

Bloqueo de rama izquierda
Visión contemporánea

Ricardo Corbalán / Tucumán / Argentina

- Voy a tratar abordar conceptos de BRI en la era de la resincronización

AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram

Part III: Intraventricular Conduction Disturbances

A Scientific Statement From the American Heart Association Electrocardiography and Arrhythmias Committee, Council on Clinical Cardiology; the American College of Cardiology Foundation; and the Heart Rhythm Society

Endorsed by the International Society for Computerized Electrocardiology

Borys Surawicz, MD, FAHA, FACC; Rory Childers, MD;
Deborah J. Deal, MD, FACC; Leonard S. Gettes, MD, FAHA, FACC

Complete LBBB

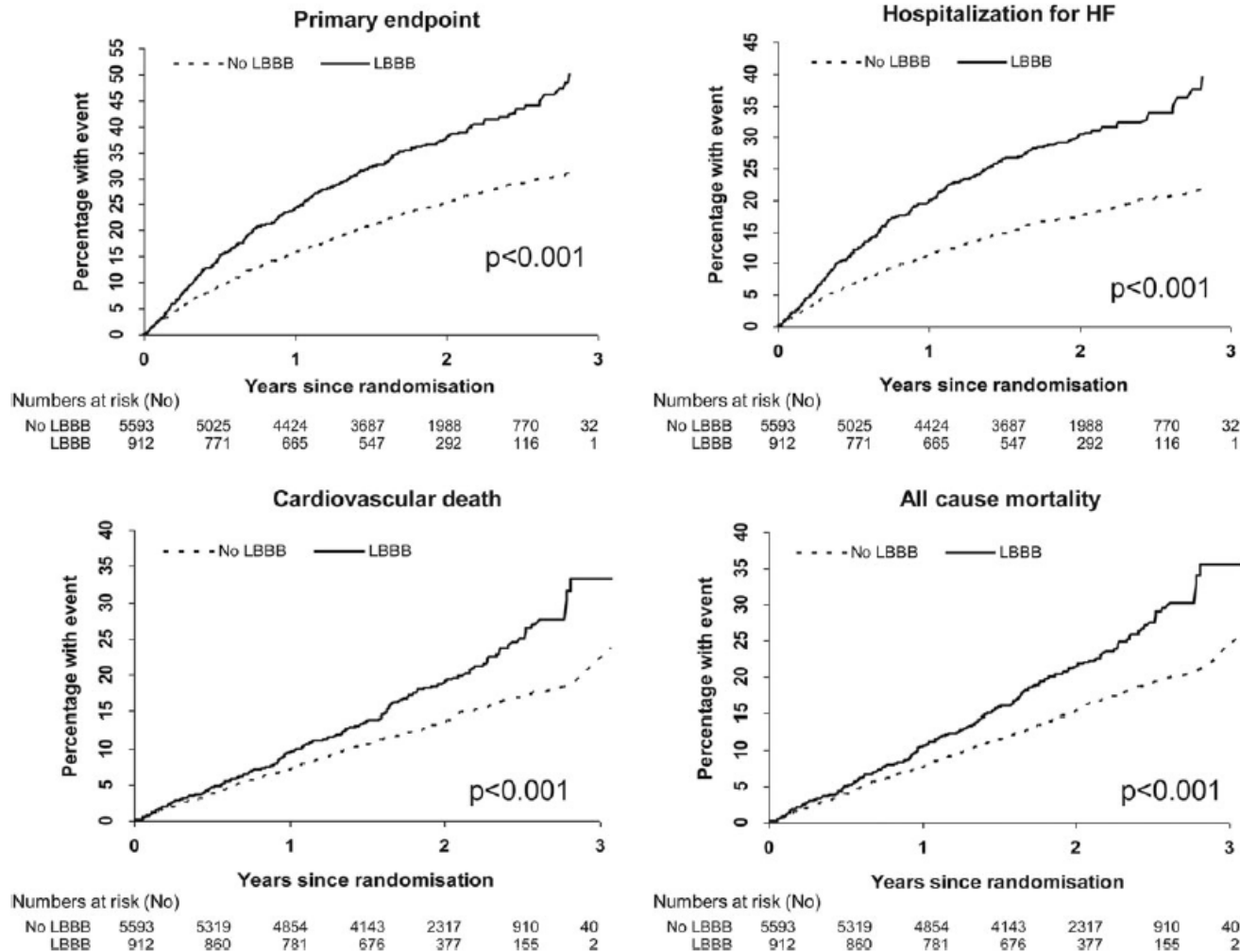
1. QRS duration greater than or equal to 120 ms in adults, greater than 100 ms in children 4 to 16 years of age, and greater than 90 ms in children less than 4 years of age.
2. Broad notched or slurred R wave in leads I, aVL, V₅, and V₆ and an occasional RS pattern in V₅ and V₆ attributed to displaced transition of QRS complex.
3. Absent q waves in leads I, V₅, and V₆, but in the lead aVL, a narrow q wave may be present in the absence of myocardial pathology.
4. R peak time greater than 60 ms in leads V₅ and V₆ but normal in leads V₁, V₂, and V₃, when small initial r waves can be discerned in the above leads.
5. ST and T waves usually opposite in direction to QRS.
6. Positive T wave in leads with upright QRS may be normal (positive concordance).
7. Depressed ST segment and/or negative T wave in leads with negative QRS (negative concordance) are abnormal (11,12) and are discussed in part VI of this statement.
8. The appearance of LBBB may change the mean QRS axis in the frontal plane to the right, to the left, or to a superior, in some cases in a rate-dependent manner (13,14).

Esta es la definición de BCRI según las ultimas guías.

