

Napule è...

PEDIATRIA PREVENTIVA E SOCIALE



Malattia Reumatica o TAsite?

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Malattie Reumatiche Pediatriche**

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**Revision of the Jones Criteria for the Diagnosis of Acute
Rheumatic Fever in the Era of Doppler Echocardiography**
A Scientific Statement From the American Heart Association

Endorsed by the World Heart Federation

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Association Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease
of the Council on Cardiovascular Disease in the Young

Incidence of Rheumatic Fever

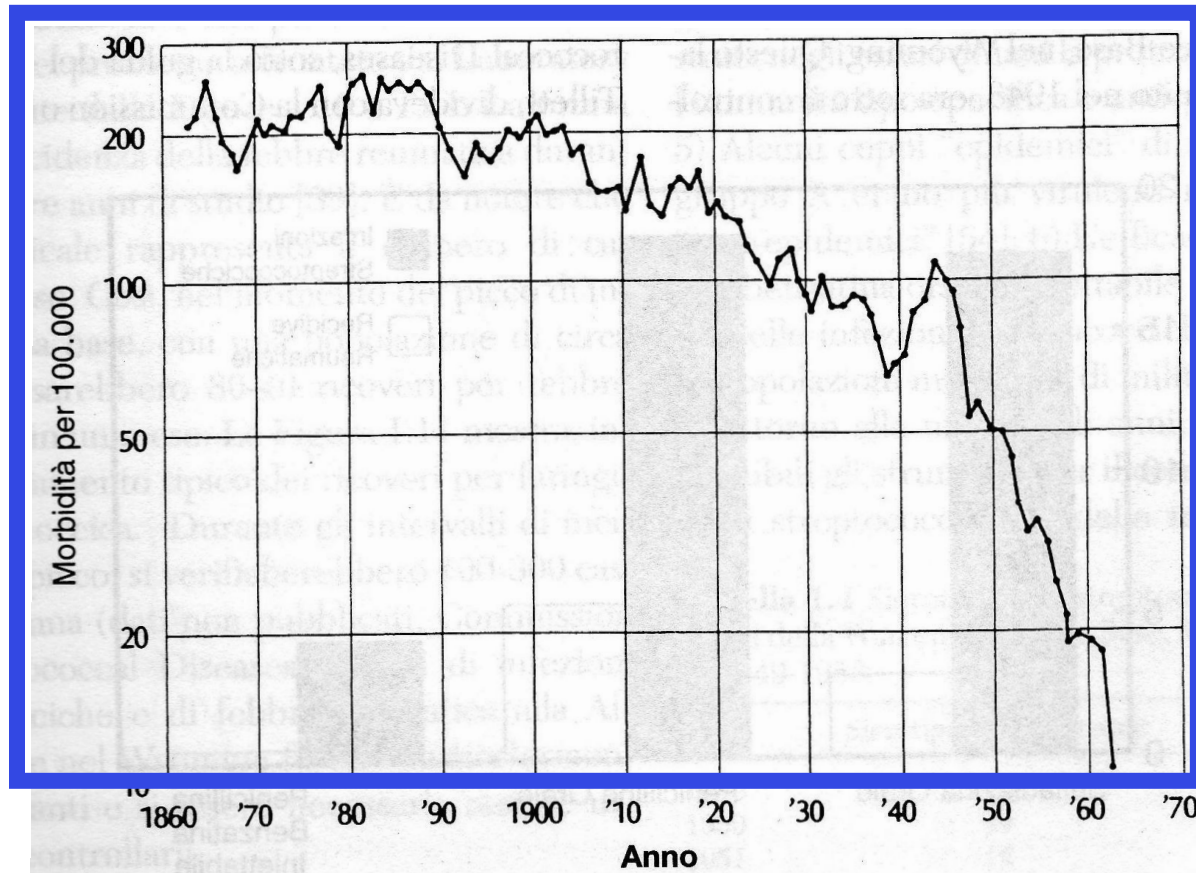


Table 3. Incidence of First Attack Acute Rheumatic Fever by Geographical Region

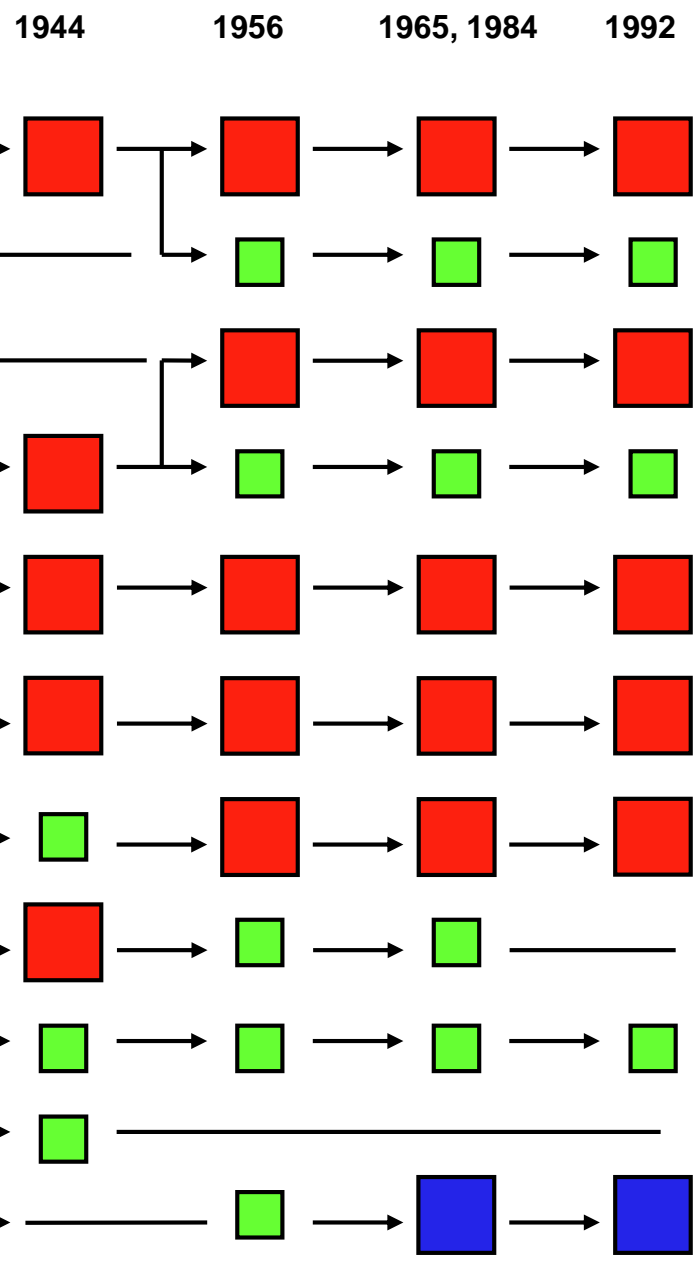
Study (1 st Author, Year of Publication)	Study Period	Geographical Region	Country	Overall Mean Annual Incidence (per 100 000 popn)*	Age Group Studied (yrs)	Version of Duckett-Jones Diagnostic Criteria
