



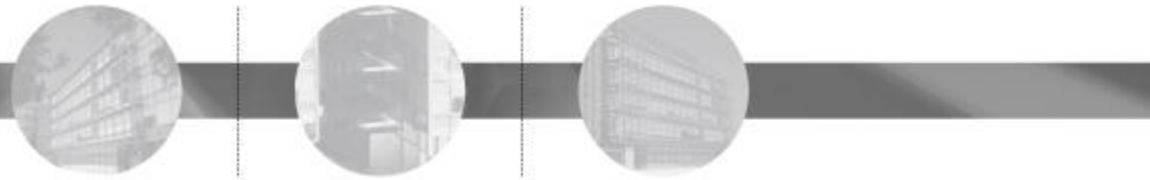
# DOCUMENTACIÓN CIENTÍFICA

**Irene Maseda**

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*Fundación  
Centro Nacional de  
Investigaciones  
**Cardiovasculares**  
Carlos III*

**23 julio 2018**



## 1 Concepción de la idea

## 2 Planteamiento del problema

Objetivos, preguntas de investigación, justificación y viabilidad

## 3 Marco teórico y revisión de la literatura

- Detección
- Obtención
- Consulta
- Selección de la información de interés



## 4 Tipo de investigación

- Exploratoria
- Descriptiva
- Correlacional
- Explicativa



## 5 Definición de hipótesis y definición de variables

- Definición conceptual
- Definición operacional

## 6 Selección del diseño de investigación



- Experimental
- Cuasi-experimental
- No experimental

## 7 Selección de la muestra, determinar el universo y extraer la muestra

## 8 Recolección de datos



- Instrumento de medición
- Validación del instrumento
- Codificación de datos
- Archivar datos

## 9 Análisis de datos



- Pruebas estadísticas
- Problemas de análisis
- Realizar análisis

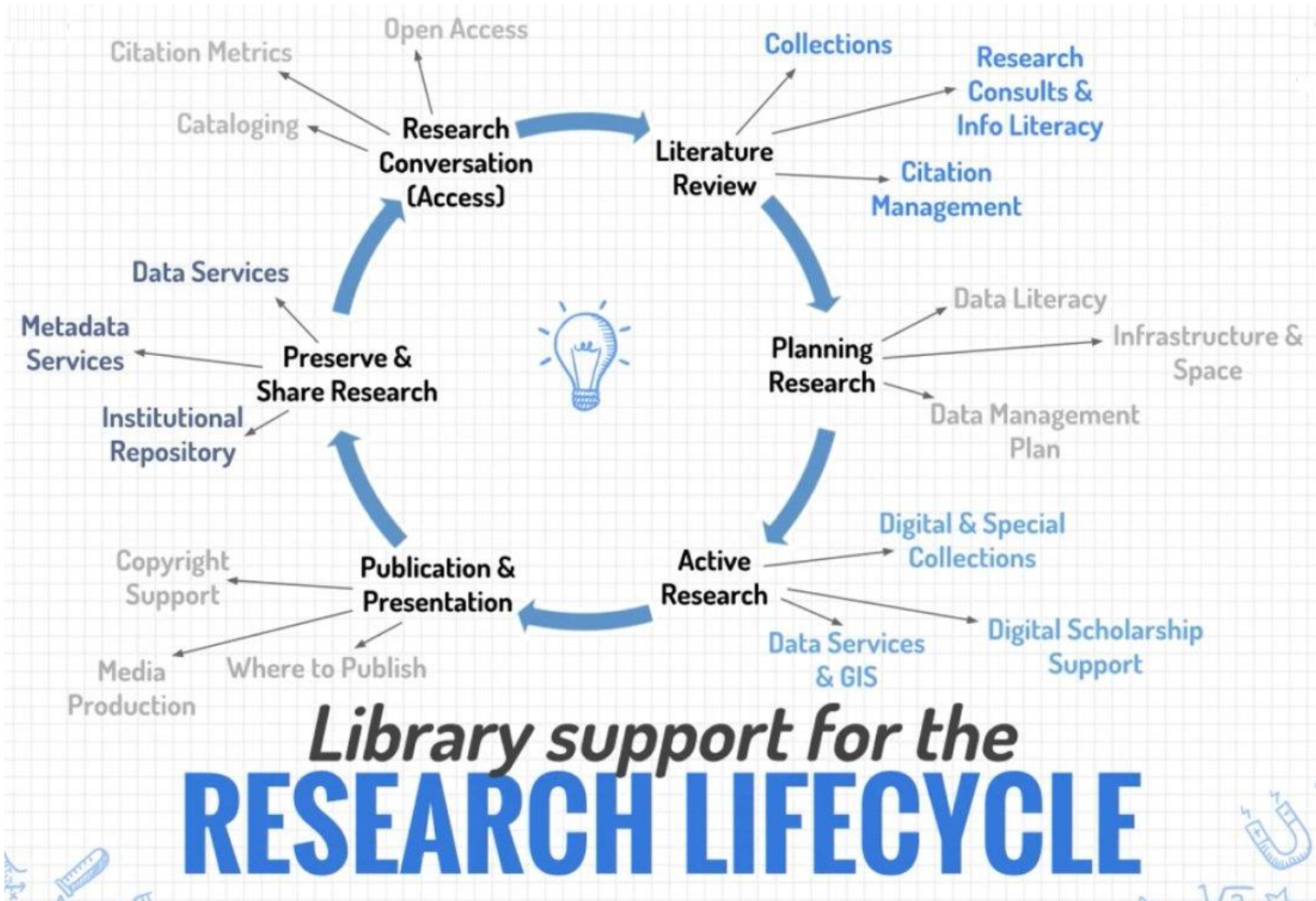
## 10 Presentación de los resultados



- Elaboración del informe de investigación
- Publicación de artículos con los resultados