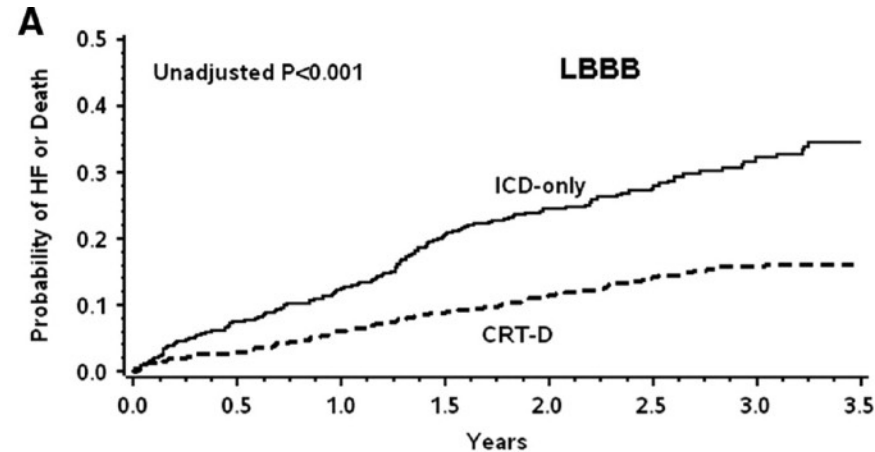
Nuevos conceptos en BRI

- Efectos del BRI en la función del VI
- Valor pronóstico del BRI en diferentes poblaciones
- Diagnóstico de BRI verdadero
- Cuantificación por ECG de fibrosis en BRI
- Importancia en la selección de pacientes para TRC

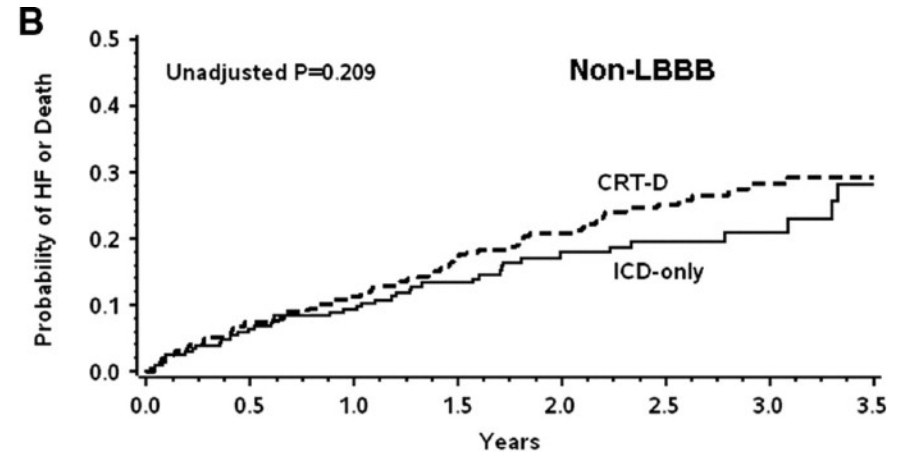
Impact of LBBB in pts with heart failure (SHIFT)



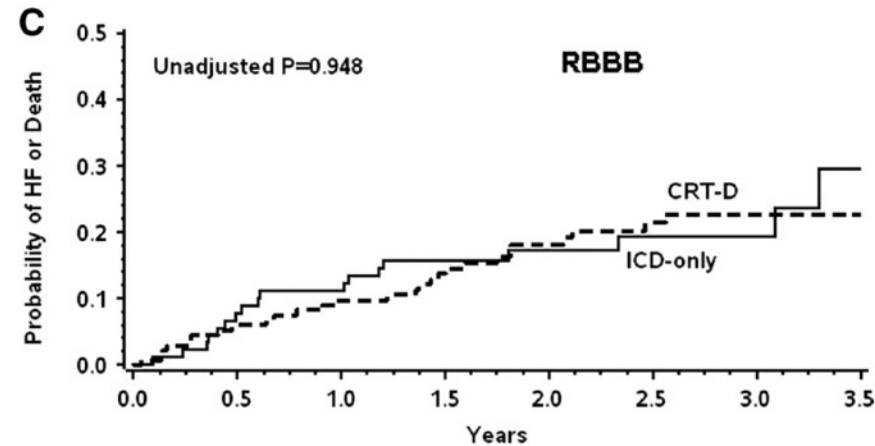
Benefit of CRT only occurs in patients with LBBB – MADIT-CRT



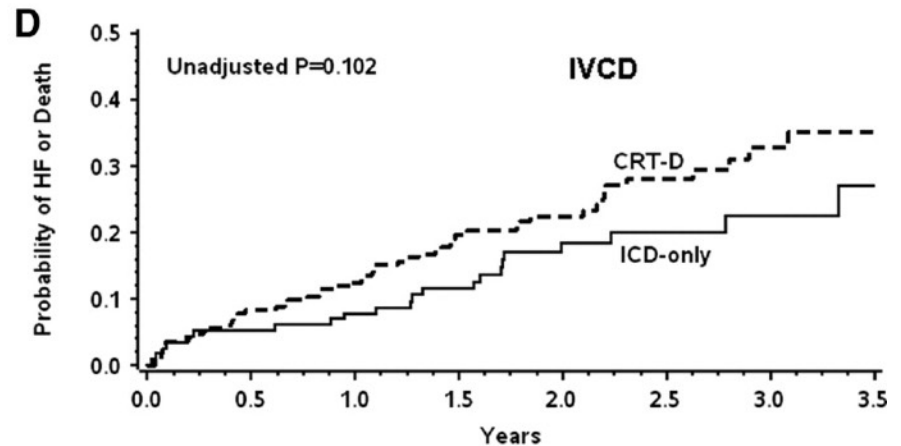
Patients at Risk				
ICD-only	520	436 (0.12)	274 (0.24)	134 (0.32)
CRT-D	761	700 (0.06)	491 (0.12)	220 (0.16)



Patients at Risk				
ICD-only	209	183 (0.09)	113 (0.18)	48 (0.21)
CRT-D	327	285 (0.11)	180 (0.21)	77 (0.28)