Quinn, 1967 ¹⁰ Berrios, 1984 ¹¹ Bach, 1996 ¹²	1963-1965	America	USA	10	All	Revised
	1976-1981		Chile	5	All	Modified
	1981-1992		Martinique and Gouadaloupe	8	<20	Modified
Grover, 1993 ¹⁸	1988-1991	Asia	India	51	5-18	Revised
Talbot, 1984 ¹⁹	1978-1982	Australasia	New Zealand	22	<30	Revised
Ekelund, 1967 ¹⁴ Sramek, 1981	1952-1961	Europe	Sweden	5	0-15	Modified
	1961-972		Czechoslovakia	16	All	Modified
Gharagozloo, 1976 ¹⁷	1971-1973	Middle East	Iran	35	All	Modified
Majeed, 1987 ¹⁵	1980-1983		Kuwait	18	<14	Revised
Majeed, 1993 ¹⁶	1984-1988		Kuwait	23	5-14	Revised

*This statistic was obtained by dividing the total number of incident cases over the entire study period by the estimated annual study population at risk, then further dividing by the total number of years of study to obtain the overall mean annual incidence rate.

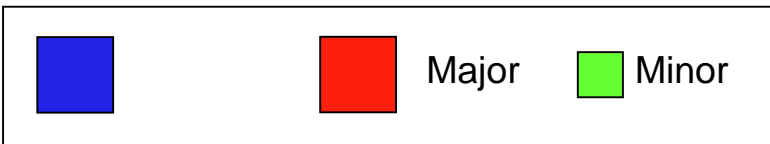
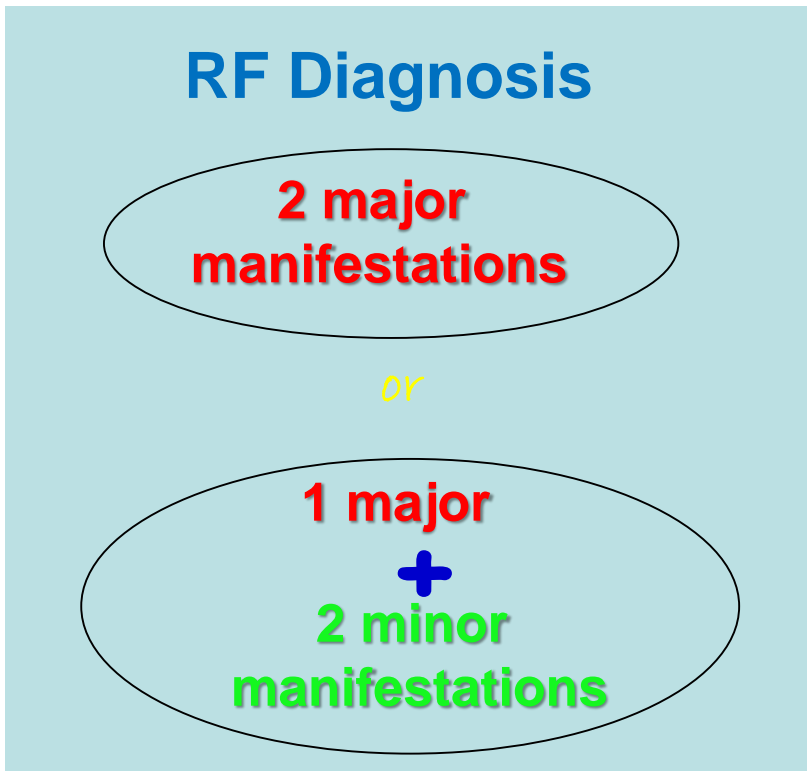
Epidemiologia