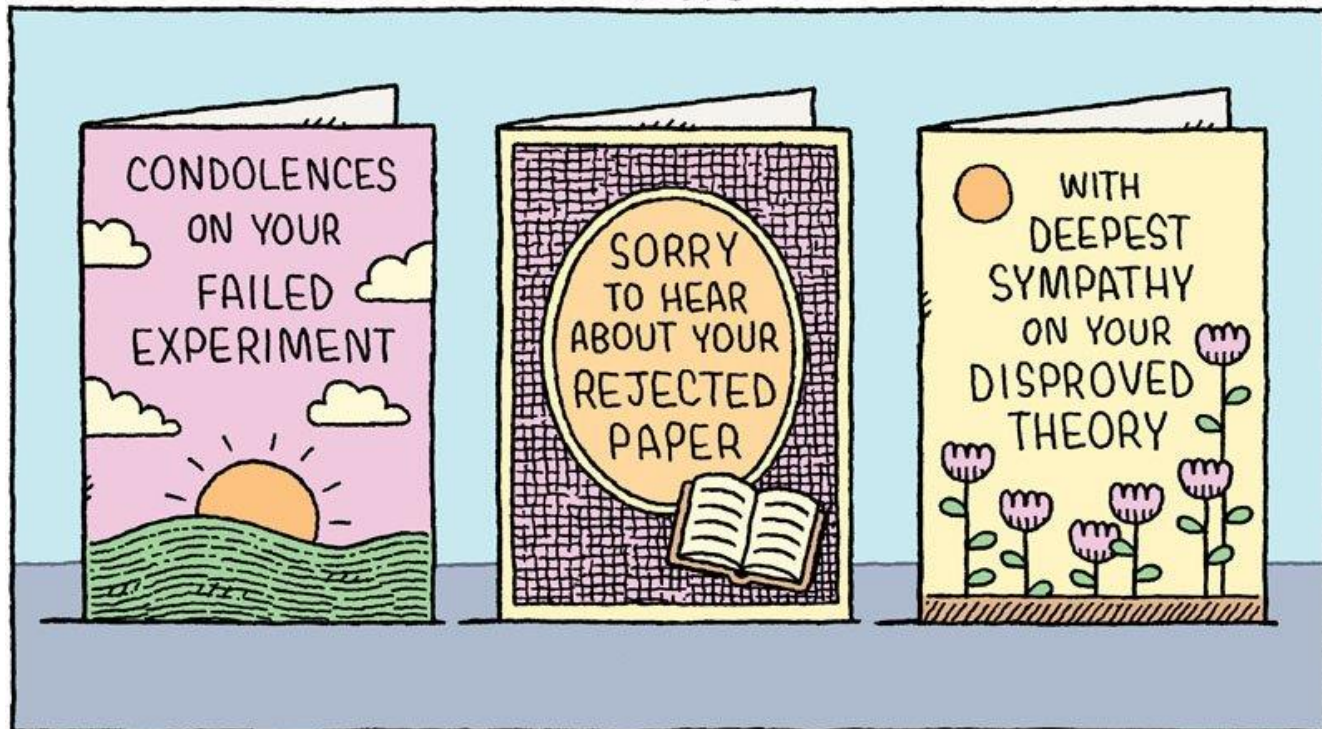
# EL DOCUMENTALISTA EN EL PROCESO DE INVESTIGACIÓN

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## ¿QUÉ HACEMOS CON LOS RESULTADOS NEGATIVOS?

### SYMPATHY CARDS FOR SCIENTISTS



TOM GAULD

## LA COMUNICACIÓN ENTRE CIENTÍFICOS:

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 **Formal**

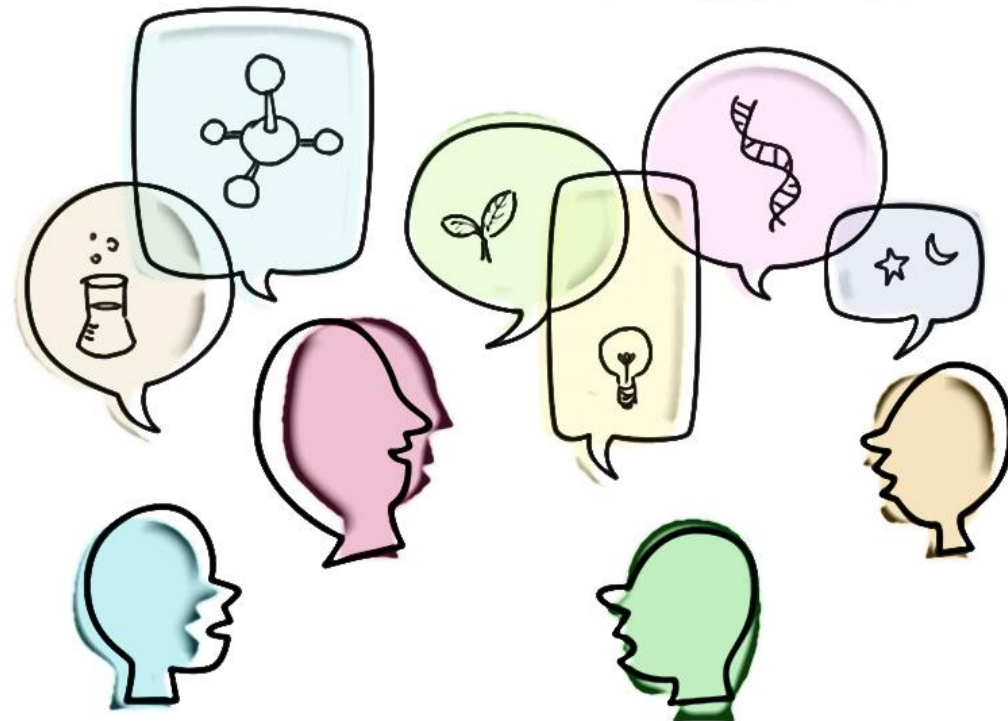


## FUNDAMENTAL

Debe ofrecer los detalles del método científico utilizado y así los experimentos deberían poder ser repetidos en cualquier laboratorio del mundo.

## RECONOCIMIENTO

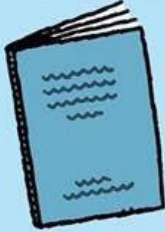
Provee información acerca de los recursos utilizados de manera que otros investigadores puedan identificar el artículo de una revista, libro u otro tipo de recurso.




TOM GAULD

NewScientist

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BEAMED TO OUR  
ALIEN MASTERS



A BROADWAY  
MUSICAL



WHISPERED INTO  
A HOLE IN AN  
ENCHANTED OAK



AN INTERNET  
MEME  
INVOLVING CATS

## PEER REVIEW

Es un método de control de calidad dentro de la comunidad científica que asegura que los trabajos publicados en las revistas científicas siguen unos estándares mínimos en cuanto al diseño experimental.

### ENVÍO



Los investigadores redactan un artículo de su investigación y lo envían a una revista.

### RECEPCION



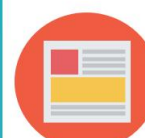
El editor de la revista envía el artículo a los referees.

### REVISIÓN



Los referees (evaluadores) estudian el trabajo y elaboran un resumen dando su opinión sobre la calidad del artículo.