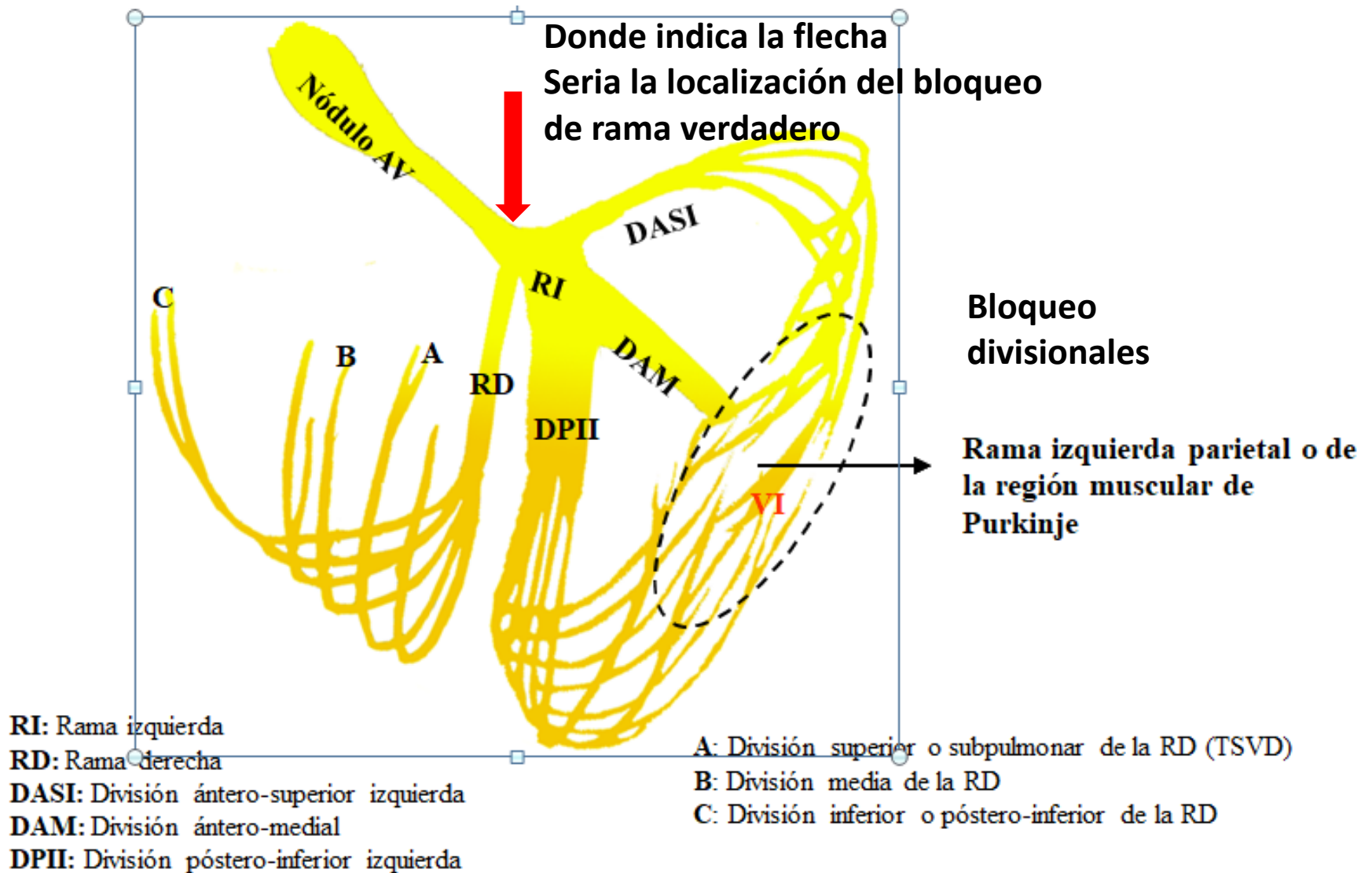


Patients at Risk				
ICD-only	92	78 (0.11)	51 (0.17)	23 (0.19)
CRT-D	136	119 (0.10)	86 (0.18)	42 (0.23)



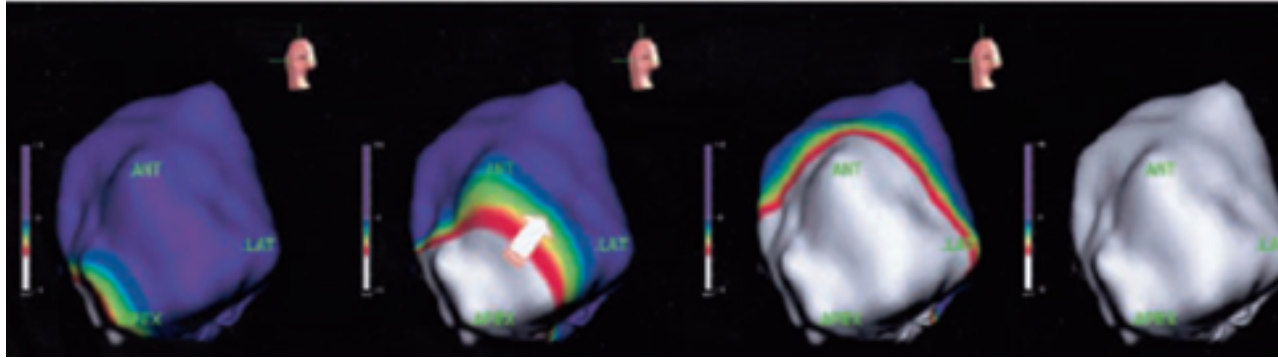
Patients at Risk				
ICD-only	117	105 (0.08)	62 (0.18)	25 (0.23)
CRT-D	191	166 (0.13)	94 (0.23)	35 (0.33)

El sistema de conducción se considera hexafascicular



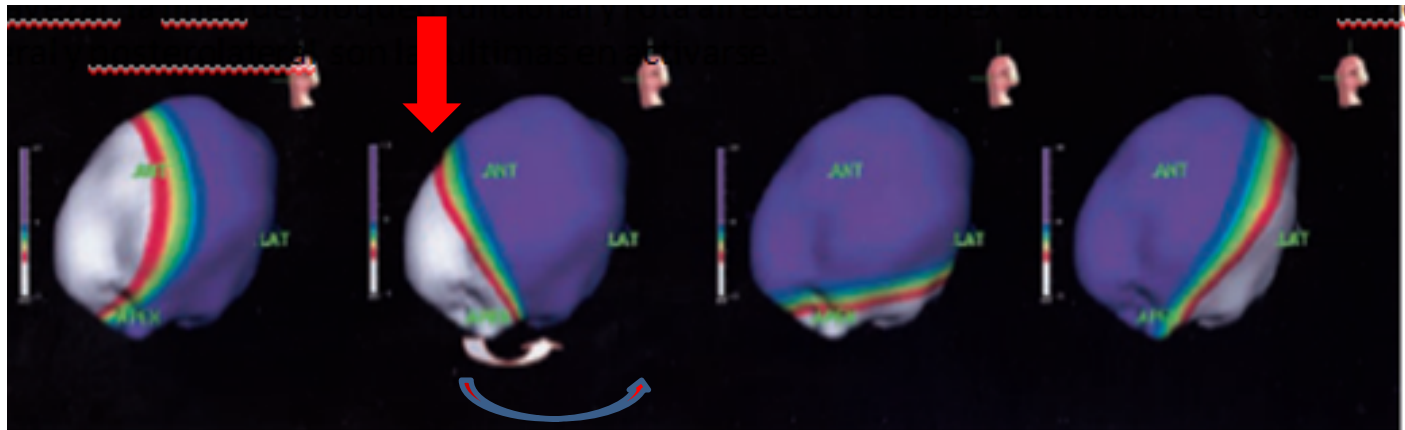
Despolarización en pacientes con falla cardiaca