1. It is reasonable to consider individuals to be at low risk for ARF if they come from a setting or population known to experience low rates of ARF or RHD (*Class IIa; Level of Evidence C*).
2. It is reasonable that where reliable epidemiological data are available, low risk should be defined as having an ARF incidence <2 per 100 000 school-aged children (usually 5–14 years old) per year or an all-age prevalence of RHD of ≤ 1 per 1000 population per year (*Class IIa; Level of Evidence C*).
3. Children not clearly from a low-risk population are at moderate to high risk depending on their reference population (*Class I; Level of Evidence C*).

**Symptoms and signs
Of Rhrumatic Fever**



Jones Criteria



Cardite



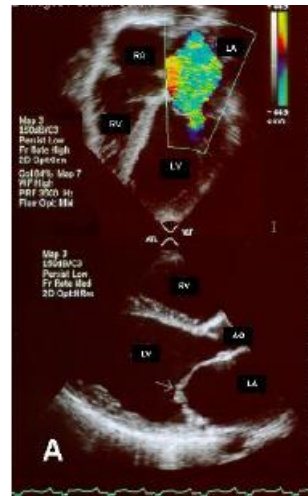
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and the National Institutes of Health

nature CLINICAL PRACTICE
**CARDIOVASCULAR
MEDICINE**

2008 Jul;5(7):E1-3.

Time to use ultrasound and not
stethoscopes for rheumatic heart
disease screening.

Marijon E, Tafflet M, Jouven X.



Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart
Association® 
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2002;106;2521-2523

AHA Scientific Statement

Proceedings of the Jones Criteria Workshop

Patricia Ferrieri, MD, for the Jones Criteria Working Group*

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pathological valvular regurgitation."

It was the opinion of the working group that Doppler echocardiographic findings alone should not be classified as either a major or minor Jones criterion in the guidelines for the diagnosis of acute rheumatic fever at this time.

Table 2. Evolving Role of Echocardiography in the Diagnosis of ARF

Year	Guidelines	Perform Echo in All Confirmed Cases of ARF Without Clinical Carditis?	Perform Echo in All Suspected Cases of ARF?	Use Echo to Confirm Carditis as Major Criterion in Absence of Murmur?
1992	Jones criteria 1992 ²	No	No	No
2000	Jones Criteria Workshop ³	No	No	No
2001	WHO guidelines ⁴⁹	Yes	No	No
2008	Indian Working Group ⁵⁰	Yes*	No	No
2008	New Zealand guidelines ⁵	Yes†	Yes‡	Yes§
2012	Australian guidelines ⁴	Yes	Yes¶	Yes#

ARF indicates acute rheumatic fever; Echo, echocardiography; and WHO, World Health Organization.

Table 3. Doppler Findings in Rheumatic Valvulitis

Pathological mitral regurgitation (all 4 criteria met)

Seen in at least 2 views

Jet length ≥ 2 cm in at least 1 view

Peak velocity >3 m/s

Pansystolic jet in at least 1 envelope

Pathological aortic regurgitation (all 4 criteria met)

Seen in at least 2 views

Jet length ≥ 1 cm in at least 1 view

Peak velocity >3 m/s

Pan diastolic jet in at least 1 envelope

Loading conditions should be accounted for at time of echocardiography/ Doppler assessment (see the section Differential Diagnosis of ARF for a full discussion). This table reflects an amalgam of the findings from the references listed in Table 5 and other guideline statements^{4,5} and also resembles findings described in rheumatic heart disease.⁵¹

Table 4. Morphological Findings on Echocardiogram in Rheumatic Valvulitis

Acute mitral valve changes

Annular dilation

Chordal elongation

Chordal rupture resulting in flail leaflet with severe mitral regurgitation

Anterior (or less commonly posterior) leaflet tip prolapse

Beading/nodularity of leaflet tips

Chronic mitral valve changes: not seen in acute carditis

Leaflet thickening

Chordal thickening and fusion

Restricted leaflet motion

Calcification

Aortic valve changes in either acute or chronic carditis

Irregular or focal leaflet thickening

Coaptation defect

Restricted leaflet motion

Leaflet prolapse

On occasion, particularly early in the course of acute rheumatic fever, mitral or aortic valve morphology may be normal on echocardiogram while Doppler shows regurgitation, as defined in Table 3. These findings can also be seen in chronic rheumatic heart disease.⁵¹

Artrite

Poliartrite migrante, coinvolgimento delle grandi articolazioni, rapida risposta ai FANS, autolimitantesi, assenti sequele.

