WEBINAR

WEBINARS
MALALTIA CARDIOVASCULAR I COVID-19
UNA VISIÓ DES DE CATALUNYA

DIJOUS 4/JUNY
18:00 A 19:30 HORES

COVID-19 y Arritmias: ¿Riesgo Significativo?

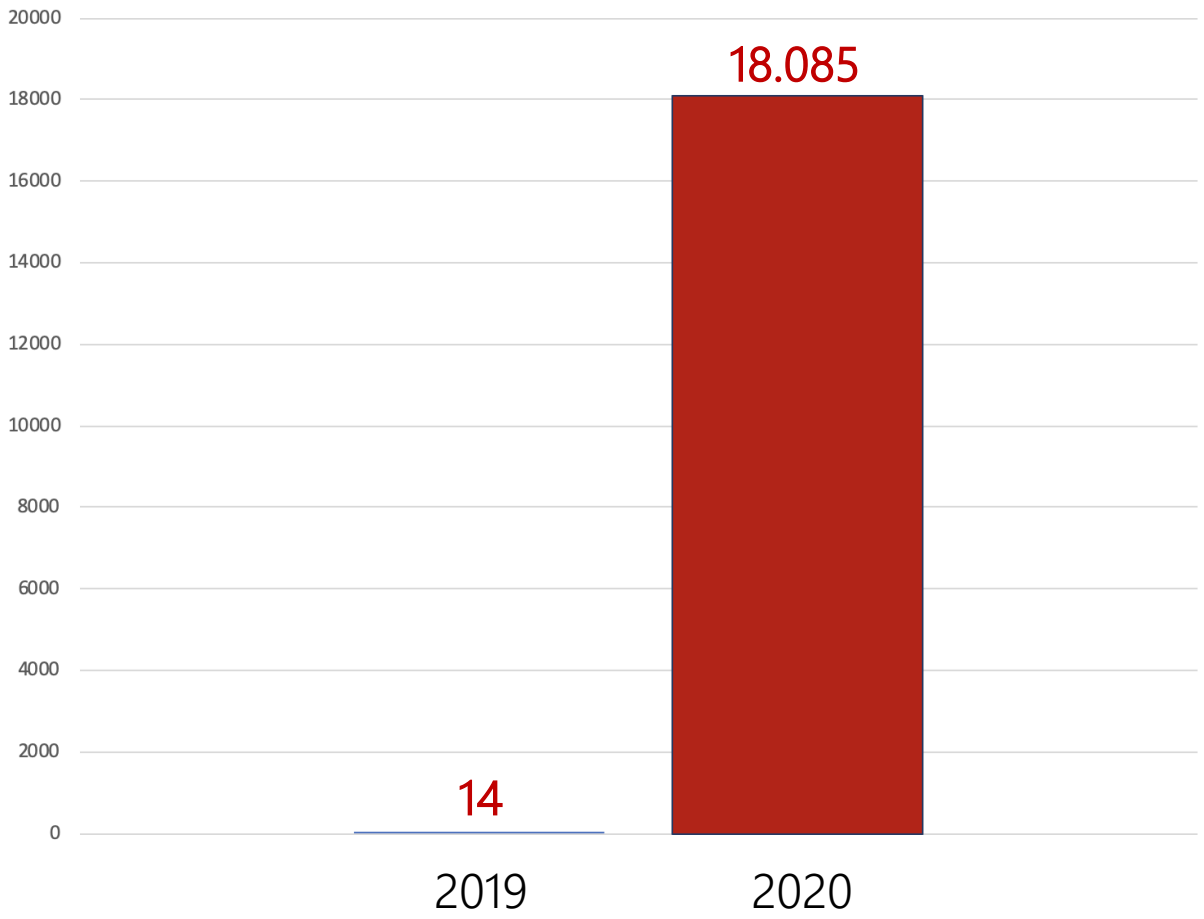
4 de junio de 2020

Bieito Campos García
Unidad de Arritmias, Cardiología
Hospital de Sant Pau
Barcelona

www.catcardio.cat

HOSPITAL DE LA SANTA CREU I SANT PAU
UNIVERSITAT AUTÒNOMA DE BARCELONA

Nº de Artículos



https://preview.ncbi.nlm.nih.gov/pubmed

"COVID-19"

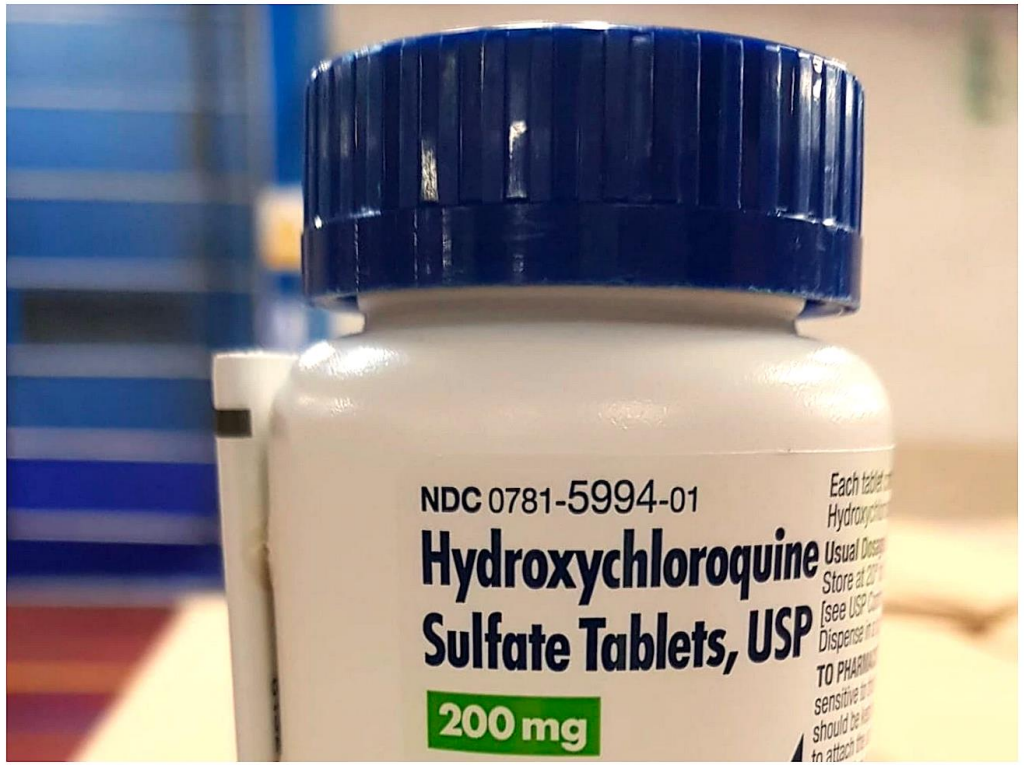
EL PAÍS
www.elpais.com
EL PERIÓDICO GLOBAL
PRIMERA EDICIÓN

25/05/2020

LA CRISIS DEL CORONAVIRUS >

La OMS suspende los ensayos clínicos con hidroxicloroquina por "precaución"

La Organización Mundial de la Salud reclama más información sobre el tratamiento ante los efectos contraproducentes detectados en una investigación

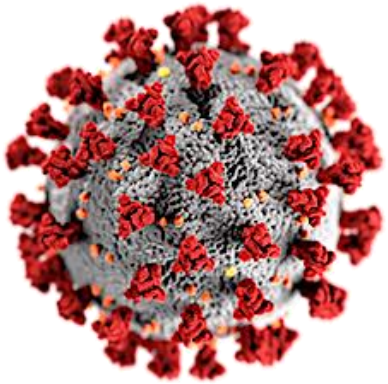


3/06/2020

LA CRISIS DEL CORONAVIRUS >

La OMS reinicia los ensayos en pacientes con hidroxicloroquina

Aumentan las dudas sobre el estudio que alertó de una mayor mortalidad asociada a la cloroquina y su derivado

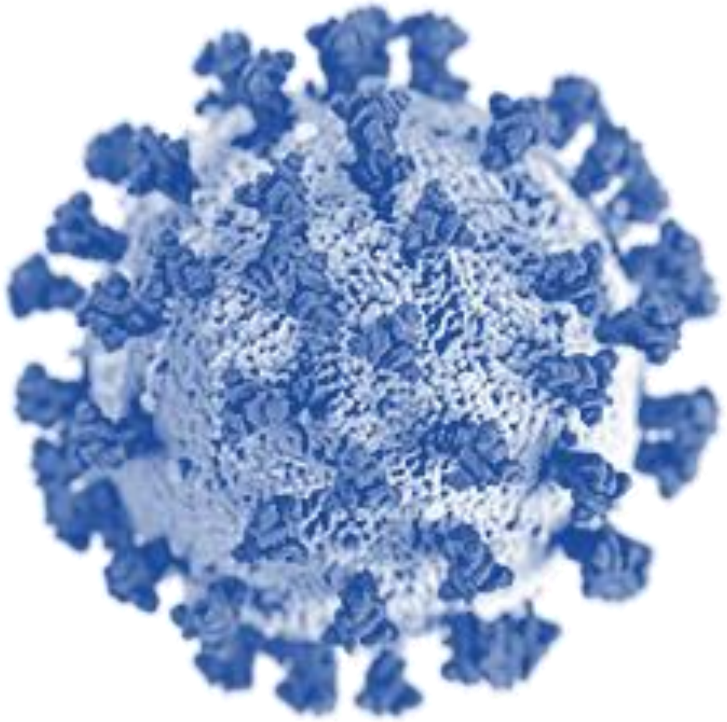


SARS-CoV-2

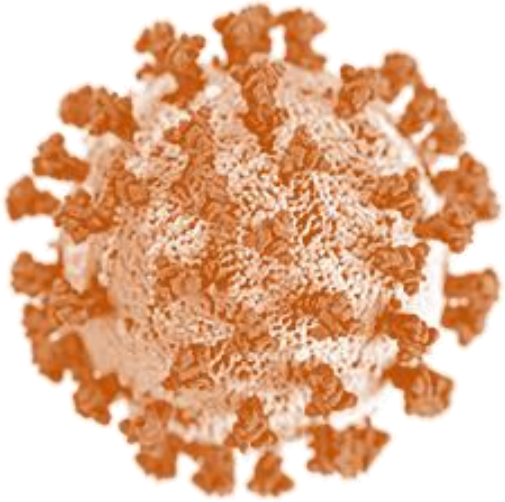
COVID-19

ARRITMIAS

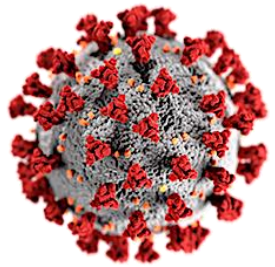
Casa



Hospital



UCI



Arritmias: SÍNTOMA INICIAL

COVID-19

↓

7.3% Palpitaciones

Original Article

Chinese Medical Journal

Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province

Kui Liu[1], Yuan-Yuan Fang[1], Yan Deng[1], Wei Liu[2], Mei-Fang Wang[3], Jing-Ping Ma[4], Wei Xiao[5], Ying-Nan Wang[6], Min-Hua Zhong[7], Cheng-Hong Li[8], Guang-Cai Li[9], Hui-Guo Liu[1]

Table 2: Clinical manifestations and physical signs of 2019-novel coronavirus-infected patients (*N* = 137).