Propagación de actividad color gris en paciente con FCC dilatado QRS 95 ms La actividad se propaga a la cara anterior y pared lateral .La región basal de VI es la ultima en activarse



95 ms

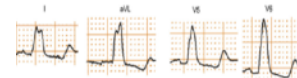
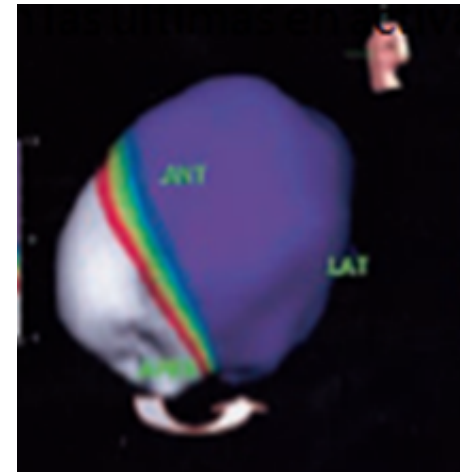
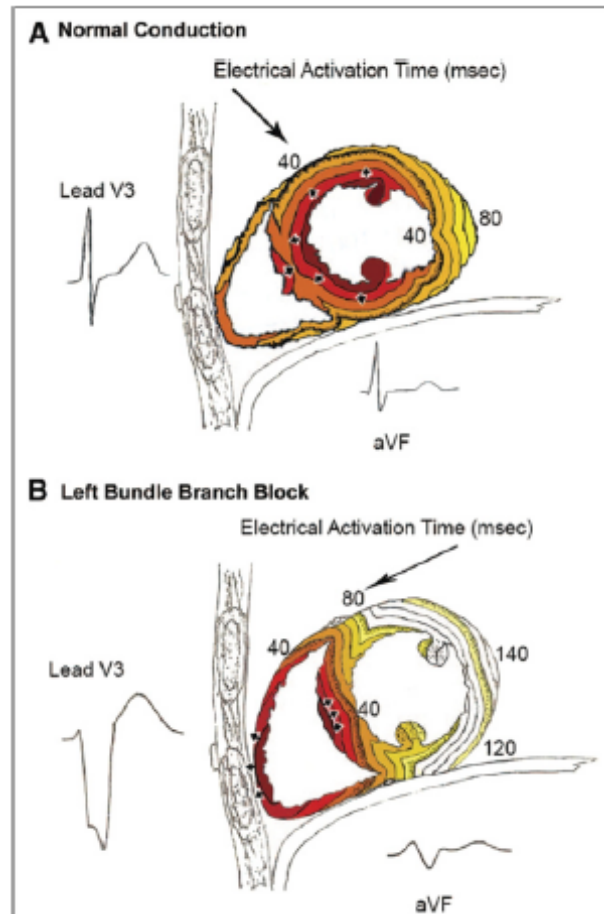
Propagación de actividad en paciente con FCC dilatado QRS 179 ms La actividad es incapaz de atravesar la linea de bloqueo funcional y rota alrededor del ápex activación en U. LA región lateral y posterolateral son las ultimas en activarse.



179 ms

Defining Left Bundle Branch Block in the Era of Cardiac Resynchronization Therapy

David G. Strauss, MD, PhD^{a,b,*}, Ronald H. Selvester, MD^c, and Galen S. Wagner, MD^d



La muesca representa la línea de bloqueo interventricular que es lo que en definitiva ,produce la disincronía activandose en U a través del apex siendo la cara lateral y posterior del VI la ultima en activarse

Es el único que debe ser considerado BRI verdadero

Nonspecific intraventricular conduction delay: Definitions, prognosis, and implications for cardiac resynchronization therapy

Romain Eschalier, MD, PhD,^{*,†} Sylvain Ploux, MD, PhD,^{*} Philippe Ritter, MD,^{*}
Michel Haïssaguerre, MD,^{*} Kenneth A. Ellenbogen, MD, FHRS,[†] Pierre Bordachar, MD,

La visión contemporánea :