Artrite reattiva post streptococcica

Presentation of the disease up to 10 days after the infection, prolonged arthritis or arthritis that is recurrent for 2 months and lack of response to ASA or other NSAID.

Recent-onset childhood arthritis-association with *Streptococcus pyogenes* in a population-based study.
O.R. Riise et al. Rheumatology 2008

Rheumatology key messages

- The presence of *S. pyogenes* is frequent in early childhood arthritis.
- PSRA patients have longer disease duration than transient arthritis patients, and their characteristics differ from those of JIA patients.
- Carditis was not present in any of the PSRA patients.



Profilassi?

J. BARASH et al. J Pediatr 2008;153:696-9.

Shulman and Ayoub (Curr Opin Rheumatol 2002;14:562-5), the AHA, and the Red Book of the AAP17 suggest that antibiotic prophylaxis be given for 1 year, and if no carditis is observed, then prophylaxis should be discontinued”.

J.M. van Bommel et al. Arthritis Rheum 2009;60:987-993.

Post-Streptococcal Reactive Arthritis was not associated with long-term cardiac sequelae.

Monoartrite asettica

1. At present, consideration that monoarthritis may be part of the ARF spectrum should be limited to patients from moderate- to high-risk populations (*Class I; Level of Evidence C*).

Poliartralgia

1. The inclusion of polyarthralgia as a major manifestation is applicable only for moderate- or high-incidence populations and only after careful consideration and exclusion of other causes of arthralgia such as autoimmune, viral, or reactive arthropathies (Table 6) (*Class IIb; Level of Evidence C*).

Table 6. Differential Diagnosis of Arthritis, Carditis, and Chorea

Arthritis	Carditis	Chorea
Septic arthritis (including gonococcal)	Physiological mitral regurgitation	Drug intoxication
Connective tissue and other autoimmune diseases such as juvenile idiopathic arthritis	Mitral valve prolapse	Wilson disease
Viral arthropathy	Myxomatous mitral valve	Tic disorder
Reactive arthropathy	Fibroelastoma	Choreoathetoid cerebral palsy
Lyme disease	Congenital mitral valve disease	Encephalitis
Sickle cell anemia	Congenital aortic valve disease	Familial chorea (including Huntington disease)
Infective endocarditis	Infective endocarditis	Intracranial tumor
Leukemia or lymphoma	Cardiomyopathy	Lyme disease
Gout and pseudo gout	Myocarditis, viral or idiopathic	Hormonal
Poststreptococcal reactive arthritis	Kawasaki disease	Metabolic (eg, Lesch-Nyhan, hyperalaninemia, ataxia telangiectasia)
Henoch-Schonlein purpura		Antiphospholipid antibody syndrome
		Autoimmune: Systemic lupus erythematosus, systemic vasculitis
		Sarcoidosis
		Hyperthyroidism

Progressiva infezione streptococcica

1. Increased or rising anti-streptolysin O titer or other streptococcal antibodies (anti-DNASE B) (*Class I; Level of Evidence B*).³⁸ A rise in titer is better evidence than a single titer result.
2. A positive throat culture for group A β -hemolytic streptococci (*Class I; Level of Evidence B*).³⁸
3. A positive rapid group A streptococcal carbohydrate antigen test in a child whose clinical presentation suggests a high pretest probability of streptococcal pharyngitis (*Class I; Level of Evidence B*).³⁸

Table 7. Revised Jones Criteria

A. For all patient populations with evidence of preceding GAS infection

Diagnosis: initial ARF

2 Major manifestations or 1 major plus 2 minor manifestations

Diagnosis: recurrent ARF

2 Major or 1 major and 2 minor or 3 minor

B. Major criteria

Low-risk populations*

Carditis†

- Clinical and/or subclinical

Arthritis

- Polyarthrititis only

Chorea

Erythema marginatum

Subcutaneous nodules

Moderate- and high-risk populations

Carditis

- Clinical and/or subclinical

Arthritis

- Monoarthritis or polyarthrititis
- Polyarthralgia‡

Chorea

Erythema marginatum

Subcutaneous nodules

C. Minor criteria

Low-risk populations*

Polyarthralgia

Fever ($\geq 38.5^{\circ}\text{C}$)

ESR ≥ 60 mm in the first hour and/or CRP ≥ 3.0 mg/dL§

Prolonged PR interval, after accounting for age variability (unless carditis is a major criterion)