Items	*n*	%
Initial symptom		
Fever	112	81.8
<37.3°C	28	25.0
37.3–38°C	29	25.9
38.1–39°C	35	31.3
>39°C	20	17.7
Cough	66	48.2
Myalgia or fatigue	44	32.1
Expectoration	6	4.4
Hemoptysis	7	5.1
Headache	13	9.5
Diarrhea	11	8.0
Heart palpitations	10	7.3
Dyspnea	26	19.0

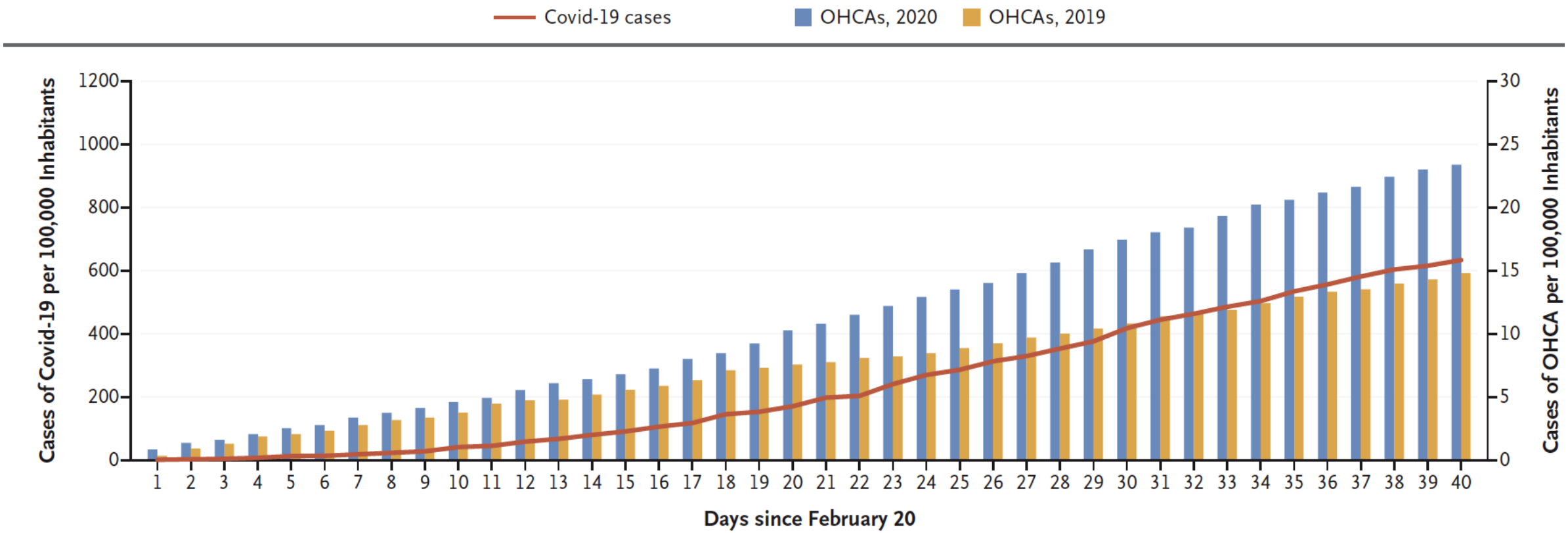
Liu K et al. Chin Med J (Engl). 2020 May 5;133(9):1025-1031

Riesgo de Muerte Súbita

The NEW ENGLAND JOURNAL of MEDICINE

Out-of-Hospital Cardiac Arrest during the Covid-19 Outbreak in Italy

↑ 58% MS Extrahospitalaria



Baldi E et al. N Engl J Med. 2020 Apr 29. doi: 10.1056/NEJMc2010418

Riesgo de Muerte Súbita

Zhonghua Jie He He Hu Xi Za Zhi. 2003 Oct;26(10):602-5.

[Cardiac arrest in severe acute respiratory syndrome: analysis of 15 cases].

[Article in Chinese]

Pan SF[1], Zhang HY, Li CS, Wang C.

Author information

1 Beijing Chaoyang Hospital-Affiliate of Capital University of Medical Sciences, Beijing 100020, China.

Abstract

OBJECTIVE: To investigate the causes for cardiac arrest in severe acute respiratory syndrome (SARS) patients.

METHODS: Retrospective analysis of the epidemiological history, clinical presentation, the change of laboratory tests, chest radiography, and treatment of 15 SARS patients with cardiac arrest.

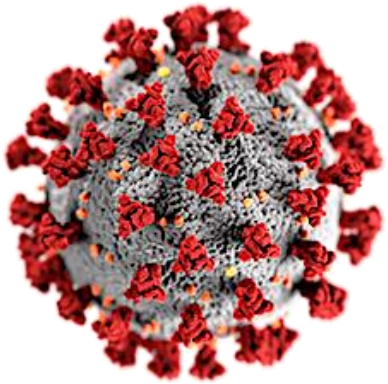
RESULTS: The average age of the patients was 60 years. Eight had a history of exposure to SARS patients, among them 6 were household contacts. Eight patients had no underlying diseases, and another 8 complained of extreme anxiety. Abnormalities of cardiac enzymes were present in 10 patients. Myocardial ischemia and arrhythmia were present in 5 patients. Bilateral, multifocal lung infiltrates were present in 13 of the 15 patients. Four patients died after defecation and 9 died during relatively stable periods.

CONCLUSIONS: It was suggested that the causes for cardiac arrest in SARS patients may include: (1) the lung injury caused by the SARS virus leads to hypoxemia and thus an unsteady state of the myocardial electricity; (2) SARS virus directly causes injury to the myocardial cells and/or the conduct system; (3) SARS infection aggravates the original myocardial pathological change, worsening the conduct block; (4) extreme anxiety leads to extra secretion of catecholamine, which causes instability of myocardial electricity; (5) defecation worsens hypoxemia, which induces arrhythmia (ventricular fibrillation) and causes cardiac arrest.