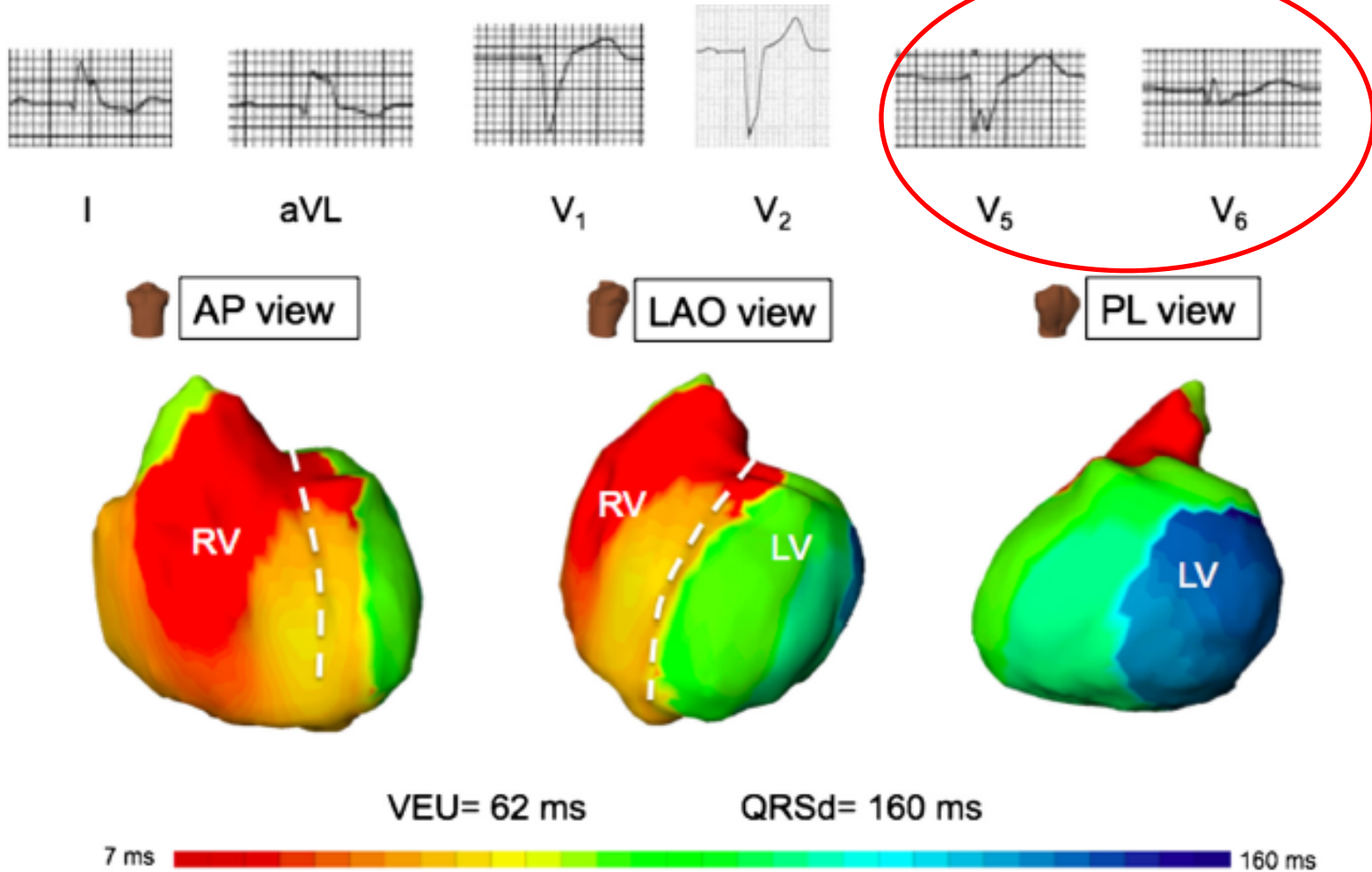
Definiciones

**Bloqueos
atípicos**

**Bloqueos
Periinfarto**

**Bloqueos
Parietales IV**

BRI ATIPICO



Se observan en pacientes postinfarto con BRI previos en el cual hay efectos de superposición de anomalías eléctricas. Se observan ondas Q en múltiples derivaciones complejos QS o QR en derivaciones laterales

Fragmented Wide QRS on a 12-Lead ECG

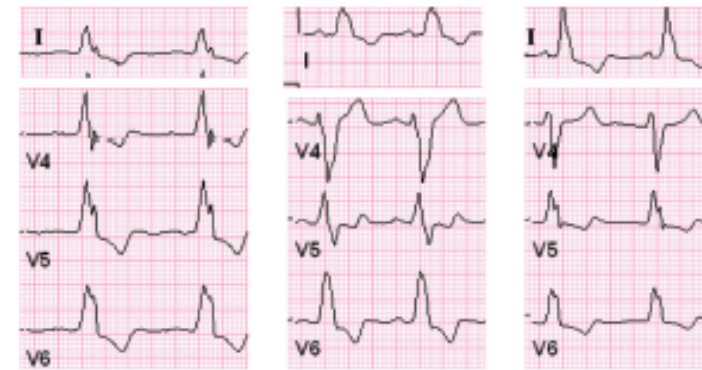
A Sign of Myocardial Scar and Poor Prognosis

Mithilesh K. Das, MD; Hussam Suradi, MD; Waddah Maskoun, MD; Mark A. Michael, MD;
Changyu Shen, PHD; Jonathan Peng, MD; Gopi Dandamudi, MD; Jo Mahenthiran, MD

Fragmented LBBB (f-LBBB)



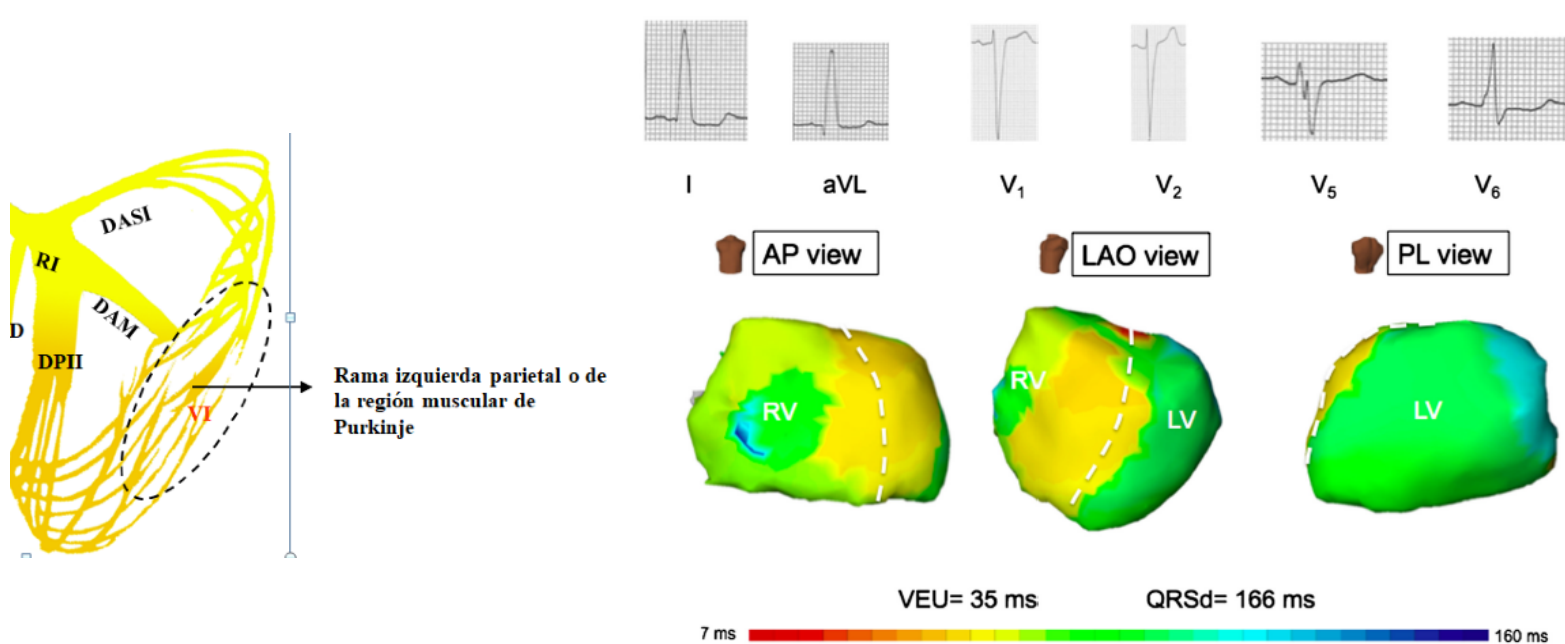
D. Non-fragmented LBBB



Los asteriscos muestran zonas de fQRS signos de escara

Conclusions—f-wQRS on a standard 12-lead ECG is a moderately sensitive and highly specific sign for myocardial scar in patients with known or suspected coronary artery disease. f-wQRS is also an independent predictor of mortality. (*Circ Arrhythmia Electrophysiol.* 2008;1:258-268.)