### DECISIÓN



Los referees (evaluadores) estudian el trabajo y elaboran un resumen dando su opinión sobre la calidad del artículo.

- Se acepta el artículo (a veces se solicitan cambios).
- No se acepta el artículo.

Si los evaluadores no están de acuerdo el editor hace de árbitro en la decisión.

**PUBLICACIÓN DEL ARTÍCULO**

# EL FORMATO Y EL ESTILO DE UN ARTÍCULO CIENTÍFICO

*cnic*

**I**

INTRODUCCIÓN



¿POR QUÉ?

**M**

MÉTODOS



¿CÓMO?

**R**

RESULTADOS



¿QUÉ?

**D**

DISCUSIÓN



¿ENTONCES QUÉ?



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International Journal of Cardiology

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Nutritional preconditioning by marine omega-3 fatty acids in patients with ST-segment elevation myocardial infarction: A METOCARD-CNIC trial substudy



TÍTULO

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AFILIACIÓN

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CLAVE

## ABSTRACT

**Background:** Marine omega-3 eicosapentaenoic acid (EPA) is readily incorporated into cardiomyocyte membranes, partially displacing the omega-6 arachidonic acid (AA). Whereas AA is a substrate for pro-inflammatory eicosanoids, the release of EPA from cell membranes generates anti-inflammatory lipid mediators, contributing to the infarct-limiting effect observed experimental models. Clinical data are lacking.

**Methods:** In this observational study conducted in 100 patients with a reperfused anterior ST-elevation myocardial infarction (STEMI), at hospital admission we quantified by gas-chromatography the red blood cell proportions of AA, EPA, and the AA:EPA ratio, a valid surrogate for cardiomyocyte membrane content. Patients underwent cardiac magnetic resonance imaging in the acute phase (one week post-STEMI), and at long-term (6 months) follow-up. Infarct size (delayed gadolinium enhancement) and cardiac function (left ventricular ejection fraction [LVEF]) were correlated with exposures of interest by multivariate regression analysis.

**Results:** AA:EPA ratio directly related to acute infarct size (coefficient [95% CI]: 6.19 [1.68 to 10.69],  $P = 0.008$ ) and inversely to long-term LVEF (coefficient [95% CI]: -4.02 [-7.15 to -0.89],  $P = 0.012$ ). EPA inversely related to acute infarct size (coefficient [95% CI]: -6.58; [-11.46 to -1.70];  $P = 0.009$ ), while a direct association with LVEF at follow-up (coefficient [95% CI]: 3.67 [0.25 to 7.08];  $P = 0.036$ ) was observed.

**Conclusions:** A low AA:EPA ratio in red blood cells at the time of STEMI is associated with smaller acute infarct size and preserved long-term ventricular function. Our results are consistent with prior work in experimental models and add to the notion of omega-3 fatty acids as a healthy fat.

**Trial registration:** <http://www.clinicaltrials.gov/NCT01311700>

RESUMEN

## 1. Introduction

Ischemic heart disease (IHD), the leading cause of death worldwide [1], can be prevented by a variety of dietary components [2]. Among them, intake of long-chain omega-3 polyunsaturated fatty acids (LCn3PUFA), mainly eicosapentaenoic acid (C20:5n-3, EPA) and docosahexaenoic acids (C22:6n-3, DHA), is associated with a lower risk of IHD, particularly sudden cardiac death, in individuals without prior cardiovascular disease [3]. The link is controversial for secondary prevention [4], which can be mostly explained by the universal statin treatment after myocardial infarction and by the fact that myocardial infarction survivors are no longer deficient in LCn3PUFA, as recently pointed out [5]. Based on large epidemiologic studies, the American Heart Association recommended consuming at least two servings per week of fish, preferably fatty fish [6].

Dietary LCn3PUFA readily displace the omega-6 arachidonic acid (C20:4n-6, AA) from membranes [7]. Such replacement modifies the production of eicosanoids and other lipid mediators by the cyclooxygenase, lipoxygenase, and cytochrome P450 pathways [8,9]. Myocardial ischemia triggers the release of free AA and the ensuing formation of pro-inflammatory eicosanoids, which are believed to amplify ischemic tissue damage in animal models and in patients with myocardial infarction [10,11]. In contrast, the release of EPA from cardiac membranes under ischemic conditions leads to the generation of anti-inflammatory eicosanoids [7-9].

Long-term diet-induced displacement of AA of cardiomyocyte membranes by EPA may thus have beneficial effects in the event of ST-segment elevation myocardial infarction (STEMI), protecting the myocardium during the ischemia/reperfusion process and improving post-infarction ventricular function and remodeling. This strategy would be of interest in public health, given that infarct size and chronic left ventricular ejection fraction (LVEF) are major determinants of post-STEMI mortality and morbidity [12,13]. Experimental models have consistently reported a nutritional preconditioning-like effect of diets supplemented with LCn3PUFA in the heart [14-19], but clinical data are confined to a recent study reporting that treatment with doses of 4 g/d of LCn3PUFA after myocardial infarction improves cardiac remodeling [20]. The issue of whether regular fish eaters who sustain a first STEMI may have less extensive cardiac damage than non-eaters remains to be explored. In observational studies, the optimal approach to address this issue is by using the fatty acid composition of body tissues, given the difficulties of accurately measuring fat intake from the diet records [21].

We therefore hypothesized that cardiomyocyte membrane AA replacement by EPA supplied by the usual diet, in the absence of omega-3 supplementation, would relate to smaller myocardial injury and result in better chronic left ventricle contractile function at the time of a first STEMI. Given that routine myocardial biopsy is not safe in the acute phase of STEMI, we measured the AA:EPA ratio in red blood cells (RBC) – a well validated surrogate for cardiomyocyte membrane fatty acid content [22,23] unaffected in the subacute phase of a cardiac event [24] – at the time of STEMI and studied its association with acute infarct size and long-term cardiac function as assessed by state-of-the-art cardiac magnetic resonance (CMR) [25].

# INTRODUCCIÓN

## ¿POR QUÉ ESTA INVESTIGACIÓN ES INTERESANTE?

## 2. Material and methods

This observational study is a substudy of the METOCARD-CNIC clinical trial (<http://www.clinicaltrials.gov>. Unique identifier: NCT01311700. EUDRACT number: 2010-019939-35) [26–28].