SARS-CoV 2002

15 pacientes MSC

Pan SF et al. Zhonghua Jie He He Hu Xi Za Zhi. 2003 Oct;26(10):602-5

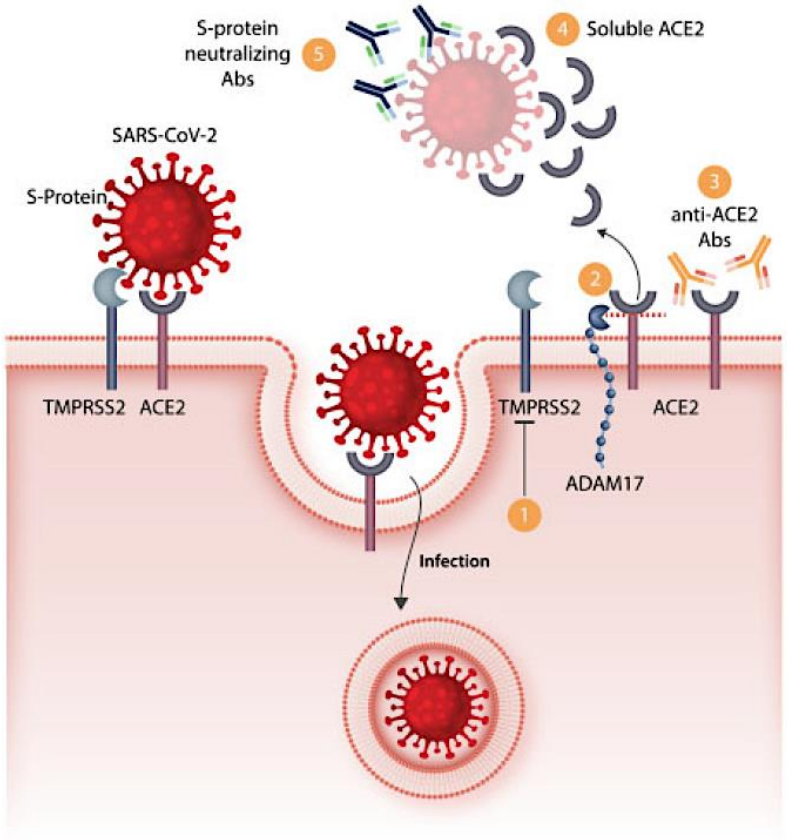


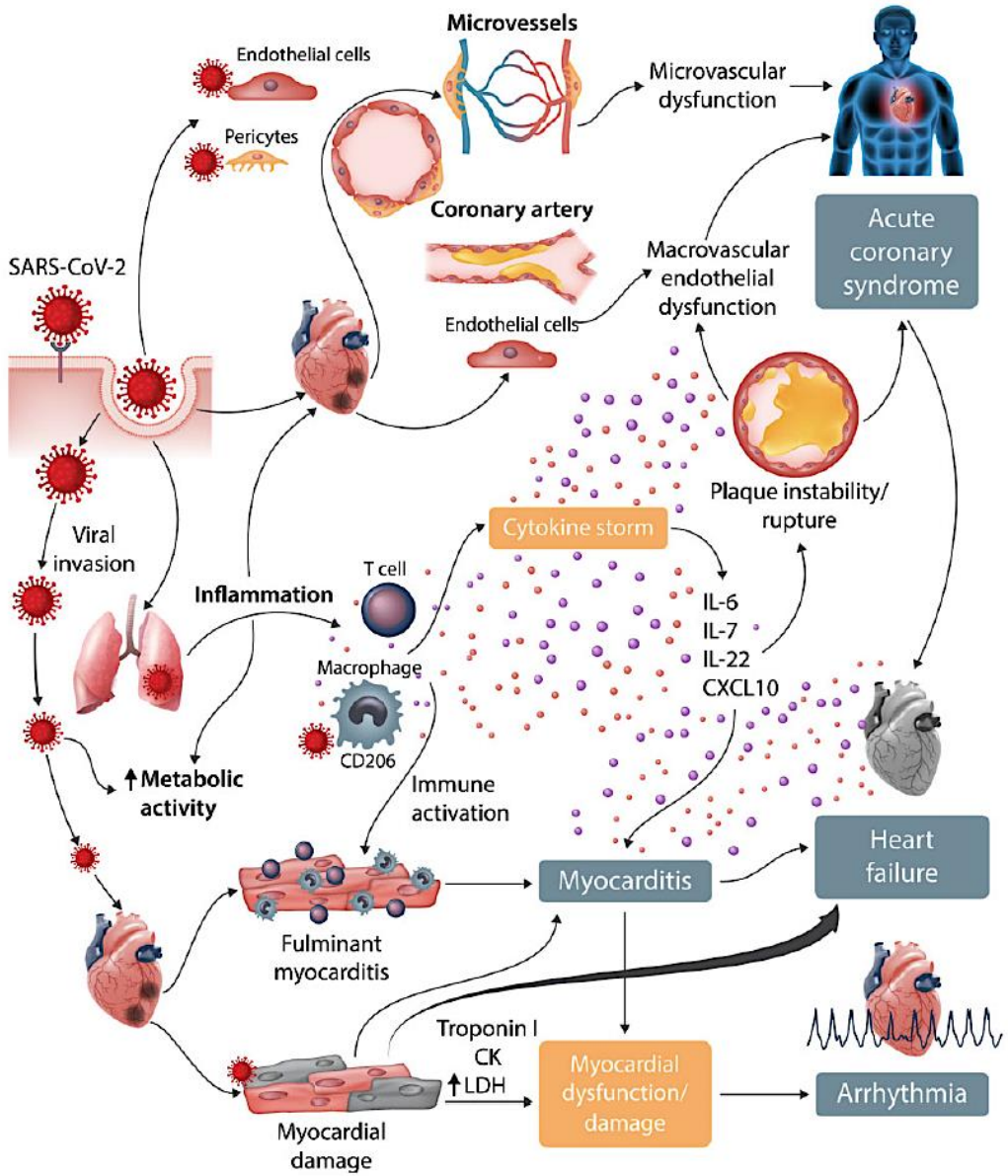
SARS-CoV-2

COVID-19

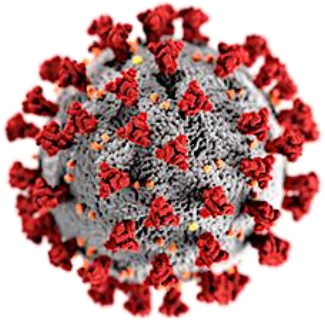
Muerte Súbita

SARS-CoV-2: Afectación CV





Guzik TJ et al. Cardiovasc Res. 2020 Apr 30. pii: cvaa106. doi: 10.1093/cvr/cvaa106



