

**ORGANOPATIA DA COVID-19
DIAGNOSI, TERAPIA E FOLLOW UP**

MARTEDÌ 22 DICEMBRE



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Cardiomiopatie e alterazioni del ritmo nei pazienti contagiati



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ESC Guidance for the Diagnosis and Management of CV Disease during the COVID-19 Pandemic



COVID-19 and cardiovascular disease

- Pre-existing cardiovascular diseases (comorbidities) in COVID-19 infection
- **Cardiovascular diseases (i.e. cardiac injury) caused by COVID-19 infection**

ESC Guidance for the Diagnosis and Management of CV Disease during the COVID-19 Pandemic



COVID-19 and comorbidities

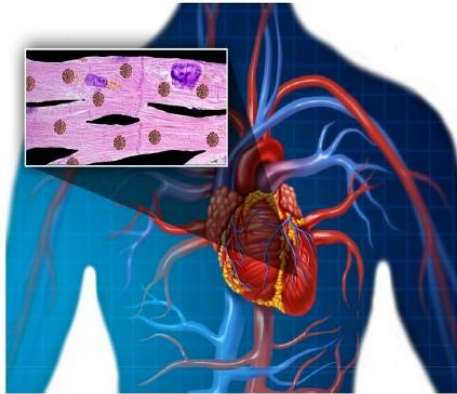
- CV comorbidities are common in COVID-19 patients
 - 50% of COVID-19 patients had one or more comorbidities
 - In severe COVID-19 patients this proportion was as high as 72%
- CVDs are associated with higher mortality in COVID-19 patients
 - Patients with CV comorbidities had fivefold higher mortality risk (10.5%)
- CV risk factors and CV diseases correlate with increasing age
 - It remains vague whether diabetes, hypertension and CVD are causally linked or associated due to age
 - Increasing age is an important risk factor for severe course of COVID-19 infections



ESC Guidance for the Diagnosis and Management of CV Disease during the COVID-19 Pandemic



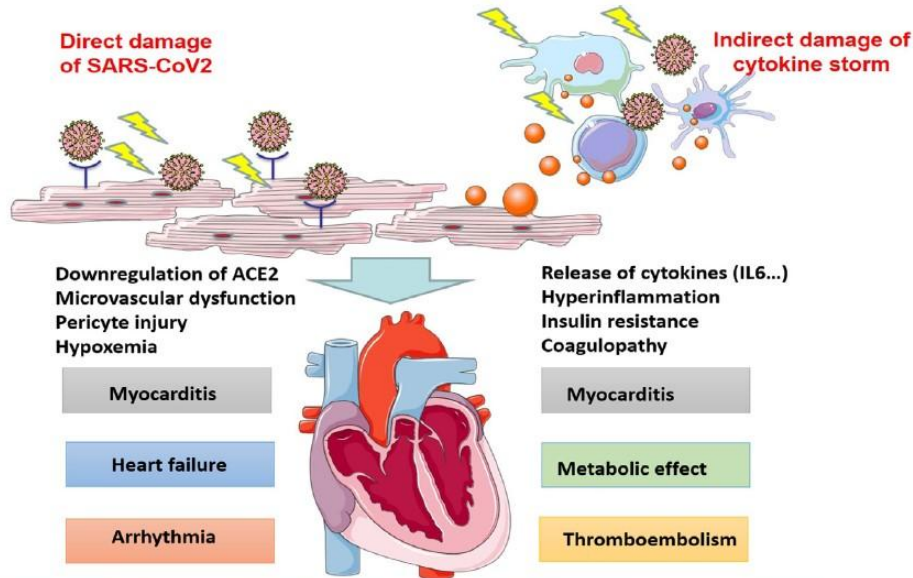
CV System Involvement in COVID-19



- Myocarditis (?)
- Myocardial injury
- ACS /myocardial infarction
 - Plaque disruption
 - Takotsubo
- DVT/PE
- Heart failure and cardiogenic shock
- Bradyarrhythmias (AV block)
- Ventricular arrhythmias (QT prolongation)