### 2.1. Design and study participants

The METOCARD-CNIC trial showed that in patients suffering a first STEMI, early intravenous metoprolol administration prior to primary percutaneous coronary intervention reduces acute infarct size [27] and preserves long-term LVEF, thereby reducing the incidence of severe left ventricle systolic dysfunction and lowering heart failure admissions [28]. The study protocol has been described in detail elsewhere [26]. Participants were recruited between November 2010 and October 2012. Inclusion criteria were age 18 to 80 years, Killip class  $\leq$  II anterior STEMI, and anticipated symptom onset-to-reperfusion time  $\leq$  6 h. Aside from allocation to pre-reperfusion intravenous metoprolol or control, all patients received state-of-the-art treatment according to clinical guidelines, including long-term oral treatment with  $\beta$ -blockers. The study, which complied with the Declaration of Helsinki, was approved by the institutional review boards of each participating center, and all eligible candidates provided written informed consent. Complete information was available in 100 STEMI patients ( $n = 50$ , treated with intravenous metoprolol administration prior to primary percutaneous coronary intervention; and  $n = 50$  controls, not receiving metoprolol) who agreed to participate in this substudy (Supplementary Fig. 1).

### 2.2. RBC membrane fatty acid analysis

Overnight fasting period ( $> 10$  h) blood samples were drawn during hospital admission and were stored at  $-80$  °C until fatty acid analysis. The RBC fatty acid profile was determined as described [29]. In brief, whole blood cells were hemolysed and the pellet ( $> 99.5\%$  RBC membranes) was obtained by centrifugation. After that, the cell membrane pellet was dissolved in 1 ml  $\text{BF}_3$  methanol solution and transferred to a screw-cap test-tube, which was heated for 10 min at  $100$  °C to hydrolyze and methylate glycerophospholipid fatty acids. The extracts were cooled and fatty acid methyl esters were isolated by adding  $300$   $\mu\text{l}$  of n-hexane. The tubes were centrifuged and an aliquot of the upper layer was transferred into an automatic injector vial equipped with a  $300$   $\mu\text{l}$  volume adapter. Fatty acid methyl esters were separated by gas-chromatography using an Agilent HP 7890 Gas Chromatograph equipped with a  $30 \text{ m} \times 0.25 \mu\text{m} \times 0.25 \text{ mm}$  SupraWAX-280 capillary column (Teknokroma, Barcelona, Spain), an autosampler, and a flame ionization detector. The amount of each fatty acid is expressed as a percentage of the total identified fatty acids in the sample.

# MÉTODOS

# ¿CÓMO SE HA LLEVADO A CABO ESTA INVESTIGACIÓN?

### 3. Results

Baseline clinical characteristics and treatment regimens of the study population are shown in Table 1. Demographic, anthropometric, and clinical characteristics of patients included in this substudy were similar to those of the overall study cohort (data not shown). 15% of participants were treated with statins before STEMI, while the full cohort received statin treatment at 6 months. RBC membrane fatty acid composition at hospital admission is presented in Table 2. Acute and follow-up CMR data are summarized in Table 3.

In a randomly selected subset of subjects at baseline ( $n = 36$ ), the mean (SD) of fatty fish, lean fish, and total fish was 38.3 g/d (22.1), 27.7 g/d (16.2) and 101.4 g/d (45.8), respectively. The calculated mean EPA + DHA intake was 1006 mg/d (502). Attesting to the validity of the questionnaire, the Spearman's correlation coefficient between calculated intake of EPA + DHA and AA:EPA ratio in RBC at the time of STEMI was  $-0.384$  ( $P = 0.021$ ), while the value for EPA in RBC was  $0.392$  ( $P = 0.018$ ).

Univariate associations between CMR-assessed acute infarct size were  $-0.141$  ( $P = 0.161$ );  $0.112$  ( $P = 0.269$ ), and  $0.173$  ( $P = 0.086$ ) for RBC EPA, AA, and AA:EPA ratio, respectively. The values for long-term LVEF were  $0.130$  ( $P = 0.198$ ),  $-0.225$  ( $P = 0.024$ ), and  $-0.185$  ( $P = 0.065$ ), respectively. Multivariate associations are shown in Tables 4, 5, and eTable 1. The AA:EPA ratio showed a significant direct association with acute infarct size (coefficient: 6.19; 95% CI: 1.68 to 10.69;  $P = 0.008$ ; Table 4) and a significant inverse association with LVEF at 6 months (coefficient:  $-4.02$ ; 95% CI:  $-7.15$  to  $-0.89$ ;  $P = 0.012$ ; Table 4). Significant associations were found for EPA (inverse with infarct size at baseline [coefficient:  $-6.58$ ; 95% CI:  $-11.46$  to  $-1.70$ ;  $P = 0.009$ ], and direct with LVEF at follow-up [coefficient: 3.67; 95% CI: 0.25 to 7.08;  $P = 0.036$ ]) (Table 5). AA showed a significant inverse association with long-term LVEF (coefficient:  $-0.02$ ; 95% CI:  $-0.03$  to 0.00;  $P = 0.022$ ) (eTable 1).

## RESULTADOS

¿QUÉ HA SIDO  
ENCONTRADO?

## 4. Discussion

In this substudy of the METOCARD-CNIC trial, we found that reduced AA:EPA ratio in RBC membranes at the time of STEMI was associated with smaller infarctions and improved long-term LVEF. Despite its observational design, our study investigated the preconditioning-like properties of omega-3 fatty acids in humans, a notion only explored in animal models heretofore. We determined the LCn3PUFA profile in RBC, which is known to mirror dietary LCn3PUFA intake [21,29] and it is a validated surrogate for cardiac fatty acid status in humans, as previously demonstrated in studies undertaken in heart transplant recipients [23] and in patients undergoing cardiac bypass surgery [24]. Our unprecedented findings suggest that replacement of AA with EPA in the phospholipids of cell membranes (including cardiomyocytes), which can be achieved through the regular intake of fatty fish or fish oil, might contribute improving prognosis in the event of a STEMI.