SARS-CoV-2

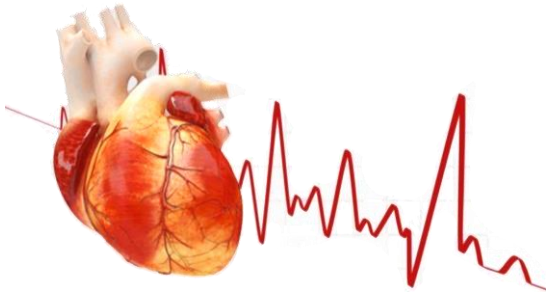
Inflamación Sistémica

Hipoxia

Trastornos Hidroelectrolíticos

Ventilación Mecánica

Daño Miocárdico



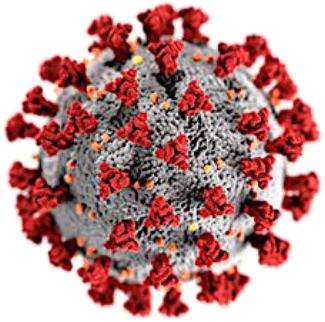
Hiperadrenergia

Shock

Fármacos ↑QT

Fiebre

Insuficiencia Cardíaca



SARS-CoV-2

Inflamación Sistémica

Hipoxia

Trastornos Hidroelectrolíticos

Ventilación Mecánica

Daño Miocárdico

Hiperadrenergia

CARDIOPATIA PREVIA

Shock

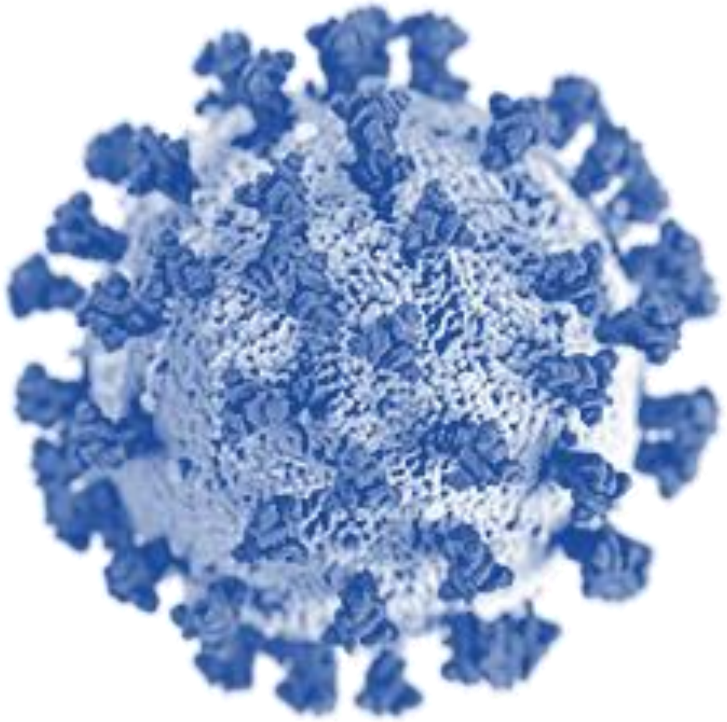
Fármacos ↑QT

Fiebre

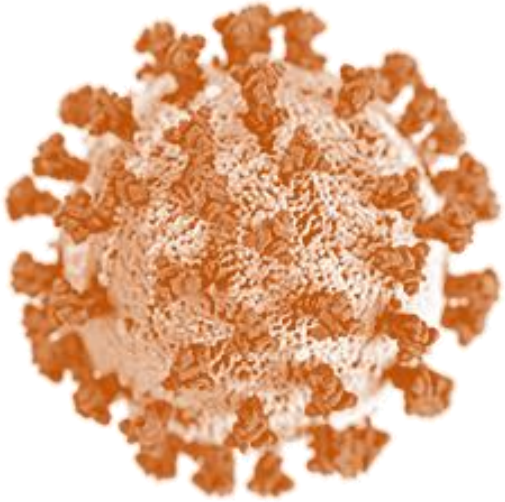
Insuficiencia Cardíaca

Riesgo Arrítmico

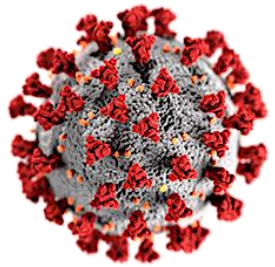
Casa



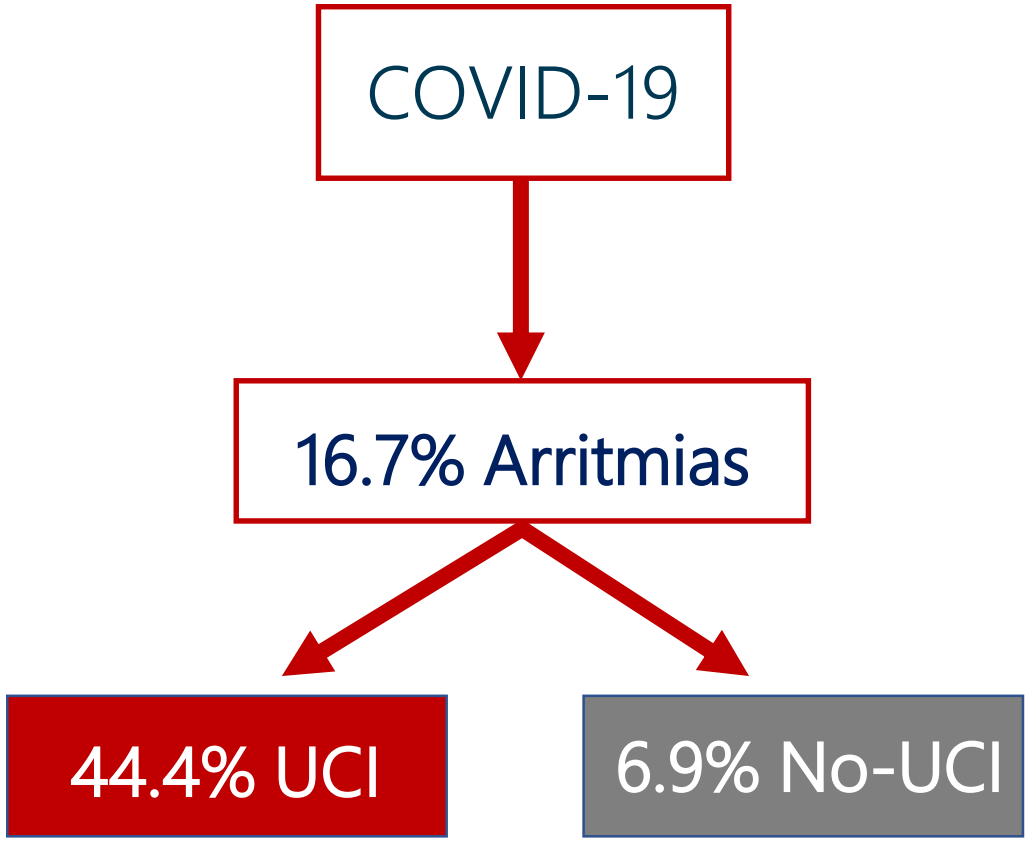
Hospital



UCI



Arritmias: Marcador SEVERIDAD



JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus–Infected Pneumonia in Wuhan, China

Dawei Wang, MD; Bo Hu, MD; Chang Hu, MD; Fangfang Zhu, MD; Xing Liu, MD; Jing Zhang, MD; Binbin Wang, MD; Hui Xiang, MD; Zhenshun Cheng, MD; Yong Xiong, MD; Yan Zhao, MD; Yirong Li, MD; Xinghuan Wang, MD; Zhiyong Peng, MD

Table 4. Complications and Treatments of Patients Infected With 2019-nCoV

	No. (%)			
	Total (N = 138)	ICU (n = 36)	Non-ICU (n = 102)	*P* Value[a]
Complications				
Shock	12 (8.7)	11 (30.6)	1 (1.0)	<.001
Acute cardiac injury	10 (7.2)	8 (22.2)	2 (2.0)	<.001
Arrhythmia	23 (16.7)	16 (44.4)	7 (6.9)	<.001
ARDS	27 (19.6)	22 (61.1)	5 (4.9)	<.001
AKI	5 (3.6)	3 (8.3)	2 (2.0)	.11

Wang D et al. JAMA. 2020 Feb 7. doi: 10.1001/jama.2020.1585

Arritmias: Marcador de RIESGO

ARRITMIAS
Pre-Infección

6.8%
Fallecidos

3.2%
Supervivientes

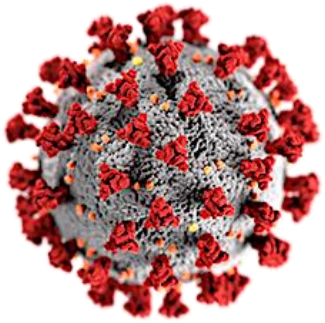
The NEW ENGLAND JOURNAL of MEDICINE

Cardiovascular Disease, Drug Therapy, and Mortality in Covid-19

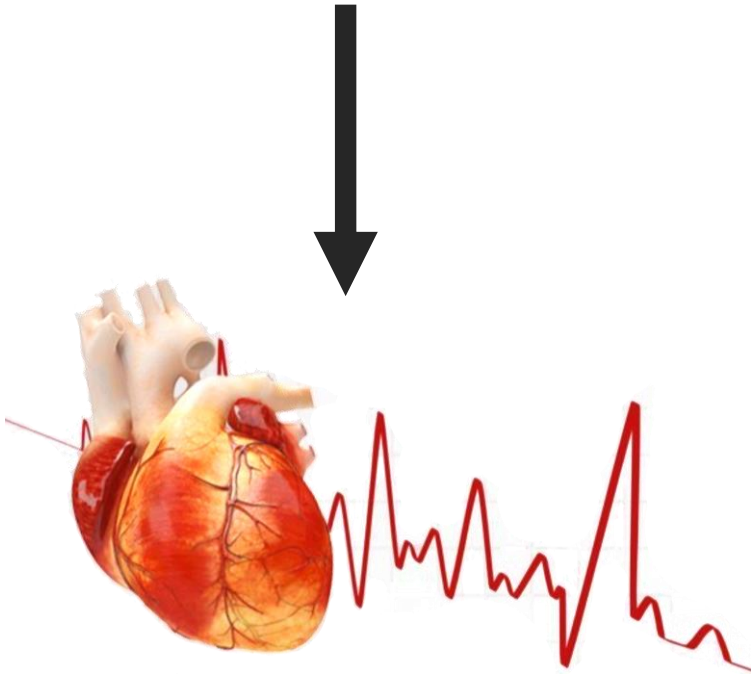
Table 1. Demographic Characteristics and Coexisting Conditions among Survivors and Nonsurvivors of Covid-19.*

Characteristic or Condition	Survivors (N=8395)	Nonsurvivors (N=515)	Difference (95% CI)†
Age — yr	48.7±16.6	55.8±15.1	−7.1 (−8.4 to −5.7)
Age >65 yr — no. (%)	1327 (15.8)	147 (28.5)	−12.7 (−16.0 to −9.4)
Female sex — no. (%)	3392 (40.4)	179 (34.8)	5.6 (1.3 to 10.0)
Race or ethnic group — no. (%)‡			
White	5306 (63.2)	351 (68.2)	−5.0 (−9.1 to −0.8)
Black	672 (8.0)	34 (6.6)	1.4 (−0.8 to 3.6)
Hispanic	529 (6.3)	32 (6.2)	0.1 (−2.0 to 2.3)
Asian	1637 (19.5)	84 (16.3)	3.2 (−0.2 to 6.5)
Native American	34 (0.4)	1 (0.2)	0.2 (−0.3 to 0.8)
Other	219 (2.6)	13 (2.5)	0.1 (−1.4 to 1.4)
Coexisting conditions — no. (%)			
Coronary artery disease	907 (10.8)	103 (20.0)	−9.2 (−12.8 to −5.7)
Congestive heart failure	160 (1.9)	29 (5.6)	−3.7 (−5.8 to −1.8)
Cardiac arrhythmia	269 (3.2)	35 (6.8)	−3.6 (−5.8 to −1.4)
Diabetes mellitus	1175 (14.0)	97 (18.8)	−4.8 (−8.3 to −1.3)
Hypertension	2216 (26.4)	130 (25.2)	1.2 (−2.8 to 5.1)
Hyperlipidemia	2535 (30.2)	180 (35.0)	−4.8 (−9.0 to −0.5)
COPD	193 (2.3)	32 (6.2)	−3.9 (−6.1 to −1.8)
Current smoker	445 (5.3)	46 (8.9)	−3.6 (−6.2 to −1.1)
Former smoker	1410 (16.8)	83 (16.1)	0.7 (−2.6 to 4.0)
Immunosuppressed condition	227 (2.7)	22 (4.3)	−1.6 (−3.4 to 0.2)

Mehra MR et al. N Engl J Med. 2020 May 1. doi: 10.1056/NEJMoa2007621



SARS-CoV-2



- Fibrilación / Flutter Auricular
- Taquicardia / Fibrilación Ventricular
- Otros: Bradicardia S, Bloqueo AV

Fibrilación / Flutter Auricular

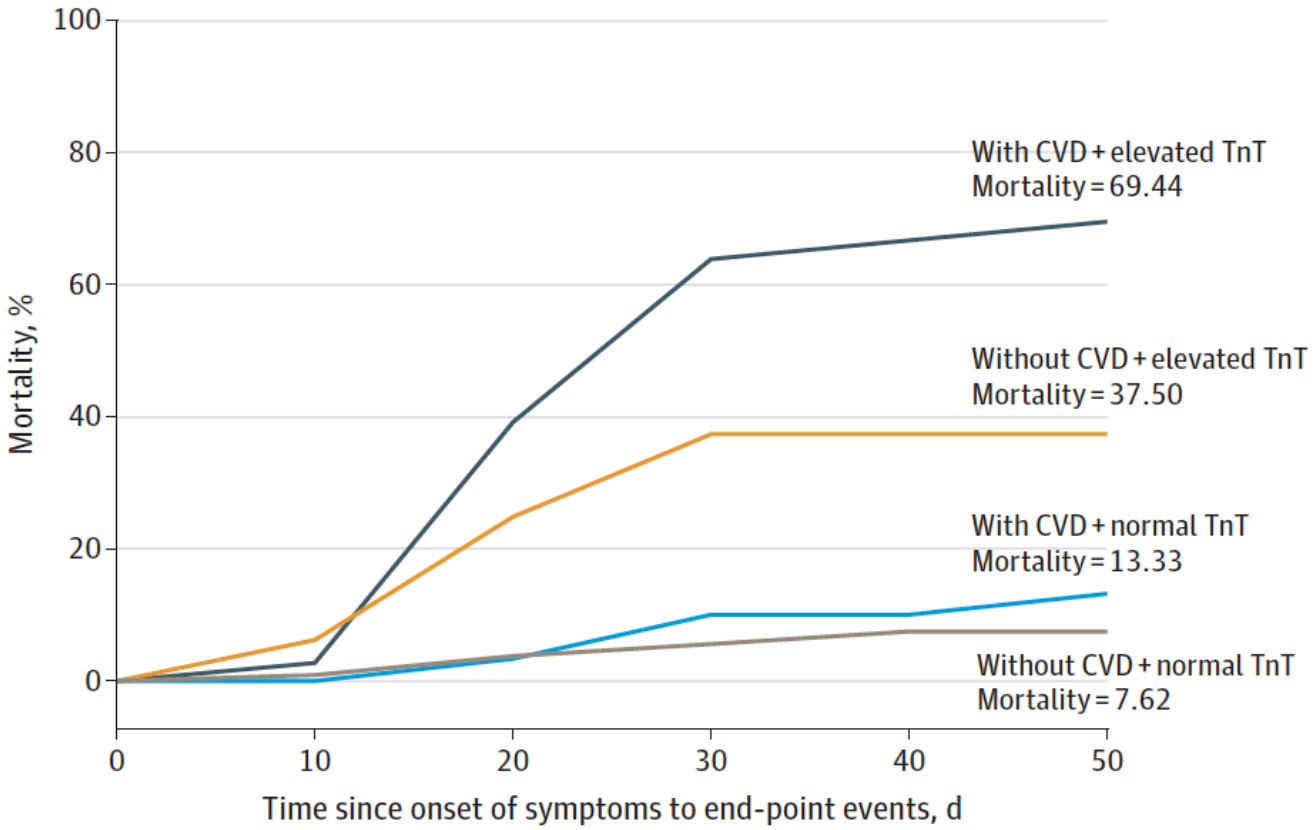
Table 1. Characteristics of Patients with and without Atrial Arrhythmias