BLOQUEO INTRAVENTRICULAR PARIETAL

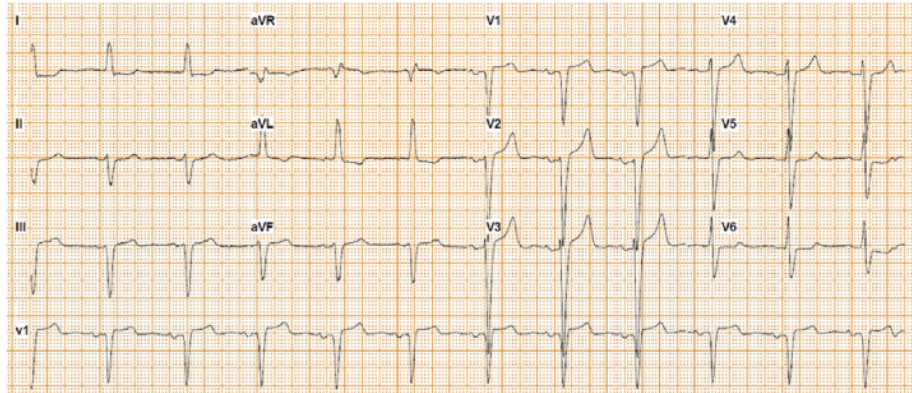


Trastornos de conducción intraventricular en el que el sitio afectado se encuentra **más allá de las ramas del haz de His y sus subdivisiones principales** Estos pueden incluir la red de fibra de Purkinje o miocardio patológico (p. ej., hipertrofia, fibrosis) de la pared ventricular. Este trastorno de conducción intraventricular se puede observar en presencia de un **sistema de conducción proximal conservado** (His mas ramas) .

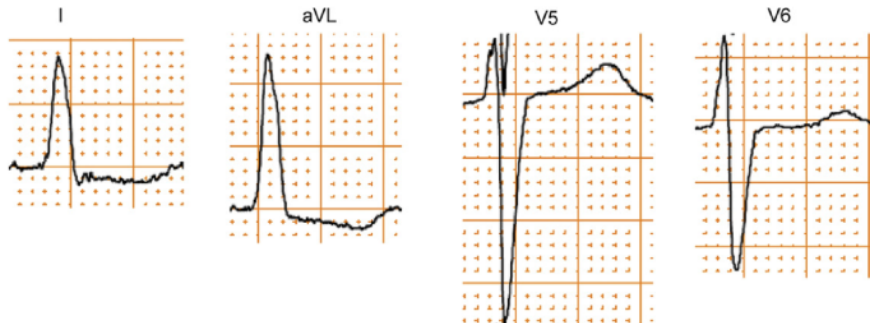
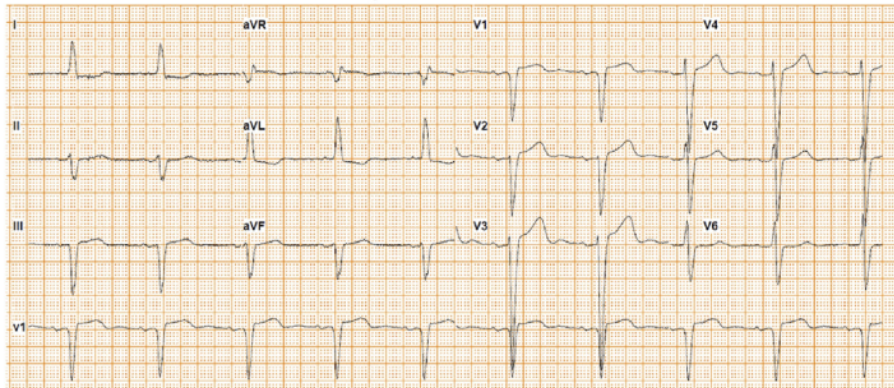
HVI bloqueo parietal

BRI

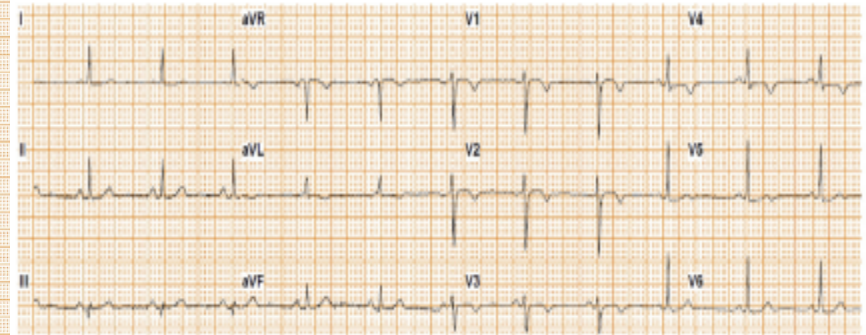
D. ECG after 5 years: QRS duration = 128 ms



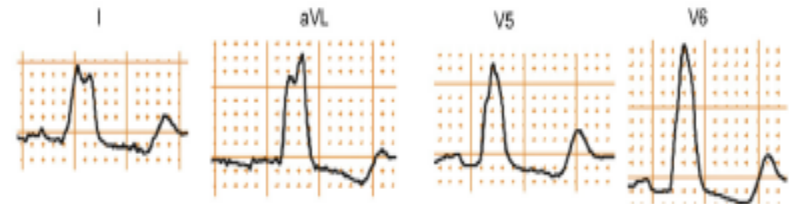
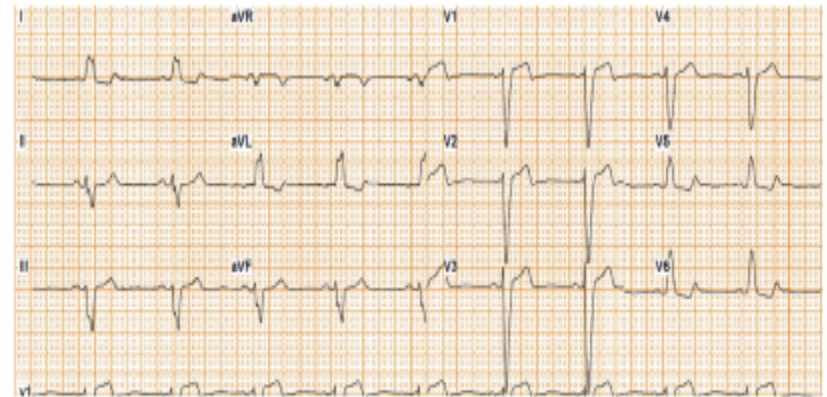
E. ECG after 6.5 years: QRS duration = 142 ms



