G Gottesman, B Wolach

Arch Dis Child 2003;**88**:940–942

Two cases of atypical Kawasaki disease (KD) manifested as persistent lobar lung consolidation, prolonged fever, and active inflammatory laboratory markers unresponsive to antibiotic treatment are reported. One of the children developed a giant coronary aneurysm. Atypical KD should be considered in the differential diagnosis of young children with prolonged fever and lobar consolidation unresponsive to antibiotics.

15% delle Kawasaki ha Rx con interstiziopatia

,

descritti anche addensamenti, versamenti pleurici ed atelettasie

CASE REPORT

Incomplete Kawasaki disease associated with complicated *Streptococcus pyogenes* pneumonia: A case report

Timothy Ronan Leahy MB BCh MRCPI[1,2], Eyal Cohen MD MSc FRCPC[3], Upton D Allen MBBS MSc FRCPC[2]

TR Leahy, E Cohen, UD Allen. Incomplete Kawasaki disease associated with complicated *Streptococcus pyogenes* pneumonia: A case report. Can J Infect Dis Med Microbiol 2012;23(3):137-139.

Rapport de cas d'une maladie de Kawasaki incomplète compliquée par une pneumonie à *Streptococcus pyogenes*

Original Article

Adjunct Systemic Corticosteroid Therapy in Children With Community-Acquired Pneumonia in the Outpatient Setting

Lilliam Ambroggio,[1,2,4] Matthew Test,[1] Joshua P. Metlay,[5] Thomas R. Graf,[6] Mary Ann Blosky,[6] Maurizio Macaluso,[2,4] and Samir S. Shah[1,3,4]

Divisions of [1]Hospital Medicine, [2]Biostatistics and Epidemiology, [3]Infectious Diseases, Cincinnati Children's Hospital Medical Center, [4]Department of Pediatrics, the University of Cincinnati College of Medicine, Ohio; [5]General Medicine Division, Massachusetts General Hospital, Boston; and [6]Population Health, Geisinger Health System, Danville, Pennsylvania

Corresponding Author: Lilliam Ambroggio, PhD, MPH, 3333 Burnet Avenue, ML 9016, Cincinnati Children's Hospital Medical Center, Cincinnati, OH 45229. E-mail: lilliam.ambroggio@cchmc.org.

Received November 19, 2013; accepted February 3, 2014; electronically published March 27, 2014.

Journal of the Pediatric Infectious Diseases Society, Vol. 4, No. 1, pp. 21–7, 2015. DOI:10.1093/jpids/piu017

Studio retrospettivo multicentrico su
2244 bambini con polmonite

La terapia aggiuntiva con corticosteroidi è associata con fallimento terapeutico nei bambini che non hanno asma sottostante.

Conclusion. Adjunct corticosteroid therapy was associated with treatment failure among children diagnosed with CAP who did not have underlying asthma.

Education & Practice Online First, published on April 18, 2013 as 10.1136/archdischild-2012-302324

Outpatient respiratory management of the child with severe neurological impairment

Nadine McCrea,[1] Roddy O'Donnell,[2] Richard Brown[3]

Prevalenza PCI 2 per 1000

Best practice

A child with profound developmental impairment, requiring constant care, who cannot mobilise and has very limited possibilities for communication.[1]

Figure 1 Definition of a child with severe neurological impairment.

- prevalenza severe neur impair :0.4 per 1000
- malattia respiratoria **prima causa di morte**
- problemi nutrizionali 30-40 %
- Nissen dopo PEG (meno complicanze, rischio di interventi ripetuti)

- disfunzione bulbare , postura, ipotono, secrezioni : APNEE OSTRUTTIVE > CPAP

- non servono steroidi topici

- aspirazione silente >> polmonite

- stop nutrizione per bocca

- cura la scialorrea

- pensa a colonizzazione pseudomonas

Table 1 Management of drooling in children with severe neurological impairment[w1 w5 w6]