	Atrial Arrhythmias n=19	No Atrial Arrhythmias n=96	P value
Age (years) (SD)	64.6 ±12.8	55.8 ±17.0	0.028
BMI	29.0 ± 7.7	31.9 ± 10.3	0.27
Male	13 (68%)	49 (51%)	0.17
Race (B/W/other)	9/10/0	59/31/6	0.11
Required Ventilation	16 (84%)	36 (38%)	0.0002
Prior Atrial Fibrillation	3 (16%)	3 (3%)	0.06
HTN	14 (74%)	66 (69%)	0.67
CAD	3 (16%)	20 (21%)	0.62
Systolic Heart Failure	2 (11 %)	5 (5%)	0.33
Diastolic Heart Failure	4 (21 %)	16 (17%)	0.74
ACEI/ ARB	5 (26%)	30 (31%)	0.79
CRP (mg/L)	220 ± 162	138 ± 108.3	0.084
BNP (pg/mL)	495± 833	329 ± 621	0.33
HS Troponin (ng/L)	793 ± 1741	546 ± 21723	0.08
D Dimer (ng/mL)	5177 ± 6706	3610 ± 4517	0.41
Remdesivir/Placebo Trial	1 (5%)	7 (7%)	1.0
Hydroxychloroquine	2 (11%)	5 (5%)	0.33
Azithromycin	11 (58%)	39 (41%)	0.21
Vasopressor Data			
Vasopressor Use	15 (79%)	33 (34%)	0.001
Days on Vasopressors	5 ± 5	1 ± 3	0.001
Max NE Eq	0.20 ± 0.18	0.08 ± 0.18	0.05

- Incidencia escasa fuera de UCI
- Incidencia UCI:
  - General 25-30%
  - Miocardiopatía 50%
- 1/3 casos de novo
- Deterioro hemodinámico
- ↑ Riesgo de complicaciones (IC, ictus)
- ↑ mortalidad

Colon CM et al. JACC Clin Electrophysiol. DOI:10.1016/j.jacep.2020.05.015
Liu PP et al. Circulation. 2020 Apr 15. doi: 10.1161/CIRCULATIONAHA.120.047549
Klein Klouwenberg PM et al. Am J Respir Crit Care Med. 2017 Jan 15;195(2):205-211

Arritmias Ventriculares



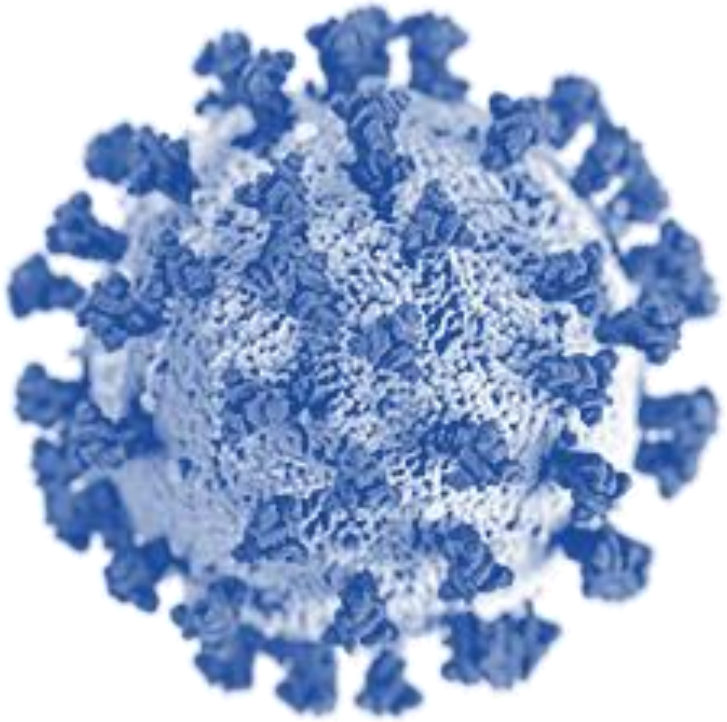
Daño Miocárdico (Troponina +)

- ↑ TV / FV: **17.3%** vs 1.5%
- ↑ Mortalidad: **59.6%** vs 8.9%

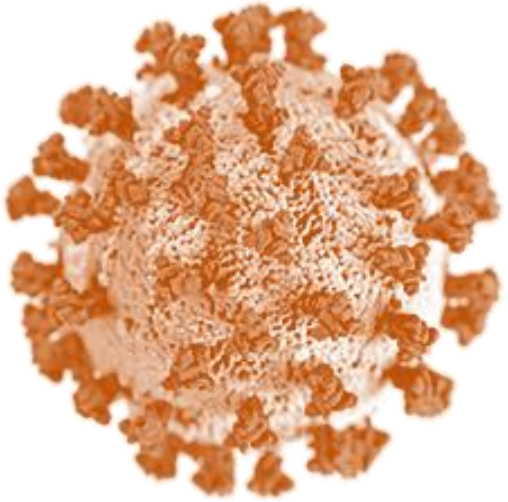
Guo T et al. JAMA Cardiol. 2020 Mar 27. doi: 10.1001/jamacardio.2020.1017

Riesgo Arrítmico

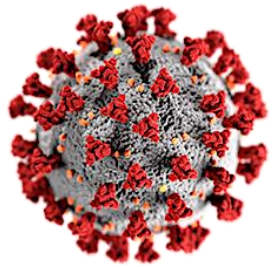
Casa



Hospital



UCI



Siponimod

Hidroxicloroquina

Cloroquina

Interferon

Azitromizina

- FC
- Conducción AV
- QRS
- QT
- TdP

Lopinovir

Remdesivir

Ritonavir

Tozilizumab

Fingolimod

Ribavirina

Metilprednisolona

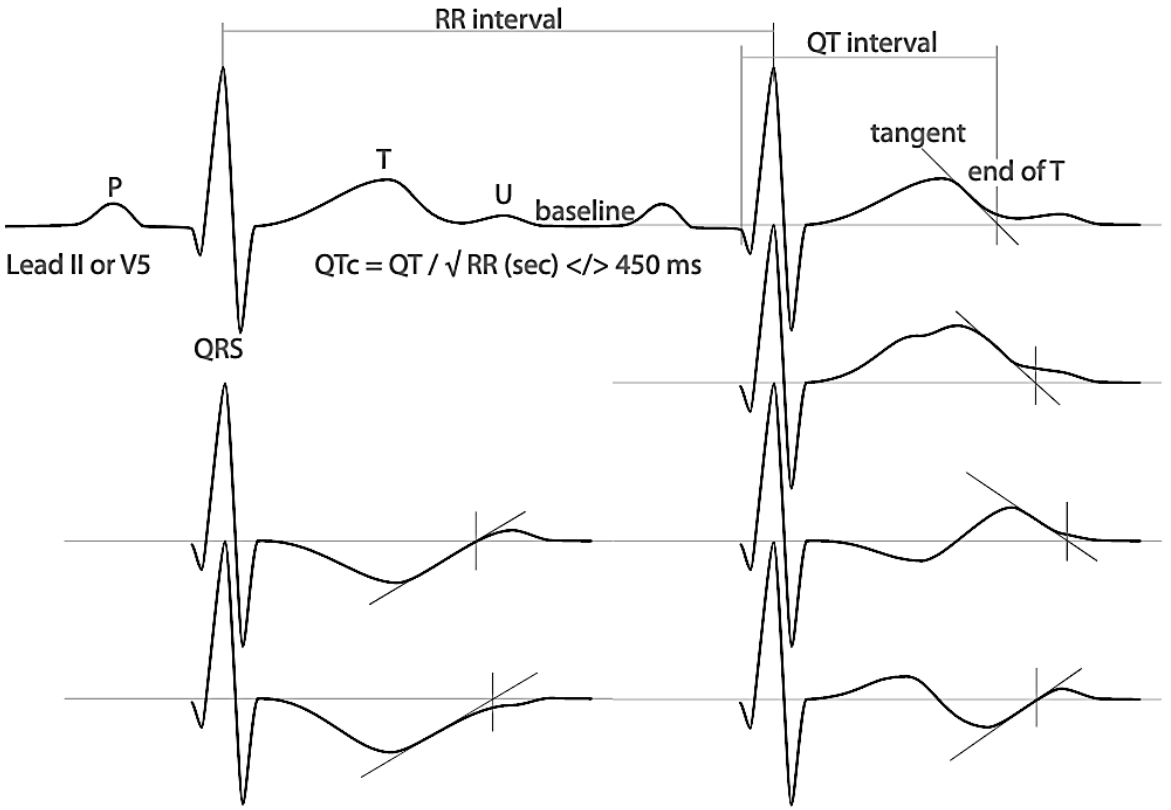
Prolongación del QT

Inaccurate electrocardiographic interpretation of long QT: The majority of physicians cannot recognize a long QT when they see one