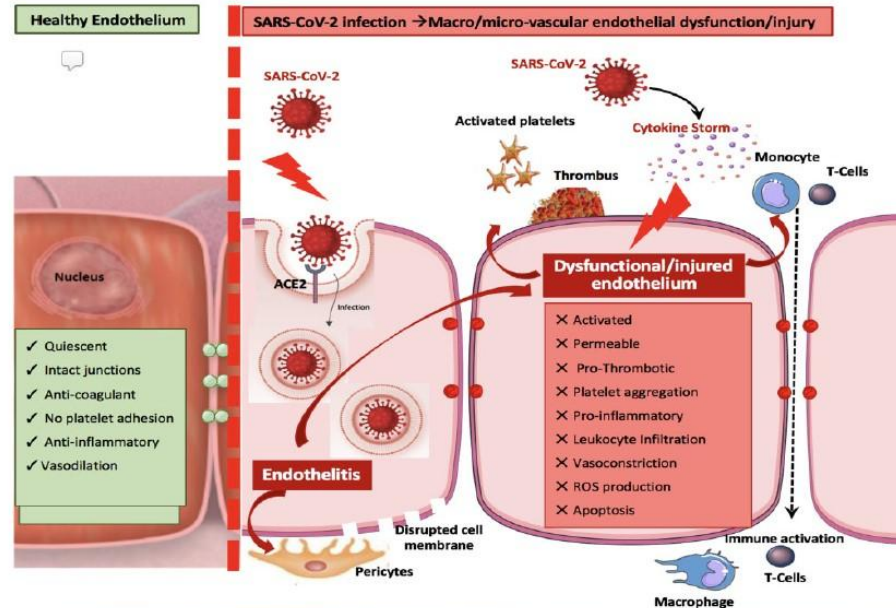
THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Cardiac Involvement of COVID-19: A Comprehensive Review



Cardiovascular Research (2020) 116, 2177–2184

Endothelial dysfunction in COVID-19: a position paper of the ESC Working Group for Atherosclerosis and Vascular Biology, and the ESC Council of Basic Cardiovascular Science

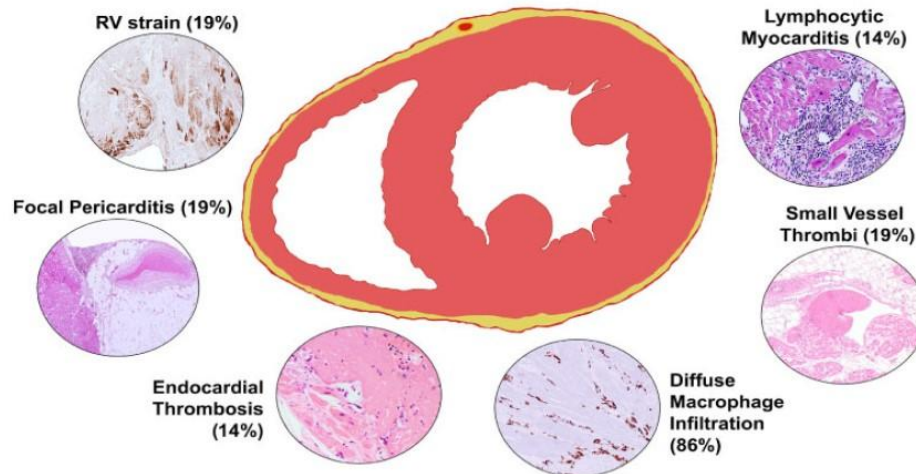


- Healthy endothelium is characterized by quiescence, intact junctions, anticoagulant anti-inflammatory phenotype, and an intact vasodilation phenotype.
- SARS-CoV-2 causes endothelitis by direct infection, whereas the closest cells are activated as a result of cytokine release and activation of prothrombotic pathways.
- Infection with SARS-CoV-2 is via ACE2 which is subsequently endocytosed, potentially reducing ACE2-mediated regulation of vascular tone.
- SARS-CoV-2 infection causes endothelial dysfunction at multiple levels including inflammatory activation, cytokine storm, leukocyte infiltration, increased permeability, thrombosis, platelet aggregation, vasoconstriction, production of reactive oxygen species (ROS), and apoptosis.