Therapy	Mechanism	How to use	Side effects and cautions	Respiratory issues
Conservative therapy				
Positioning	Position slightly reclined in wheelchair, saliva less likely to leak from mouth			Be vigilant for pooling of secretions in oropharynx which may be aspirated
Dental review	Caries or malocclusion may exacerbate drooling			
Medication				
Hyoscine hydrobromide transdermal patches	Inhibit parasympathetic stimulation of saliva production through antimuscarinic effect	1 month–3 years: ¼ patch 3–10 years: ½ patch 10–18 years: 1 patch Apply patch to hairless area of skin behind ear. Change patch every 72 h	Constipation, urinary retention, dilated pupils, loss of accommodation, rarely angle closure glaucoma Local skin reaction with hyoscine patch Dental caries more likely if saliva reduced by any method	Be vigilant for thick secretions which may be hard to clear and cause mucous plugging
Glycopyrrolate		1 month–18 years: 40–100 µg/kg (max 2 mg) 3–4 times a day		
Botulinum toxin A	Inhibit release of acetylcholine at neuromuscular junction and reduce saliva production	Ultrasound guided injection Can often be done under local anaesthetic Repeat every 3–6 months	Trauma at injection site, dysphagia, dry mouth Maximum safe dose not established May need a general anaesthetic	
Surgery				
Salivary gland duct ligation	Blocks salivary flow and induces atrophy of glands Safest surgical modality	Note that re-routing salivary glands is not recommended in children with severe neurological impairment, because it may increase the risk of aspiration	Salivary gland stones	Reduces incidence of pneumonia
Salivary gland excision	Glands surgically removed		External scarring, dry mouth, facial and hypoglossal nerve injury	
Laryngotracheal separation	Upper and lower airways completely separated Tracheostomy formed		Will lose ability to phonate Side effects of general anaesthetic, transient fistula formation	Definitive control of salivary aspiration Reduces incidence of pneumonia

Box 1 Antimicrobial management

Acute

- Ensure sputum samples sent (with help of physiotherapy and suctioning);
- Antibiotics to cover common community acquired organisms and anaerobes (if aspiration possible);
- Consider covering resistant/opportunistic organisms if isolated in the past or not improving on first-line antibiotics.

Prevention

- All routine childhood vaccinations;
- Seasonal influenza vaccine (carers too);
- 23-valent pneumococcal vaccine (after second birthday);
- Consider prophylactic oral antibiotics if >3 episodes of pneumonia/year;
- Be guided by respiratory microbiology results when choosing antibiotic;
- Use for 12 months then reassess; be vigilant for resistant organisms.

Pseudomonas eradication

- Consider eradication therapy on first *Pseudomonas aeruginosa* isolate;
- First line is 2 weeks oral ciprofloxacin; if fails then either:
  - 2 weeks intravenous antipseudomonal antibiotics *or*
  - further 4 weeks oral ciprofloxacin plus 3 months nebulised colistin *or*
  - 3 months nebulised colistin alone.

Nebulised antipseudomonal therapy

- Consider prophylactic nebulised colistin if frequent hospital admissions with pneumonia, in the presence of serial pseudomonas isolation;
- Use for 12 months then reassess.

Colistina costa meno tobra !

- non evidenza beneficio profilassi
- azitro ? amoxi ? bactrim ?
- FKT respiratoria ? Cough assist ?
- controllo dell’epilessia è cruciale anche per complicanze respiratorie (inalazione in convulsioni non controllate)

Table 2 Checklist for annual review

System	Summary of review points	Key multi-disciplinary team members
Nutrition	Nutritional status	Dietician
Bulbar function	Safety of the swallow; appropriateness of the oral route for feeding	Speech and language therapist
Gastro-oesophageal reflux	Symptoms of gastro-oesophageal reflux disease (GORD) GORD investigations and treatment	
Infection	Frequency of infections, hospital admissions and intravenous therapy Review culture results Prophylactic antibiotics: consider starting if >3 admissions in last year; consider stopping if no reduction in infective episodes in last year Nebulised antipseudomonas therapy: consider starting if serial colonisation; consider stopping if no improvement in last year Venous access Check immunisations are up to date, including seasonal flu	
Drooling	Severity of drooling Need for treatment Adverse effects of treatment	
Posture	Degree of kyphoscoliosis Need for surgery Seating	Spinal surgeon Occupational therapist
Chest physiotherapy	Provision of inpatient and home physiotherapy Appropriateness of home suction, home saline nebulizers and cough assist devices	Physiotherapist
Sleep	Symptoms of sleep disturbance and obstructive sleep apnoea. Consider need for sleep study	
Epilepsy	Frequency and severity of seizures Respiratory sequelae of seizures and anticonvulsant medication	
Home oxygen	Evaluate need for home oxygen, continued appropriateness and use	
Symptom control	Consider need for low-dose opioids for control of breathlessness	Paediatrician and community nurse with expertise in palliative care
Advanced planning	Family-held personal resuscitation plan	