Sami Viskin, MD,* Uri Rosovski, MD,* Andrew J. Sands, MPhil, MB, BCh,†

Identificación correcta QT prolongado

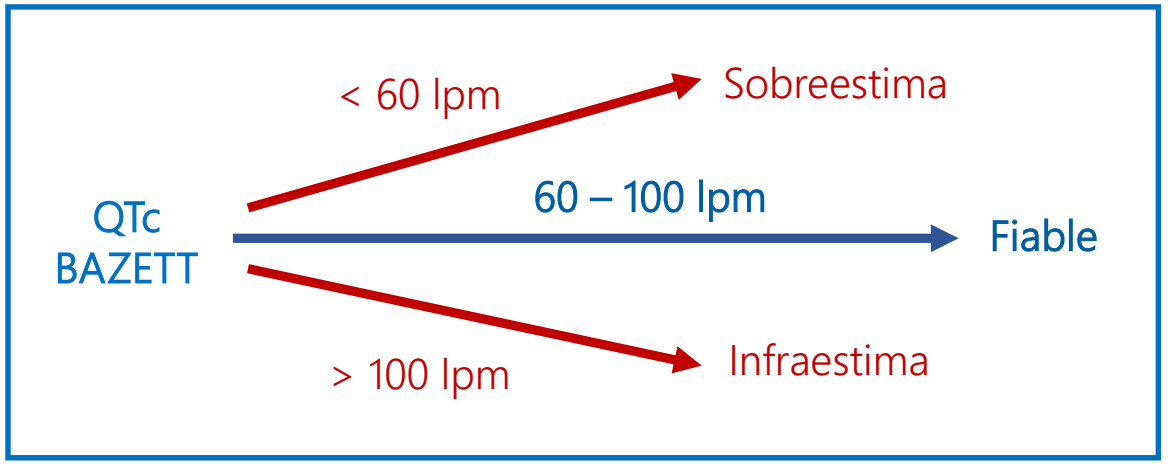
- 96% expertos en SQTL
- 62% arritmólogos
- <25% cardiólogos y no cardiólogos

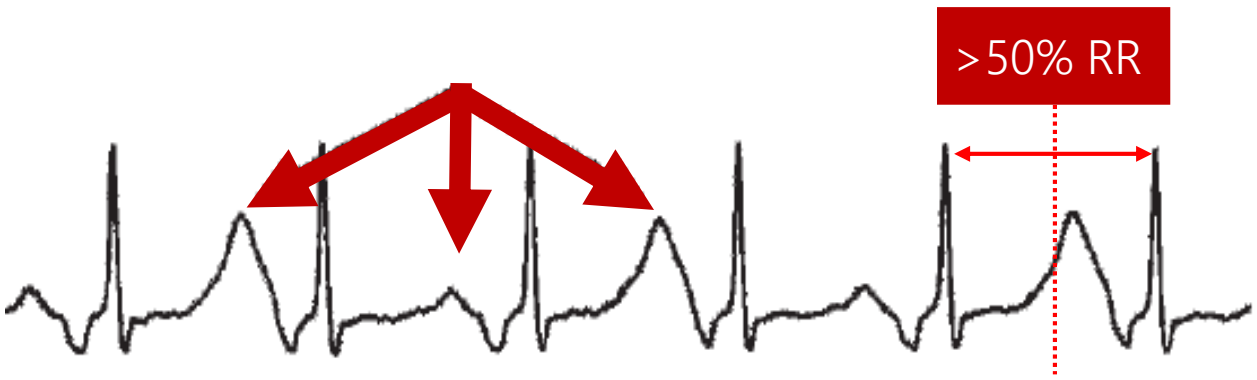


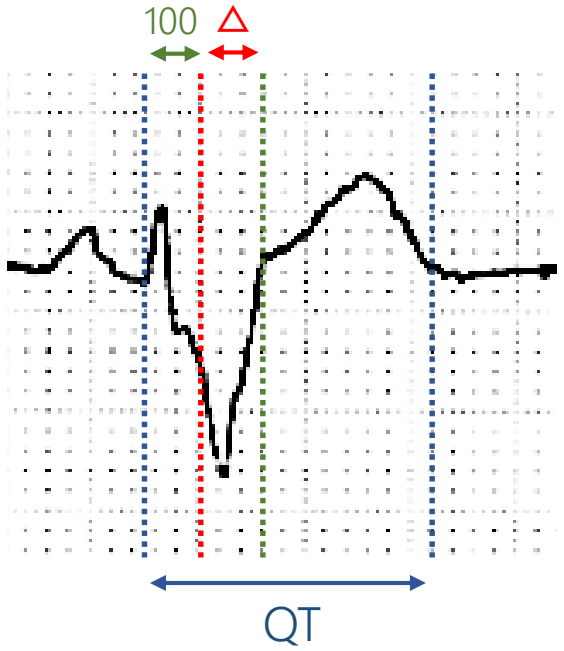
Viskin S et al. Heart Rhythm. 2005 Jun;2(6):569-74
Postema PG et al. Curr Cardiol Rev. 2014 Aug;10(3):287-94

Medición del QT

- DII, V5-V6. Usar el valor más largo
- QTc, formula de Bazett (>460-470 ms)
- QRS ancho: corregir exceso (QRSd-100 ms)