Moderate- and high-risk populations

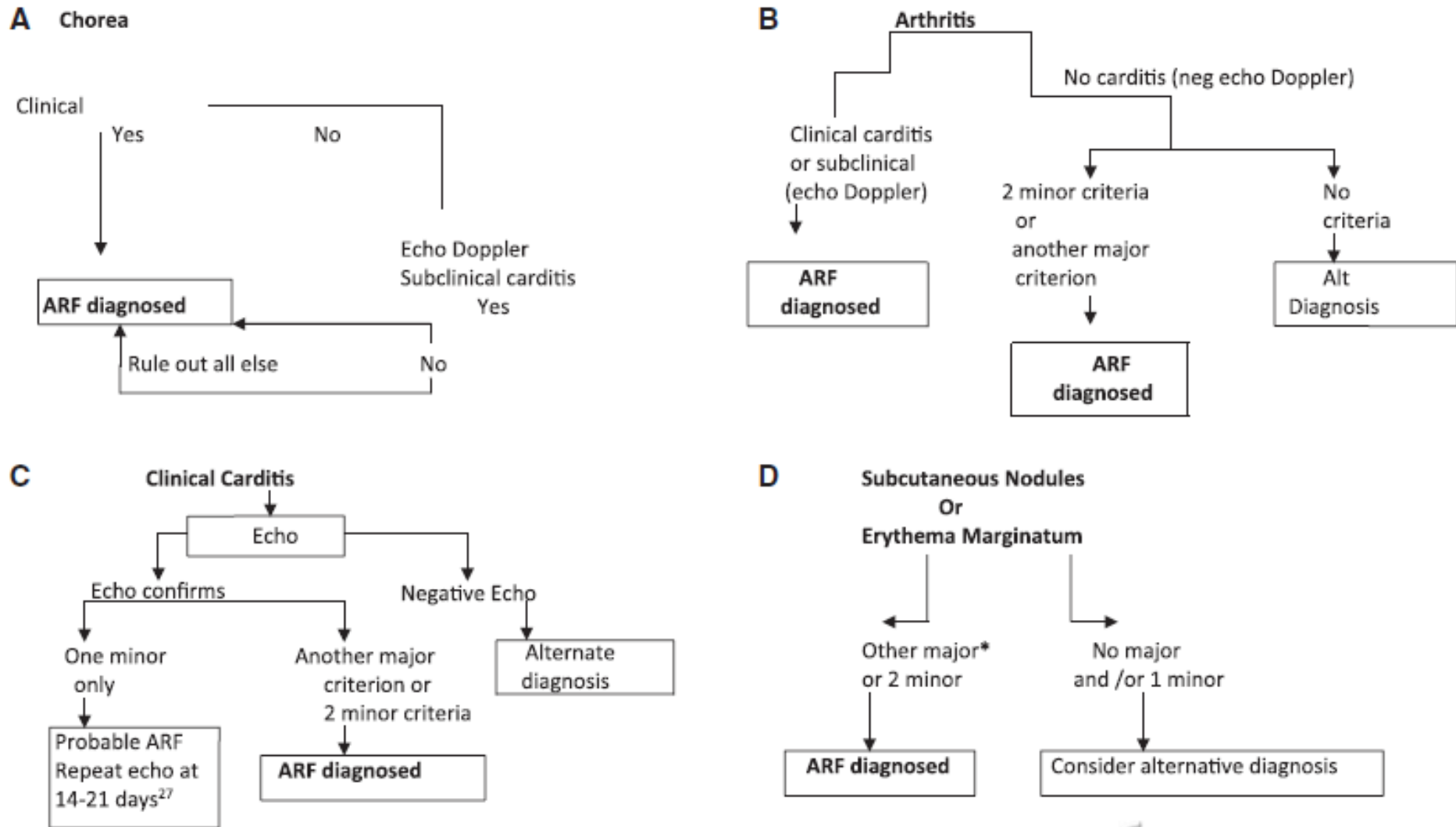
Monoarthralgia

Fever ($\geq 38^{\circ}\text{C}$)

ESR ≥ 30 mm/h and/or CRP ≥ 3.0 mg/dL§

Prolonged PR interval, after accounting for age variability (unless carditis is a major criterion)

Strategia diagnostica per la Febbre Reumatica Acuta



B, C, and D require evidence of GAS infection.