Advances in reperfusion have reduced the acute mortality associated with STEMI, the leading cause of death worldwide, and attention has since turned to the improvement of survivors' quality of life and life expectancy [14]. In this regard, declining cardiac function emerged as an important and powerful predictor of clinical outcomes in post-infarction patients [13]. As a result, pharmacological and device-based therapies have been implemented to reduce long-term mortality

# DISCUSIÓN

# ¿ENTONCES QUÉ?

**Table 3**  
Baseline and long-term magnetic resonance imaging data.

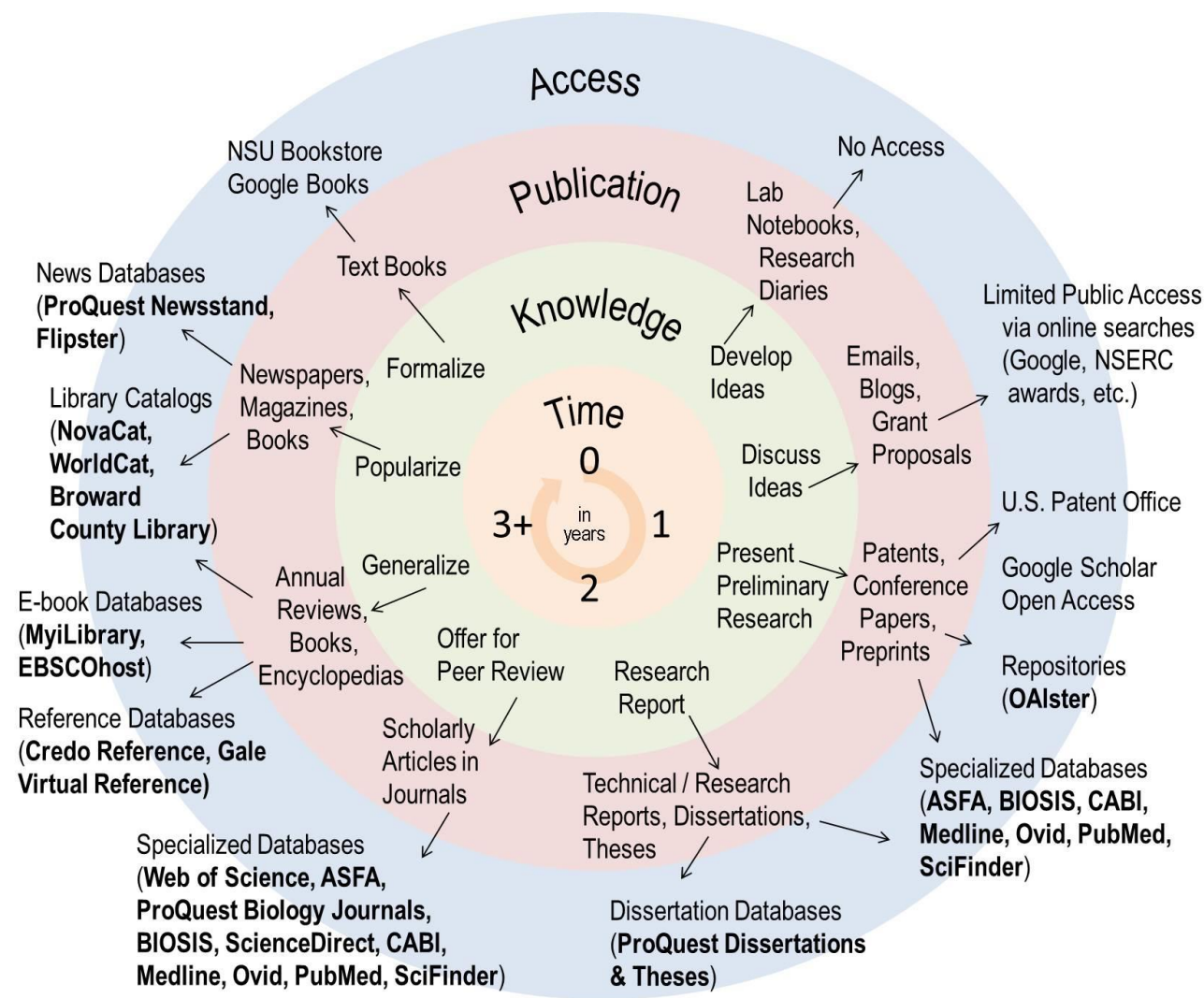
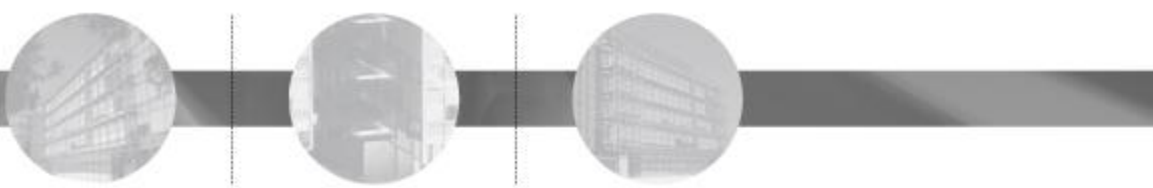
Variable	Baseline (5 to 7 days after infarction)		Long-term (6 mo after infarction)	
	Mean (SD)	Range	Mean (SD)	Range
LVEDV, mL	173.9 (36.7)	100.2 to 301.6	190.1 (43.1)	108.7 to 327.7
LVESV, mL	94.9 (32.1)	33.3 to 217.7	101.7 (41.0)	39.9 to 229.2
LV mass, g	110.8 (25.8)	57.7 to 186.1	85.8 (20.0)	40.5 to 139.4
Edema, g	35.4 (16.5)	0 to 75.7	-	-
Edema, % LV	28.2 (11.7)	0 to 52.0	-	-
Infarct size, g	24.7 (17.7)	0 to 79.8	14.8 (10.8)	0.0 to 42.4
LVEF, %	46.4 (9.7)	26.7 to 67.2	48.0 (10.8)	26.8 to 68.4

LVEDV, left ventricular end-diastolic volume; LVESV, left ventricular end-systolic volume; LV, left ventricle; LVEF, left ventricular ejection fraction.