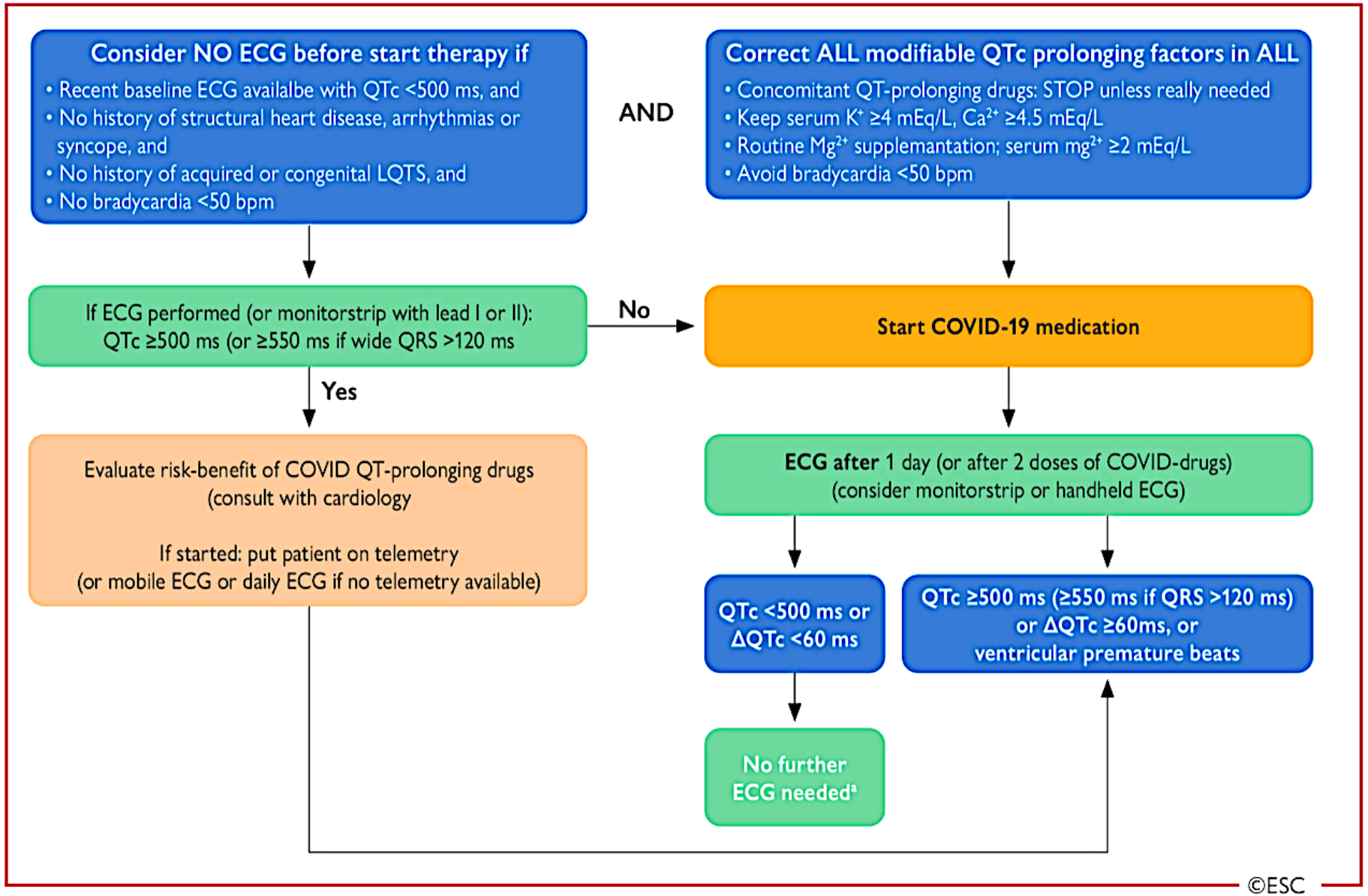




QT largo y COVID

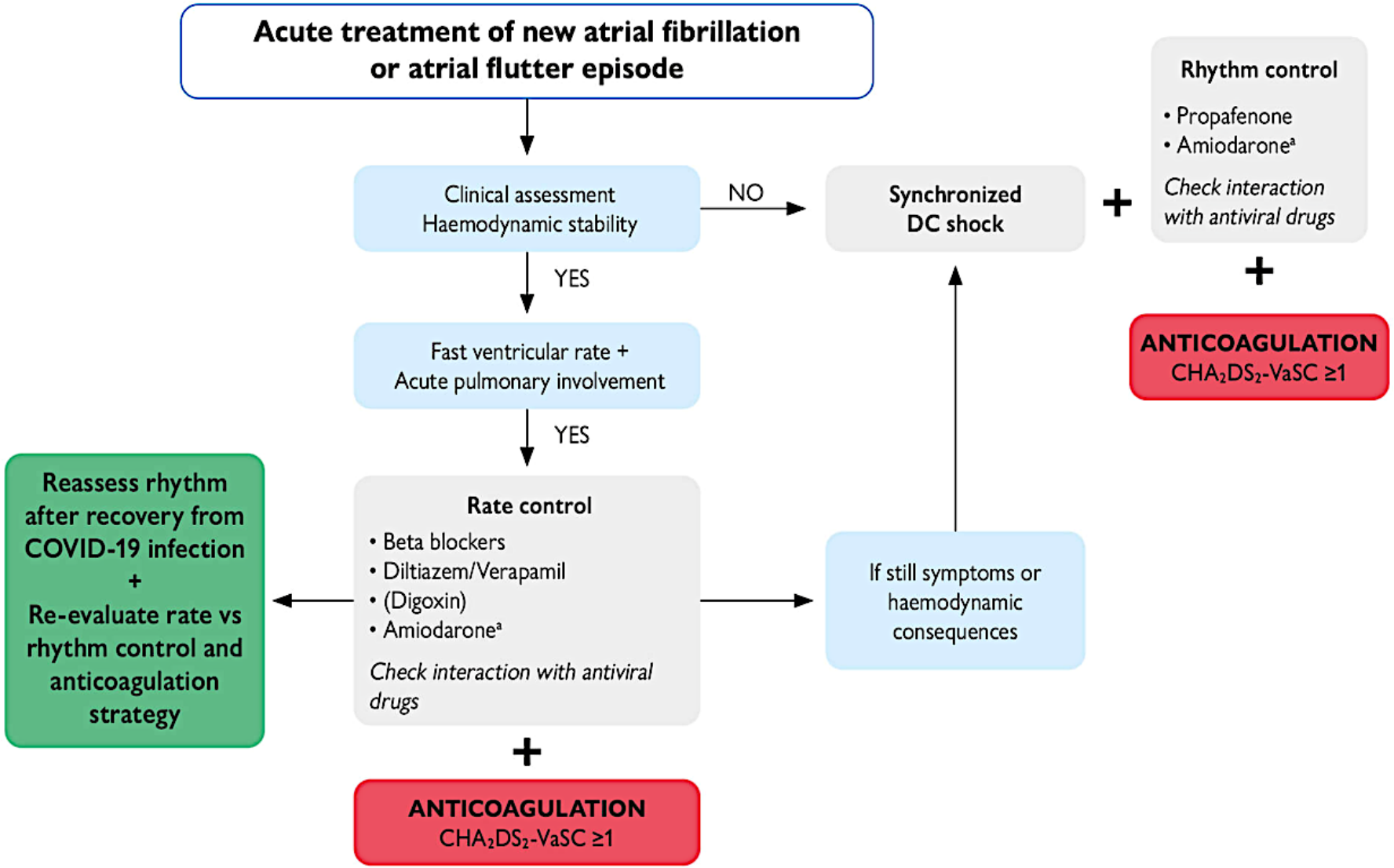
- Riesgo global de TdP es bajo
- QTc >500 ms
- Multifactorial: iones, inflamación, isquemia, IC, IR
- Evitar fármacos bradicardia.
- K, Ca y Mg en rango alto normalidad
- Individualizar siempre riesgo/beneficio
- Monitorización ECG

SQTL farmacológico y COVID-19



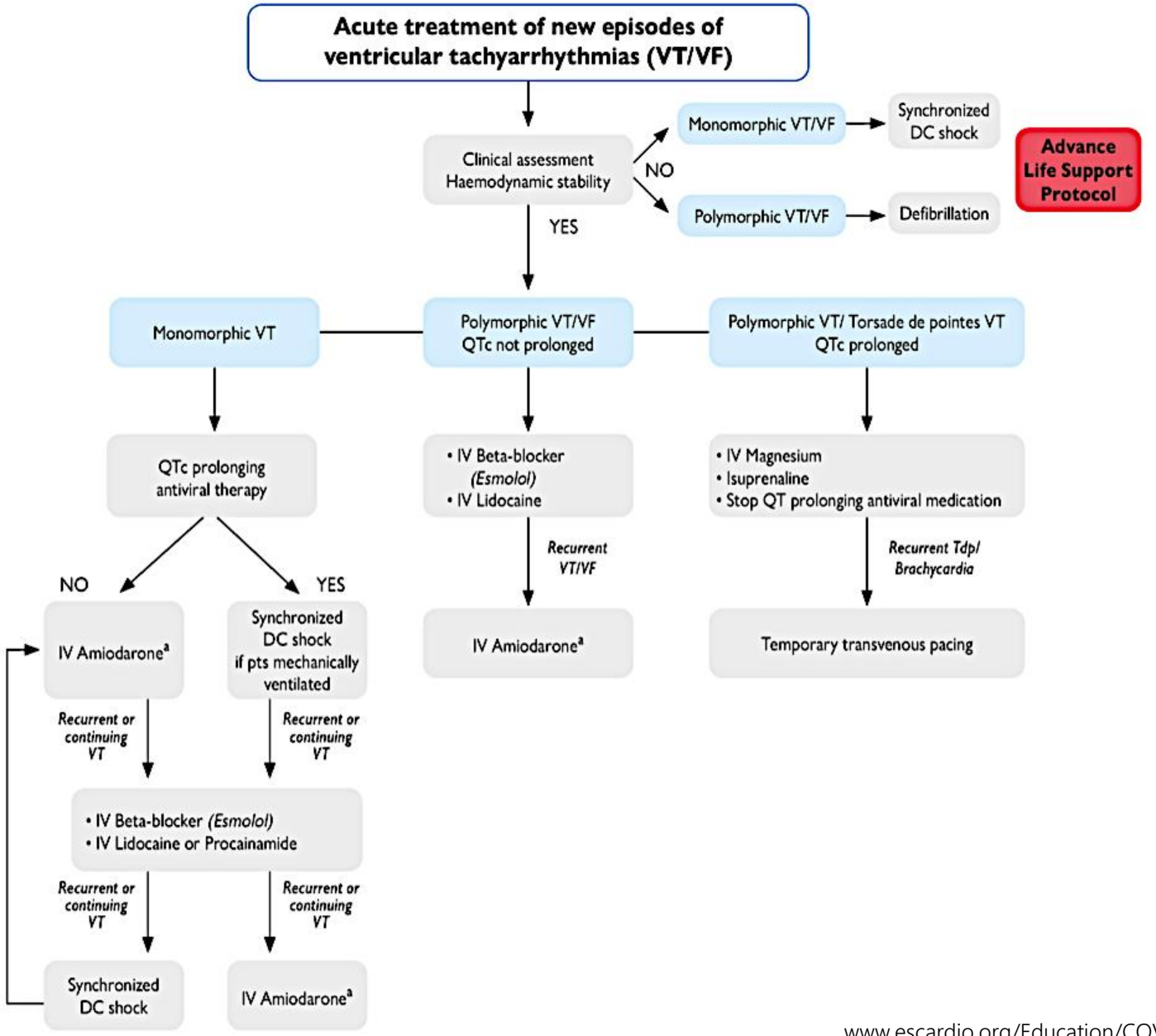
www.escardio.org/Education/COVID-19-and-Cardiology/ESC-COVID-19-Guidance