The Human Immune Response to Streptococcal Extracellular Antigens: Clinical, Diagnostic, and Potential Pathogenetic Implications

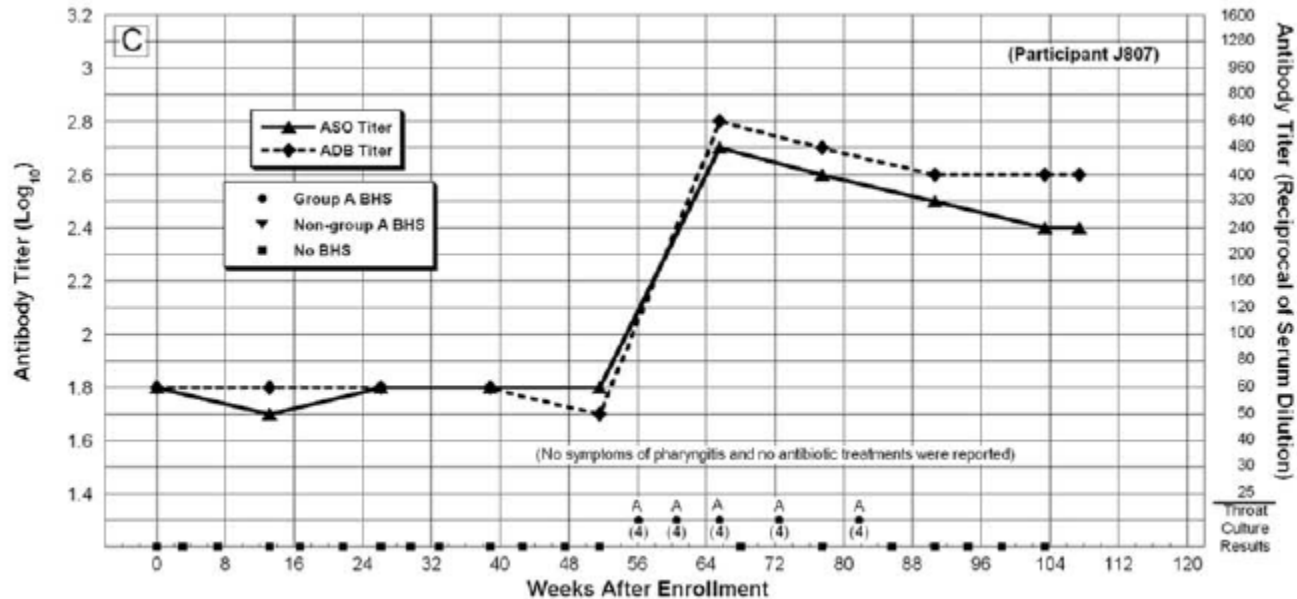
Dwight R. Johnson,¹ Roger Kurlan,² James Leckman,³ and Edward L. Kaplan¹

¹Department of Pediatrics, University of Minnesota Medical School, Minneapolis, Minnesota; ²Department of Neurology, University of Rochester School of Medicine and Dentistry, Rochester, New York; and ³Department of Pediatrics, Yale University School of Medicine, New Haven, Connecticut

Clinical Infectious Diseases 2010; 50:481–90

Methods. Pediatric study participants (*np*160) were followed during a 2-year study with monthly throat cultures (*np*3491) and blood samples (*np*1679) obtained every 13 weeks. Recovered GAS were characterized; serum anti-streptolysin O and anti-DNase B antibody titers were determined. Antibody titers and GAS culture results were temporally correlated and analyzed.

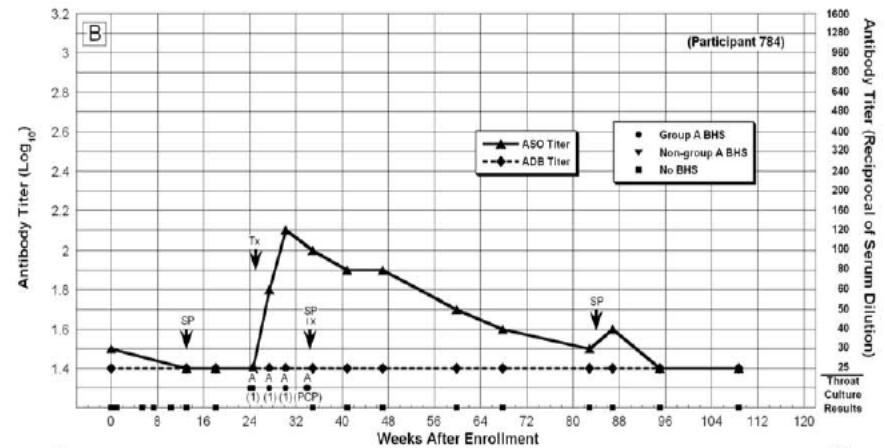
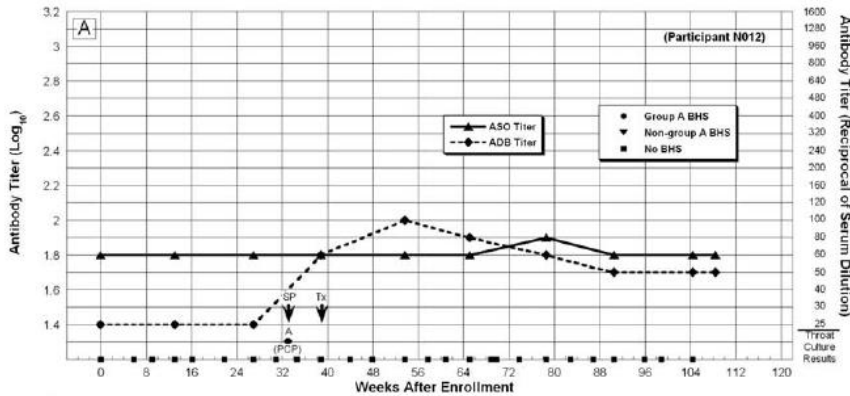
Risposta immune “classica”



Infezione documentata da SBEA, seguita da incremento significativo di TAS e antiDNAsiB.