- NIV : efficacia non dimostrata, rapporto costi benefici dubbio

- NIV : efficacia dubbia in disfunzione bulbare, Cochrane dell’adulto non riporta beneficio

- per molti bambini l’aggravio di peso assistenziale non è giustificato dai benefici

- botulino salivare : in minoranza di casi peggiora disfagia e aumenta rischio polmonite

- riduzione scialorrea (in ogni modo). secrezioni più dense, peggioramento aspirazione, tappi di muco, atelettasie

- separazione laringo-tracheale: trachea divisa la porzione inferiore forma uno stoma , altamente efficace nei sintomi respiratori

Original article

Ciprofloxacin safety in paediatrics: a systematic review

Abiodun Adefurin,[1] Helen Sammons,[1] Evelyne Jacqz-Aigrain,[2] Imti Choonara[1]

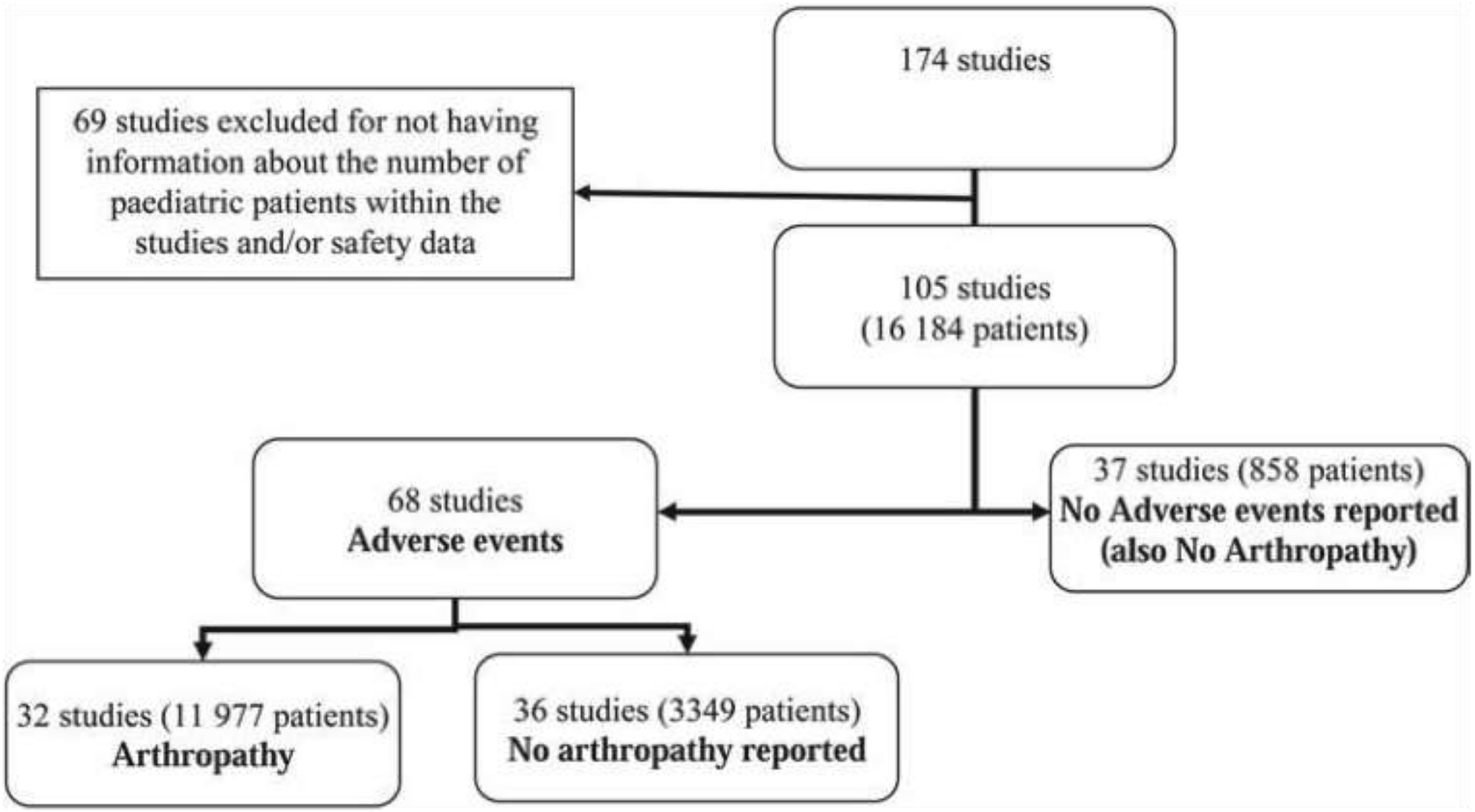
What is already known on this topic

- Ciprofloxacin is a broad spectrum, bactericidal antibiotic with good tissue penetration.
- Ciprofloxacin and fluoroquinolones as a group, cause arthropathy in weight bearing joints of juvenile animals.
- The use of ciprofloxacin in paediatrics has been limited due to the possibility of arthropathy.

Original article

Ciprofloxacin safety in paediatrics: a systematic review

Abiodun Adefurin,[1] Helen Sammons,[1] Evelyne Jacqz-Aigrain,[2] Imti Choonara[1]



1 evento avverso ogni 14 pazienti

Table 2 Summary of reported adverse events (AEs) from 68 studies

AEs	Frequency
Injection site reaction	47
Headache	41
Not specified‡	98
Total	1065

*232 patients had 258 musculoskeletal events.