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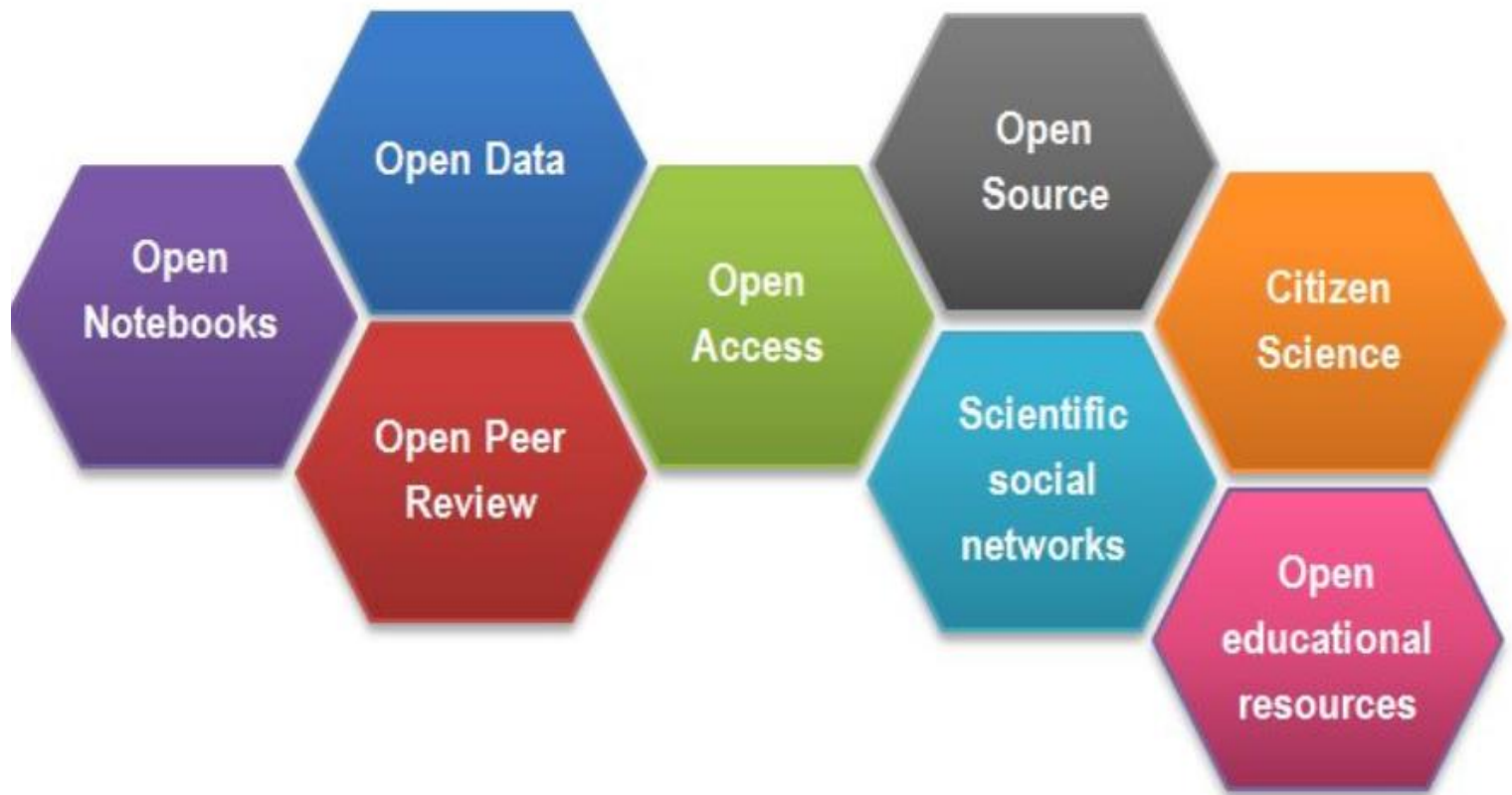


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- **ÉTICA EN LA FORMA DE GENERAR RESULTADOS**
- **ÉTICA DE LAS IMPLICACIONES DE LOS RESULTADOS**



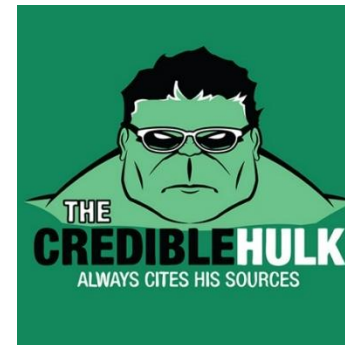
**FRAUDE CIENTÍFICO:** toda aquella desviación del método científico y de las normas éticas relacionadas con la actividad científica.

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- ❌ Fabricación de datos
- ❌ Falsificación de datos

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- ❌ Publicación duplicada
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- ❌ Publicación inflada
- ❌ Incorrección de citas bibliográficas



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- Revisión por pares





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**EL SAPO PARTERO DE PAUL KAMMERER** (1926)



**WILLIAM T. SUMMERLIN Y LOS RATONES MOTEADOS** (1974)



## ROBERT GALLO Y EL DESCUBRIMIENTO DEL VIRUS DEL SIDA (1983)

## ANDREW WAKEFIELD Y LA VACUNA TRIVÍRICA (1998)

### THE LANCET

The Lancet, Volume 351, Issue 9133, Pages 437 - 441, 28 February 1998  
doi:10.1016/S0140-6736(97)11096-0

This article was retracted

**RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children**

Dr AJ Wakefield FRCS <sup>1</sup>, Dr SH Murch MB <sup>2</sup>, A Anthony MB <sup>3</sup>, J Linnér PhD <sup>4</sup>, DM Casson MRCP <sup>5</sup>, M Maitt MRCP <sup>6</sup>, M Brekowitz FRCPsych <sup>7</sup>, AP Dillon MRCPsych <sup>8</sup>, MA Thomson FRCP <sup>9</sup>, P Harvey FRCP <sup>9</sup>, A Valentin FRCP <sup>9</sup>, SE Davies MRCPsych <sup>9</sup>, JA Walker-Smith FRCP <sup>9</sup>

#### Summary

#### Background

We investigated a consecutive series of children with classic enterocolitis and regressive developmental disorder.

#### Methods

12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

**RETRACTED**

**BBC NEWS**

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Last Updated: Thursday, 15 December 2005, 16:47 GMT

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**S Korea stem cell success 'faked'**

**A South Korean cloning pioneer has admitted fabricating results in key stem cell research, a colleague claims.**

At least nine of 11 stem cell colonies used in a landmark research paper by Dr Hwang Woo-suk were faked, said Roh Sung-Il, who collaborated on the paper.

Dr Hwang wants the US journal Science to withdraw his paper on stem cell cloning, Mr Roh said.

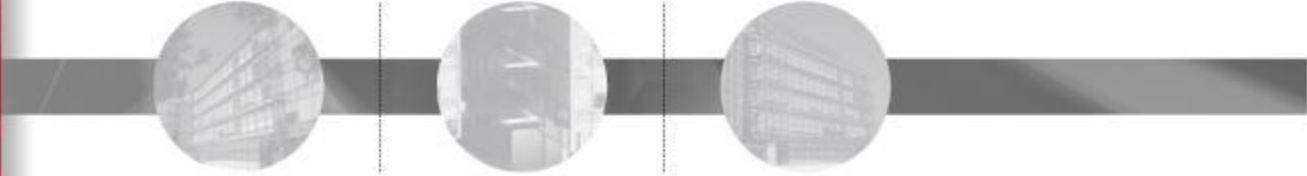
Dr Hwang, who is reported to be receiving hospital treatment for stress, was not available for comment.