Manejo FA entorno COVID-19



www.escardio.org/Education/COVID-19-and-Cardiology/ESC-COVID-19-Guidance

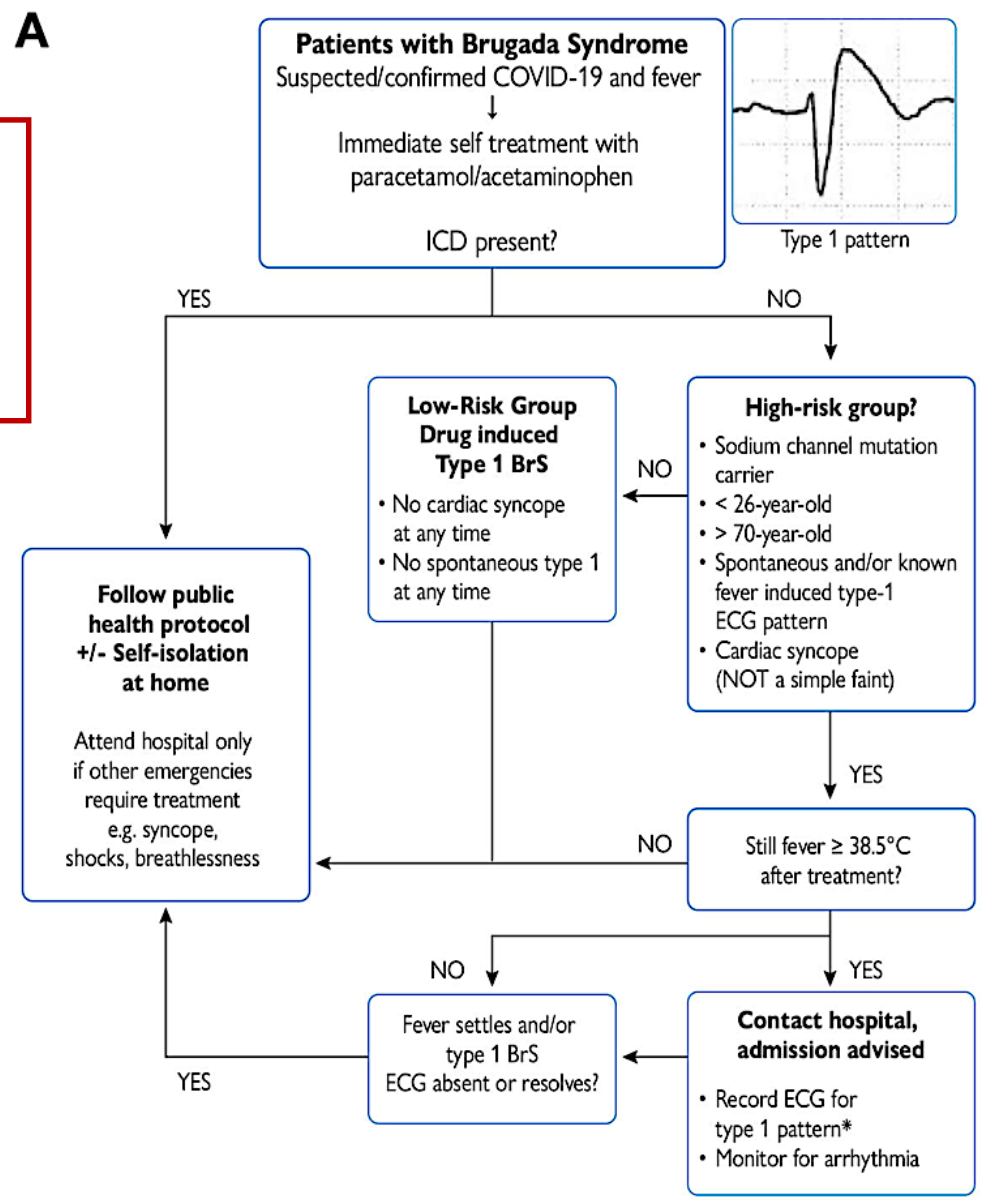
Manejo AV entorno COVID-19

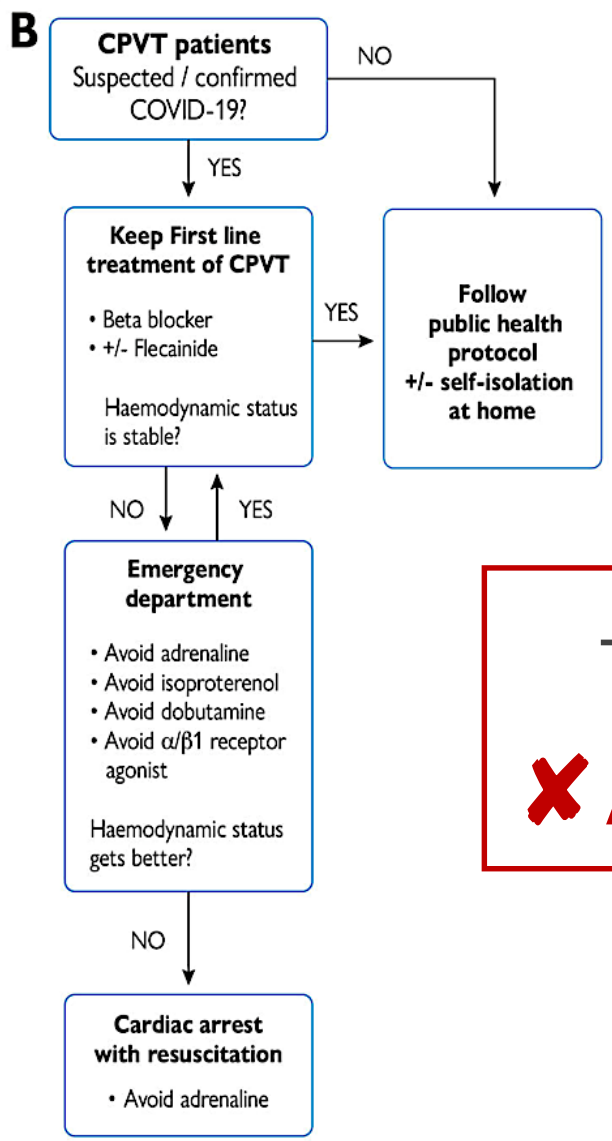


www.escardio.org/Education/COVID-19-and-Cardiology/ESC-COVID-19-Guidance

Situaciones Especiales: CANALOPATIAS

Brugada
✘ Fiebre

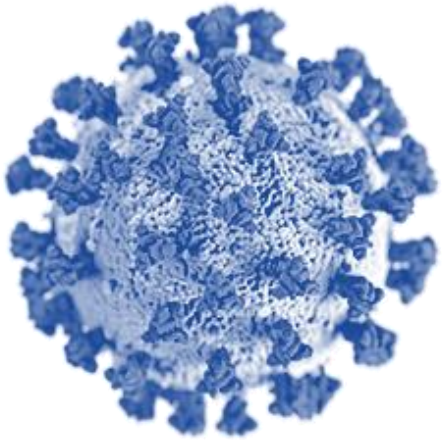




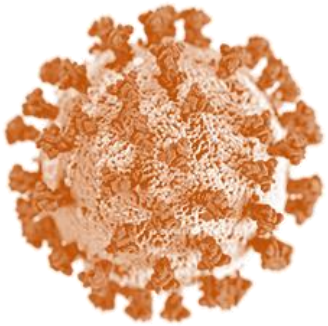
TVPC
✘ Aminas

www.escardio.org/Education/COVID-19-and-Cardiology/ESC-COVID-19-Guidance

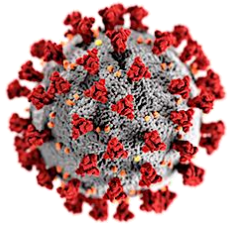
Casa



Hospital



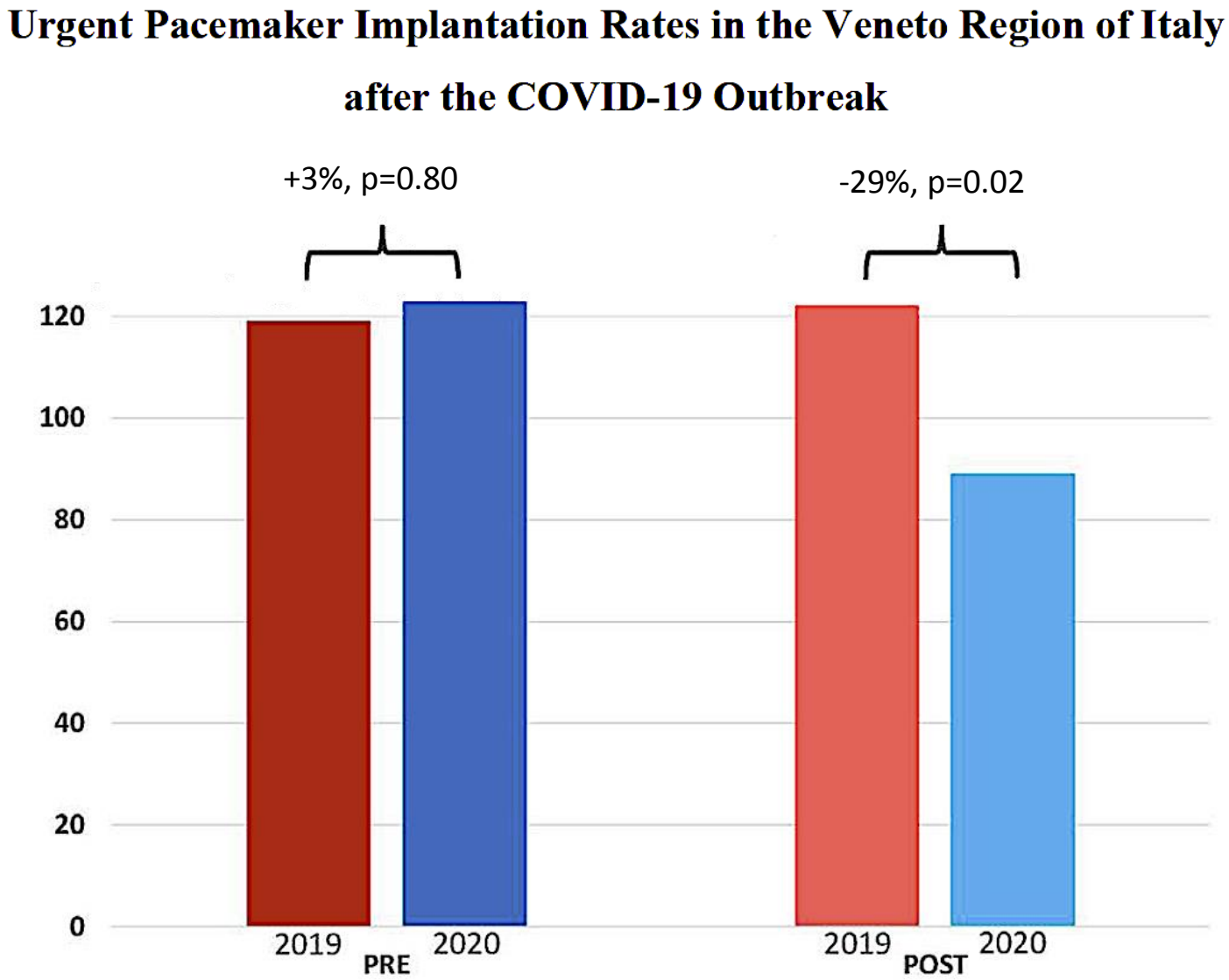
UCI



Recuperación

¿Riesgo arrítmico a largo plazo?

¿Riesgo Arrítmico COVID –?



Migliore F et al. Circ Arrhythm Electrophysiol. 2020 May 20. doi: 10.1161/CIRCEP.120.008722

En definitiva…

- Las arritmias en pacientes COVID-19 están mayormente ligadas a la afectación cardíaca directa por el virus y al contexto de gravedad
- El riesgo arrítmico en pacientes asintomáticos o paucisintomáticos es posible pero desconocido
- Gran parte del riesgo arrítmico específico del COVID-19 está ligado al uso de fármacos que alteran la electrofisiología cardíaca
- El manejo terapéutico de las arritmias cardíacas no difiere significativamente, de manera global, del estándar habitual en nuestro entorno