European Heart Journal (2020) 41, 3827–3835

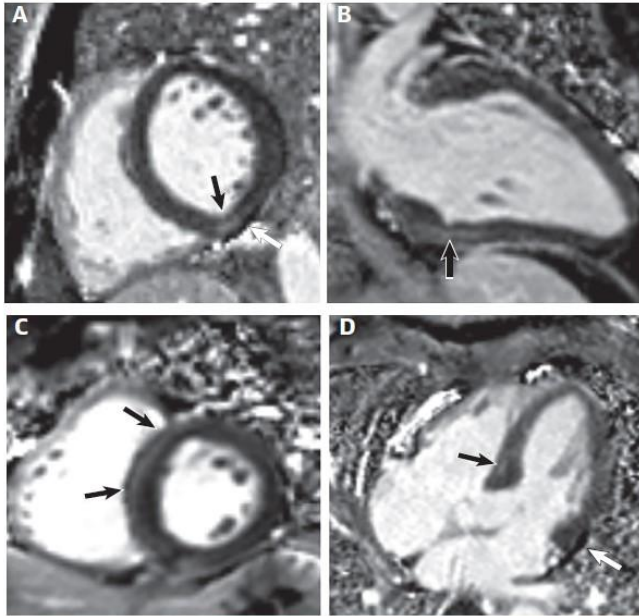
Pathological features of COVID-19-associated myocardial injury: a multicentre cardiovascular pathology study

Cardiac pathological changes associated with COVID-19



JACC: CARDIOVASCULAR IMAGING, VOL. 13, NO. 11, 2020

Cardiac Involvement in Patients Recovered From COVID-2019 Identified Using Magnetic Resonance Imaging



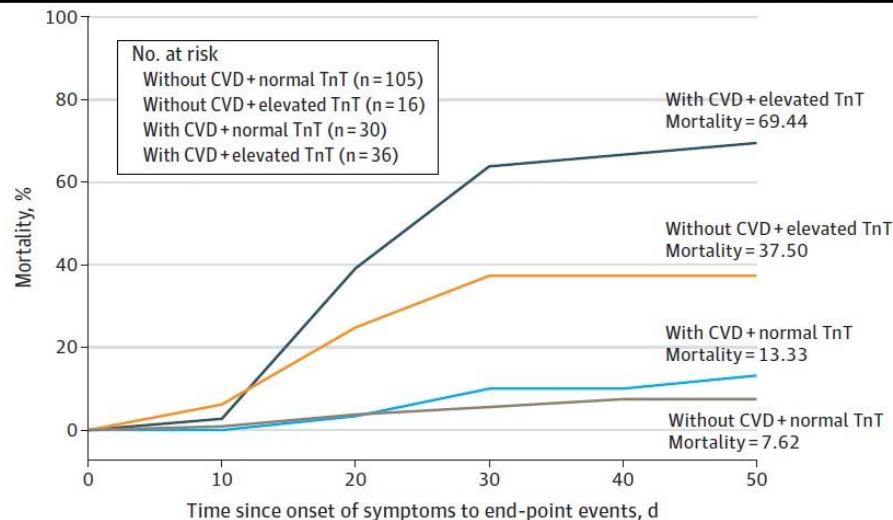
Focal Myocardial Fibrosis in Patients Recovered From COVID-19

- 15/26 (58%) pts had abnormal MRI findings
 - myocardial edema: 54%
 - LGE: 31%
 - Decreased RV functional parameters (EF, CI, and SV) were found in all patients with MRI abnormalities
- Cardiac involvement was found in a good proportion of the recovered COVID-19
- **Attention should be paid to the possible myocardial involvement in recovered COVID-19 patients with cardiac symptoms.**

JAMA Cardiology July 2020 Volume 5, Number 7

Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19)