†Others include AEs which occurred once, twice or thrice only. These include seizures, haemolytic uraemic syndrome, pseudomembranous colitis, gastro-oesophageal reflux disease, urinary retention, greenish discolouration of teeth, malaise, weight loss, dysuria, heart failure, sinoatrial nodal arrest and tachycardia.
‡Not specified AEs reported as unknown.

What this study adds

- Musculoskeletal adverse events (AEs) are the most frequently reported AEs in paediatric patients after ciprofloxacin use.
- All musculoskeletal AEs reported in the literature have been reversible following withdrawal of ciprofloxacin.

Oral fluoroquinolone use and serious arrhythmia: bi-national cohort study

Malin Inghammar,[1] Henrik Svanström,[2] Mads Melbye,[2] Björn Pasternak,[2] Anders Hviid[2]

FLUOROCHINOLONICI

BLOCCANTI DEL GENE HERG

codifica la componente rapida del Canale Cardiaco del K→ **AUMENTA LA [K]**

RITARDO DELLA DEPOLARIZZAZIONE → **AUMENTO DEL QT**

MA SONO DEBOLI INIBITORI

TORSIONI DI PUNTA

PREDISPOSIZIONE GENETICA
MALATTIE CARDIACHE SOTTOSTANTI
POLI TERAPIA

NON AUMENTATO RISCHIO DI ARITMIE DA FLUOROCHINOLONICI (CIPROFLOXACINA)

AUMENTO DELLA INCIDENZA DI ARITMIE SEVERE?

STUDIO COMPARATIVO (DANESE-SVEDESE)

ETA’ 40-79

909.656 pz FLUOROCHINOLONI (>% CIPROFLOXACINA)
909.656 pz FENOSSIMETILPENICILLINA (PRIVA DI EFFETTI PROARITMICI)

ESCLUSI : PZ CHE AVEVANO ASSUNTO TX NEI 45 GG PRECEDENTI
PZ CHE NON AVEVANO ASSUNTO TX NEI 2 ANNI PRECEDENTI
PZ CON MALATTIE TERMINALI (ALTO RISCHIO ARITMIA)

429 casi di ARITMIA SEVERA

144 casi nella 1 settimana di TX

66 in tx con FL — 3.4x 1000pa

78 in tx con FMP — 4 x 1000 pa

ANALISI PER SOTTOGRUPPI:
MALATTIE CV SOTTOSTANTI
CO-TX CON FARMACI PRO-ARITMICI

Polmoniti speciali

- immunodepressi noti
- bambini cerebropatici
- FC
- polmoniti ricorrenti