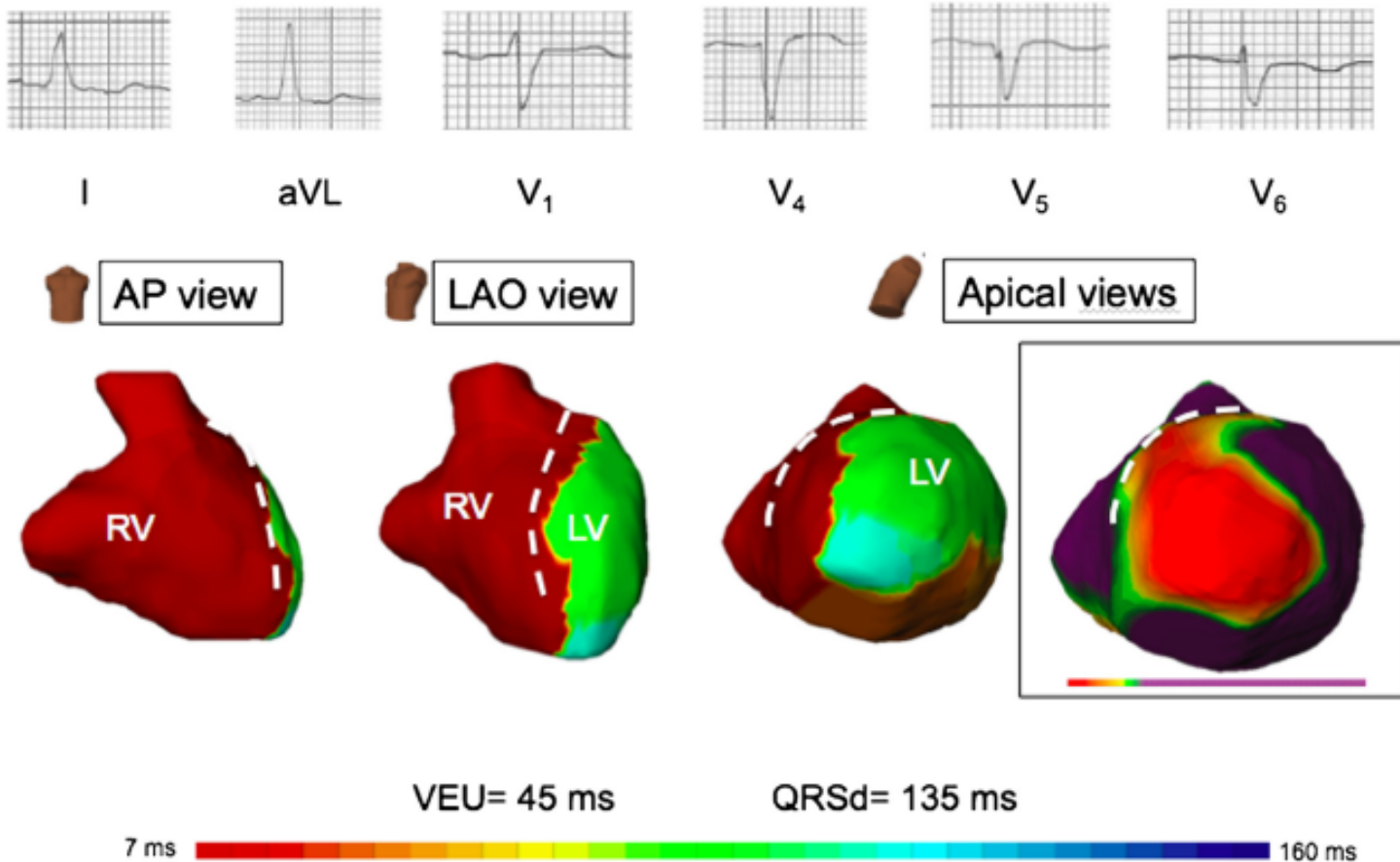
A. Initial ECG: QRS duration = 76 ms



B. ECG 1 year later: QRS duration = 148 ms



Bloqueos periinfarto



Paciente añosa con oclusión de DA en tercio medio . **Las ondas Q en V5V6 van en contra de BRI.** La zona necrotica apical de color purpura enlentece la conduccion a ese nivel.