- 58 infezioni da SBEA in 45 soggetti: 20 (34,5%) risposta “classica”

Risposta di 1 solo anticorpo



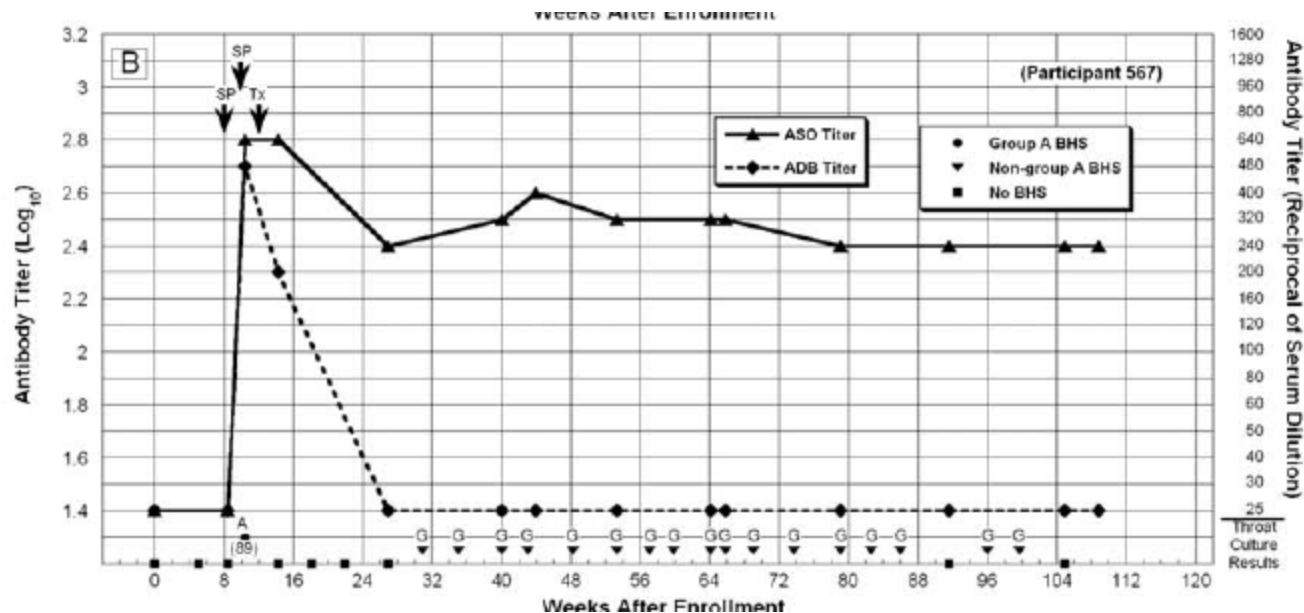
Infezione documentata da SBEA, seguita da incremento significativo di TAS o antiDNAsiB.

- 58 infezioni da SBEA in 45 soggetti: 36 (62,1%) risposta di un solo Ab (28 TAS, 28 antiDNAsiB)