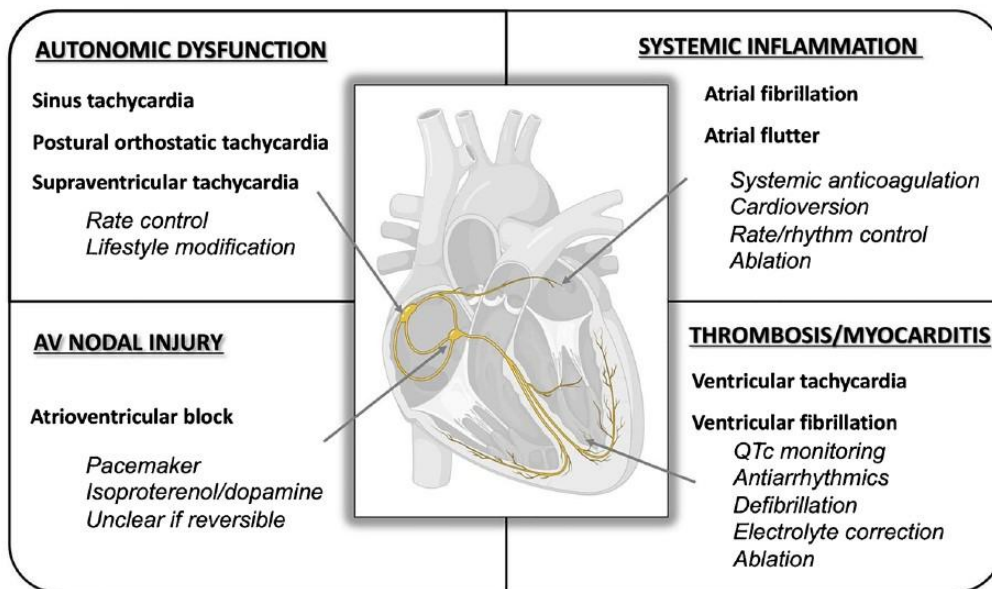
Mortality of Patients With COVID-19 With/Without CVD and With/Without Elevated TnT