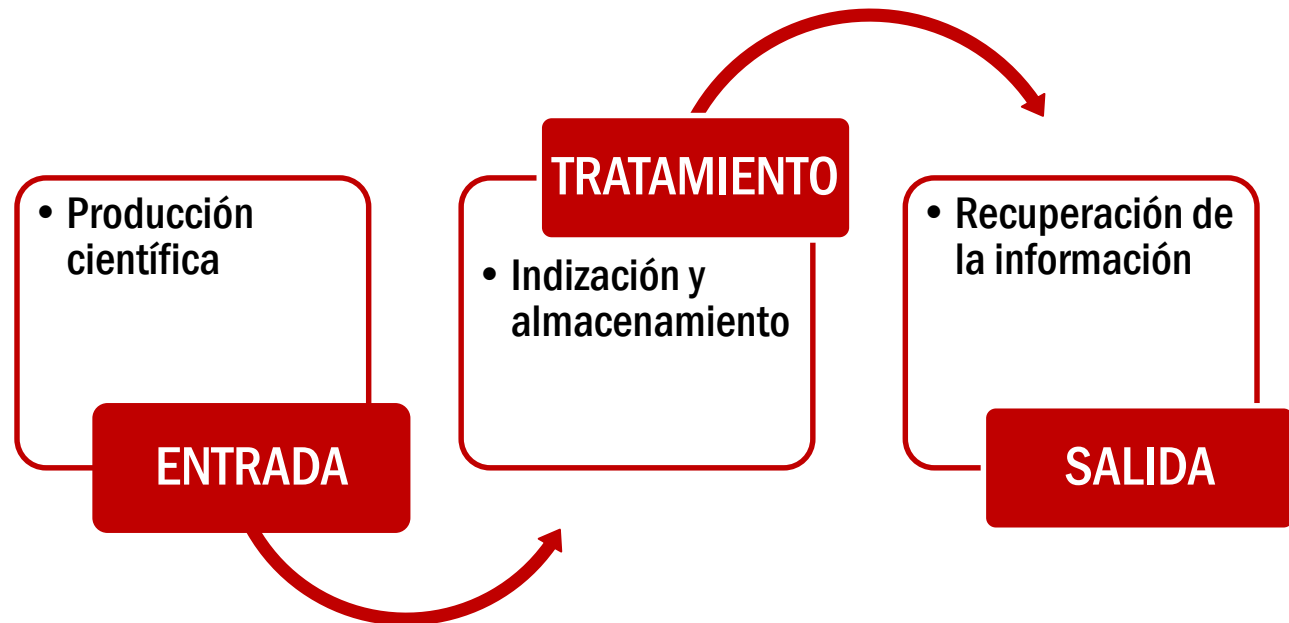
Dr Hwang has been hailed as a hero in South Korea

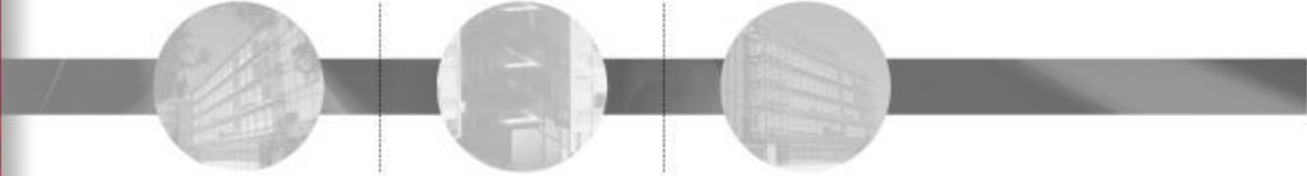
## HWANG WOO-SUK Y LA CLONACIÓN DE CÉLULAS HUMANAS (2005)

# DOCUMENTACIÓN

- 
- A decorative graphic at the top of the slide features a horizontal grey bar. Three circular images are placed along this bar, separated by vertical dashed lines. The circles contain grayscale images of architectural structures or buildings.
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## ¿QUÉ PAPEL JUEGA EL DOCUMENTALISTA?



- 
- A decorative horizontal bar with a gradient from dark grey to light grey. Three circular images are placed along the bar, separated by vertical dashed lines. The images show architectural details of a building.
- ✓ Piensa de antemano cuál es la materia a buscar
  - ✓ Elige el lugar correcto para empezar: motores de búsqueda o bases de datos específicas
  - ✓ Elige los términos de búsqueda correctos
  - ✓ Averigua si existe la posibilidad de buscar por palabras clave y si se pueden usar los operadores booleanos
  - ✓ Prueba la búsqueda sencilla y la avanzada. Usa los filtros
  - ✓ Echa un vistazo a los resultados y prueba a mejorarlos
  - ✓ Guarda o imprime los resultados
  - ✓ Obtén el documento

## Habilidades básicas (I): usar truncamien\*

- El truncamiento es usar un símbolo comodín (como \*) en las búsquedas
- El truncamiento puede generar muchos resultados y cubrir varios términos
  - cardi\* nos valdrá para *cardiology* (pero también *cardiovascular*, *cardiac*, *cardiomyocyte*...)

## Trucos:

- ✓ Busca por prefijos o sufijos específicos del tema que te interese (eletro\*, synthetic\*, geno\*, cardi\* ...) y úsalos en conjunto con otros términos
- ✓ Cuidado con efectos indeseados cuando se usa el truncamiento (cari\* vs. cardio\* vs. cardia\*)

## Habilidades básicas (II): piensa en lógica booleana - operadores

- Los operadores booleanos (AND, OR, NOT) son la base para la creación de la búsqueda avanzada
- Ejemplos:
  - **AND:** *arrhythmia AND ventricular AND ischemia* = los tres términos tienen que estar presentes
  - **OR:** *arrhythmia OR ventricular OR ischemia* = un término tiene que estar presente
  - **NOT:** *arrhythmia AND ventricular NOT ischemia* = arrhythmia y ventricular tienen que estar presentes, pero no ischemia

### Trucos:

- Algunas bdd usan también operadores de proximidad (ej. NEAR)
- Los operadores booleanos tienen que ir siempre en MAYUSCULA

## Habilidades básicas (II): piensa en lógica booleana – precedencia y ()

- Hay que conocer la PRECEDENCIA DE LOS OPERADORES de cada base de datos

Ejemplo (búsqueda [resultados PubMed] [resultados WoS]):

- arrhythmia OR ischemia NOT ventricular [371.385] [290.185]
- ischemia NOT ventricular OR arrhythmia [453.139] [290.185]
- arrhythmia OR (ischemia NOT ventricular) [453.139] [290.185]
- (arrhythmia OR ischemia) NOT ventricular [371.385] [249.847]
- ventricular NOT (arrhythmia OR ischemia) [257.147] [281.538]
- ventricular NOT arrhythmia OR ischemia [518.161] [281.538]

### Trucos:

- La precedencia de los operadores suele ser: SAME > NOT > AND > OR
- En otras bases de datos es de izquierda a derecha
- Los paréntesis anulan la precedencia de los operadores

## Habilidades básicas (II): piensa en lógica booleana – comillas

- Ejemplo: traslational research
  - A: traslational research [16.292]
  - B: traslational AND research [16.292]
  - C: “traslational research” [8.295]
  - D: “traslation\* research” [8.577]

Hay que recordar que el símbolo de truncamiento y la precedencia de los operadores puede ser diferente de una base de datos a otra, pero esa información siempre estará disponible en la sección de ayuda.