TRIAL TRC

Pacientes incluidos erróneamente en los grandes trials ⁷³

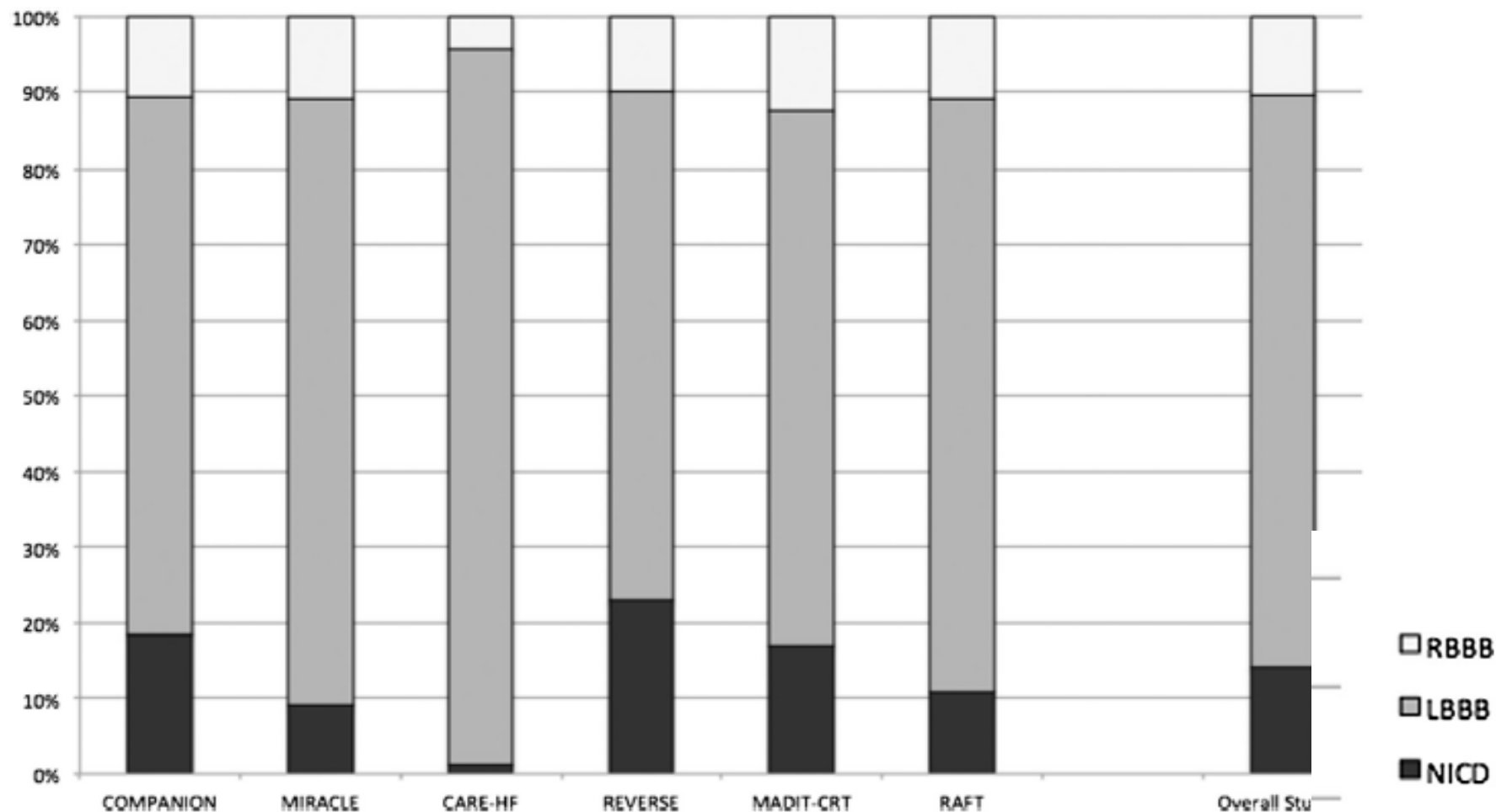


Table 1 Main CRT outcomes in NICD patients

Studies	Effects of CRT in patients with NICD
MIRACLE ³⁶	At 6 months: Improvement in quality of life ($P = .038$) Trend for improvement in functional status (NYHA class) ($P = .08$) No improvement in 6-minute walking test ($P = .141$), exercise time ($P = .469$), or MVo_2 = peak oxygen consumption ($P = .292$)
CARE-HF ²⁴	No positive or negative association with NICD In multivariable analysis, RBBB was associated with a worse prognosis (death of any cause and unplanned hospitalization for management of a major cardiovascular event; HR 2.043, 95% CI 1.322–3.157)
REVERSE ¹⁶	No improvement in clinical composite score ³⁵ (OR 0.79, 95% CI 0.40–1.57) No improvement in composite endpoint (time to first HF hospitalization and all-cause death; HR 0.60; $P = .31$) No reverse remodeling: no improvement in LV ejection fraction and no reduction in LV end-systolic and end-diastolic volumes
MADIT-CRT ¹⁴	No improvement in the following: HF event or death: HR 1.44 (95% CI 0.88–2.36), $P = .143$ HF event: HR 1.31 (95% CI 0.78–2.18), $P = .306$ Death: HR 2.00 (95% CI 0.80–5.02), $P = .139$ VT/VF: HR 1.09 (95% CI 0.69–1.71), $P = .723$ VF: HR 1.32 (95% CI 0.54–3.25), $P = .544$ VT/VF/death: HR 1.18 (95% CI 0.77–1.79), $P = .453$ VF/death: HR 1.43 (95% CI 0.74–2.74), $P = .284$
RAFT ¹³	No improvement in the following: Composite endpoint (death of any cause or HF leading to hospitalization): HR 1.116 (95% CI 0.686–1.815), $P = .657$ Death: HR 0.930 (95% CI 0.491–1.761), $P = .825$ HF hospitalization: HR 1.021 (95% CI 0.574–1.815), $P = .944$

CARE-HF — Cardiac Resynchronization in Heart Failure; CI — confidence interval; CRT — cardiac resynchronization therapy; HF — heart failure; HR — hazard ratio; LV — left ventricle; MADIT-CRT — Multicenter Automatic Defibrillator Implantation Trial With Cardiac Resynchronization Therapy; MIRACLE — Multicenter InSync Randomized Clinical Evaluation; MVo_2 — peak oxygen consumption; NICD — nonspecific intraventricular conduction delay; NYHA — New York Heart Association; OR — odds ratio; RAFT — Resynchronization Defibrillation for Ambulatory Heart Failure Trial; RBBB — right bundle branch block; REVERSE — Resynchronization Reverses Remodeling in Systolic Left Ventricular Dysfunction; VF — ventricular fibrillation; VT — ventricular tachycardia.

La conclusión en esta tabla es que la casi totalidad de los Paciente con TNEC fueron no respondedores

CONTEMPORARY REVIEW

Nonspecific intraventricular conduction delay: Definitions, prognosis, and implications for cardiac resynchronization therapy

Romain Eschalier, MD, PhD,^{*†} Sylvain Ploux, MD, PhD,^{*} Philippe Ritter, MD,^{*}
Michel Haïssaguerre, MD,^{*} Kenneth A. Ellenbogen, MD, FHRS,[†] Pierre Bordachar, MD,

La visión contemporánea es que :

**Bloqueos
atípicos**

**Bloqueos
Periinfarto**

**Bloqueos
Parietales IV**

Deben ser considerados

Retardos no específicos de la conducción intraventricular

Y su reconocimiento es de vital importancia
para la selección de pacientes para TRC

Conclusiones

- Los brillantes conceptos con respecto a las definiciones de cada tipo de bloqueo desde el punto de vista ECG-VCg, deben aplicarse clínicamente a la hora de elegir un paciente apto para ser resicronizado.
- La TRC **es la única terapia** que ha logrado detener y aun revertir la evolución de la IC a pesar de la terapia medicamentosa máxima.

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