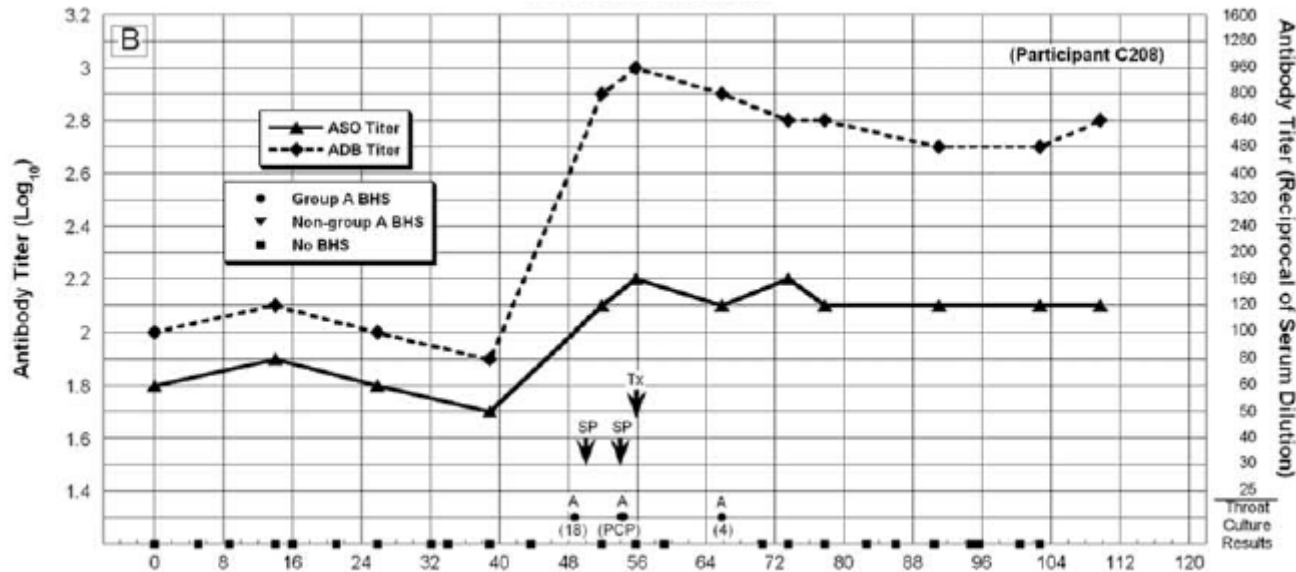
Infezioni da altri streptococchi

Gli streptococchi gr A, C e G producono una streptolisina O antigenicamente identica → incremento TAS

antiDNAsiB più sensibile nella diagnosi di SBEA



Lento decremento del titolo anticorpale

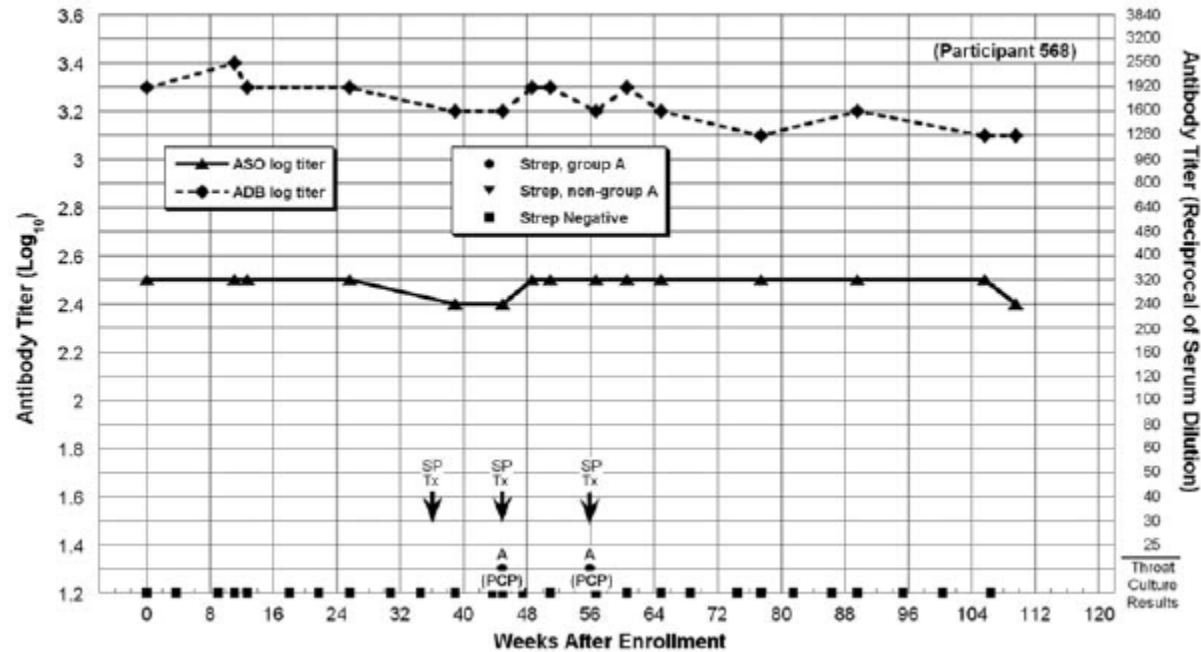


soggetti con significativo incremento del TAS: 20 (83,3%)
titolo elevato per >6 mesi, 16 (67,7%) per >1 anno.

Soggetti con significativo incremento antiDNA_{si}B: 22 (88%)
titolo elevato >6 mesi, 14 (56%) per >1 anno

Nella maggior parte dei casi non documentate inf da strepto

Valori normali



These data also unexpectedly revealed that, even in the culture-documented absence of GAS, ASO and ADB titers may remain “elevated” above ULN levels for extended periods of time.

These data document the very real potential for misinterpretation of streptococcal antibody titers.

These studies strongly reinforce observations that the documented increase in titer is the most reliable indicator of infection

Attempting to define GAS infection, especially time of infection onset, on the basis of a single timepoint or widely spaced observations can lead to erroneous interpretations.