Current Cardiology Reports

(2021) 23:2

Management of Arrhythmias Associated with COVID-19

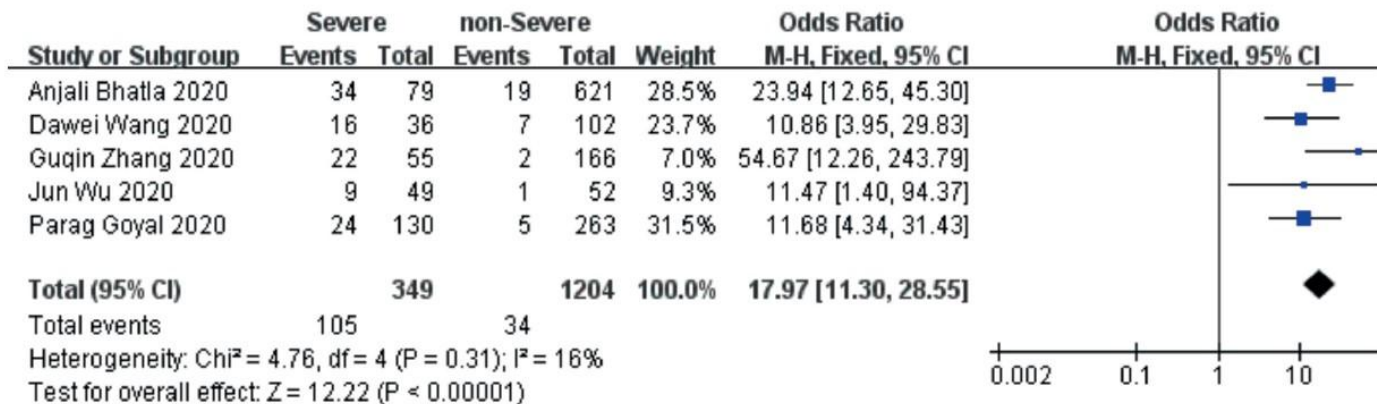


European Review for Medical and Pharmacological Sciences

2020; 24: 11395-11401

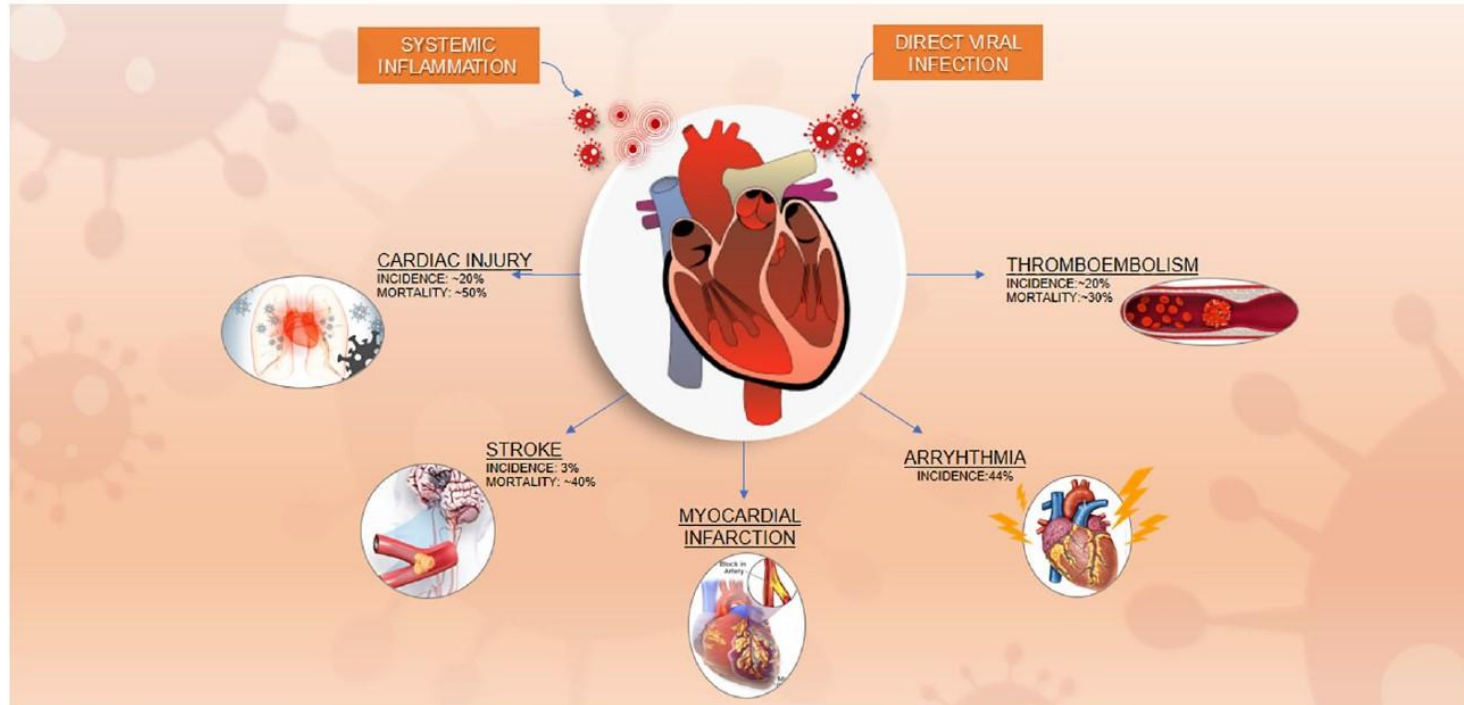
Arrhythmia in patients with severe coronavirus disease (COVID-19): a meta-analysis

Forest map of arrhythmia in severe and non-severe COVID-19 patients



1553 COVID-19 patients of 5 studies: 349 (22.47%) severely and 1204 (77.53%) non-severely ill with COVID-19 pneumonia. 790 (50.87%) were male patients. 105 cases (30.09%) of severely ill inpatients had arrhythmia complications, and 34 cases (2.82%) of non-severely ill. Arrhythmia are significantly associated with severely ill inpatients with COVID-19 pneumonia, with a pooled OR of 17.97 (95% CI [11.30, 28.55], $p < 0.00001$).

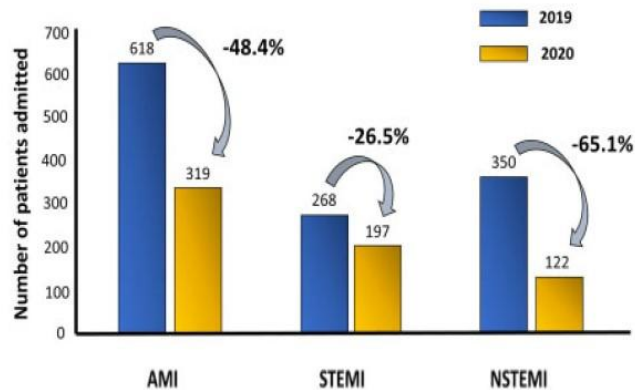
Major CV manifestations and outcomes in COVID-19