Si usas Google para comenzar la búsqueda, ¡úsalo bien!

**“Comillas”** ⇒ Encuentra la frase exacta

- **Guión** ⇒ Excluye un término de la búsqueda

~**Tilde** ⇒ Busca sinónimos

**site:** ⇒ Busca sólo en una página web específica

| **barra vertical** ⇒ Busca en sitios que tengan uno | dos | todos los términos

..**dos puntos** ⇒ Sirve para buscar en periodos de números

También se puede usar la Búsqueda Avanzada...

## Buscar páginas con...

todas estas palabras:

esta palabra o frase exactas:

cualquiera de estas palabras:

ninguna de estas palabras:

números desde el:

hasta

## Haz lo siguiente en el cuadro de búsqueda

Escribe las palabras importantes: *terrier ratonero tricolor*

Escribe las palabras exactas entre comillas: *"terrier ratonero"*

Escribe O entre todas las palabras que quieras: *miniatura OR estándar*

Añade un signo menos delante de las palabras que no quieras que aparezcan: *-roedor, -"Jack Russell"*

Escribe dos puntos seguidos entre los números y añade una unidad de medida: *10..35 kg, 300..500 euros, 2010..2011*

## A continuación, limitar los resultados por...

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3. Bartolucci J, Verdugo FJ, González PL, Larrea RE, Abarzua E, Goset C, Rojo P, Palma I,

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**Repetitive optimizing left ventricular pacing configurations with quadripolar leads improves response to cardiac resynchronization therapy: A single-center randomized clinical trial.**

Gu M<sup>1</sup>, Jin H, Hua W, Fan XH, Ding LG, Wang J, Niu HX, Cai C, Zhang S.

⊕ Author information

**Abstract**

**BACKGROUND:** This study aimed to investigate whether repetitive optimizing left ventricular pacing configurations (LVPCs) with quadripolar leads (QUAD) can improve response to cardiac resynchronization therapy (CRT).

**METHODS:** Fifty-two eligible patients were enrolled and 1:1 randomized to either the quadripolar LV leads (QUAD) group or the conventional bipolar leads (CONV) group. In the QUAD group, optimization of LVPC was performed for all patients before discharge and for nonresponders at 3 months follow-up. Clinical evaluations and transthoracic echocardiograms were performed before, 3, and 6 months after CRT implantation.

**RESULTS:** At 3 months follow-up, 16 of 25 (64%) patients in the CONV group (1 patient was lost to follow-up) and 18 of 26 (69%) patients in the QUAD group were classified as responders. After optimizing the LVPCs in 3-month nonresponders in the QUAD group, 21 of 26 (80.8%) patients in the QUAD group were classified as responders at 6 months as compared with 17 of 25 (68%) patients in the CONV group. Left ventricular end-systolic volume (LVESV) reduction, left ventricular ejection fraction (LVEF) increase, and New York Heart Association (NYHA) functional class reduction at 6 months were significantly greater in the QUAD group than in the CONV group (LVESV:  $-26.9 \pm 13.8$  vs  $-17.2 \pm 13.3\%$ ;  $P = .013$ ; LVEF:  $+12.7 \pm 8.0$  vs  $+7.8 \pm 6.3$  percentage points;  $P = .017$ ; NYHA:  $-1.27 \pm 0.67$  vs  $-0.72 \pm 0.54$  functional classes;  $P = .002$ ).

**CONCLUSIONS:** Compared with conventional bipolar leads, CRT using quadripolar leads with repetitive optimized LVPCs resulted in an additional increase in LVEF and reduction in LVESV and NYHA functional class at 6-month follow-up.

PMID: 28906405 PMCID: PMC5604674 DOI: 10.1097/MD.00000000000008066

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2 <a href="#">Transplantation of progenitor cells and regeneration enhancement in acute myocardial infarction: Final one-year results of the TOPCARE-AMI trial</a> <a href="#">Open Access</a>	Schächinger, V., Assmus, B., Britten, M.B., (...), Dimmeler, S., Zeiher, A.M.	2004	Journal of the American College of Cardiology 44(8), pp.1690-1699	840

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SEGUIR

CITADO POR	AÑO
10703 *	2011
8635 *	2005
6434 *	2006
5238	1992
4348	1995
4224	1995
3404	2004

	Total	Desde 2013
Citas	196773	54230
Índice h	178	104
Índice i10	996	573

Bar chart showing citation trends from 2011 to 2018. The Y-axis represents the number of citations, ranging from 0 to 12000. The X-axis represents the years. The chart shows a general downward trend in citations over the period, starting at approximately 11000 in 2011 and ending at approximately 4000 in 2018.

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View Title Changes <span>!</span>	Select All	Full Journal Title	ISSN	Journal Impact Factor <span>▼</span>	Average JIF Percentile
Select Journals <span>◀</span>	<input type="checkbox"/>	1 EUROPEAN HEART JOURNAL	0195-668X	23.425	99.609
Select Categories <span>◀</span>	<input type="checkbox"/>	2 CIRCULATION	0009-7322	18.880	99.029
Select JCR Year 2017 <span>▼</span>	<input type="checkbox"/>	3 JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	0735-1097	16.834	98.047
Select Edition <input checked="" type="checkbox"/> SCIE <input checked="" type="checkbox"/> SSCI	<input type="checkbox"/>	4 CIRCULATION RESEARCH	0009-7330	15.211	98.085
Open Access <input type="checkbox"/> Open Access	<input type="checkbox"/>	5 Nature Reviews Cardiology	1759-5002	15.162	96.484
	<input type="checkbox"/>	6 EUROPEAN JOURNAL OF HEART FAILURE	1388-9842	10.683	95.703
	<input type="checkbox"/>	7 JACC-Cardiovascular Imaging	1936-878X	10.247	97.266

# ACÉRCATE CHALLENGE