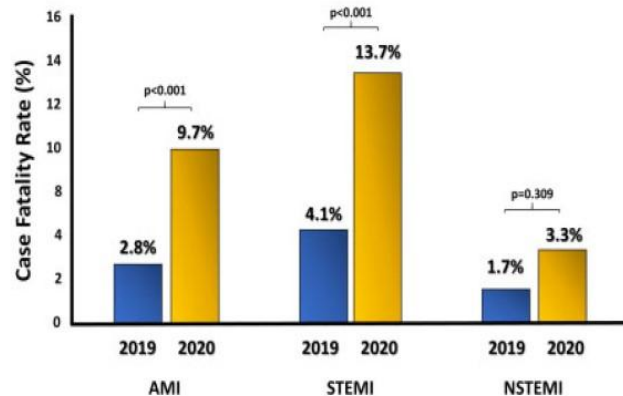
European Heart Journal (2020) 41, 2083–2088

Reduction of hospitalizations for myocardial infarction in Italy in the COVID-19 era

number of admissions registered among Italian cardiac care units (CCUs) during the week 12–19 March 2020



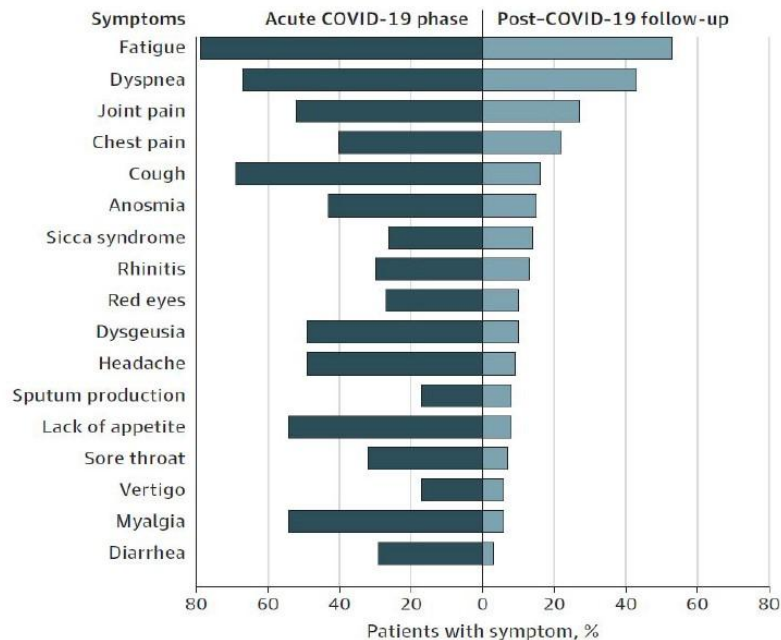
case fatality rates among patients admitted for AMI during the week 12–19 March 2020



multicentre, observational, nationwide survey on admissions for AMI at Italian CCUs throughout a 1 week period during the COVID-19 outbreak, compared with the equivalent week in 2019

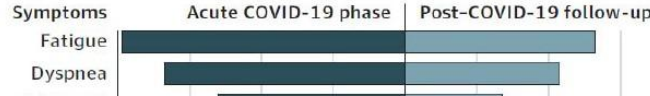
JAMA August 11, 2020 Volume 324, Number 6

Persistent Symptoms in Patients After Acute COVID-19



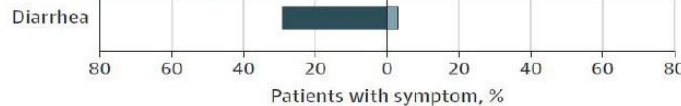
JAMA August 11, 2020 Volume 324, Number 6

Persistent Symptoms in Patients After Acute COVID-19



Long term follow-up

Patients with pulmonary embolism, evidence of lung fibrosis or persistent dyspnoea should be followed-up with echocardiography to detect the potential persistence/development of Pulmonary Hypertension



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22 DICEMBRE 2020
Dalle 11.00 alle 13.30

Grazie 1000!!

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