**Cardiac Manifestations of Multisystem Inflammatory Syndrome of Children after SARS-CoV-2 Infection: A Systematic Review and Meta-analysis**

Table A: Search Strategy

**Medline/PubMed Search Strategy**

|  |  |
| --- | --- |
| 1 | ("Coronavirus Infections/complications"[Mesh] OR coronavirus OR "COVID-19/complications"[Mesh] OR "SARS-CoV-2" OR "COVID-19") |
| 2 | ("systemic inflammatory response syndrome"[Mesh] OR "multisystem inflammatory syndrome" OR "MIS-C" OR "MISC") |
| 3 | ("coronary vessels"[Mesh] OR "myocardium"[Mesh] OR "myocarditis"[Mesh] OR "heart failure"[Mesh] OR "ventricular dysfunction"[Mesh] OR "Electrocardiography"[Mesh] OR "Heart Block"[Mesh] OR "Heart Defects, Congenital"[Mesh] OR "Bradycardia"[Mesh] OR "Cardiac Conduction System Disease"[Mesh] OR "Constriction, Pathologic"[MeSH] OR stricture OR "Coronary Stenosis"[MeSH] OR "Angioplasty, Balloon, Coronary"[Mesh] OR ventric\* OR cardiac OR heart OR coronary) |
| 4 | 1 AND 2 AND 3 |

**Ovid Embase Search Strategy**

|  |  |
| --- | --- |
| 1 | exp coronavirus disease 2019/co [Complication] |
| 2 | exp Coronavirus infection/co [Complication] |
| 3 | (coronavirus or "SARS-CoV-2" or "COVID-19").tw. |
| 4 | 1 or 2 or 3 |
| 5 | exp systemic inflammatory response syndrome/ |
| 6 | ("multisystem inflammatory syndrome" or "MIS-C" or "MISC").tw. |
| 7 | 5 or 6 |
| 8 | (ventric\* or cardiac or heart or coronary or stricture).tw. |
| 9 | exp coronary blood vessel/ or exp cardiac muscle/ or exp myocarditis/ or exp heart failure/ or exp heart ventricle function/ or exp electrocardiography/ or exp heart block/ or exp congenital heart malformation/ or exp bradycardia/ or exp heart muscle conduction disturbance/ or exp "stenosis, occlusion and obstruction"/ or exp coronary artery obstruction/ or exp transluminal coronary angioplasty/ |
| 10 | 8 or 9 |
| 11 | 4 and 7 and 10 |
| 12 | limit 11 to dc=20191201-20220101 |

**WHO Global research on coronavirus disease (COVID-19) Literature Database**

|  |  |
| --- | --- |
| 1 | (multisystem inflammatory OR multisystem inflammatory syndrome OR misc OR mis-c OR systemic inflammatory response syndrome) |

**Supplementary Table S1**: Summary of included studies, describing the country, single or multi-center institution(s), the dates of inclusion, the population of patients, the population needing ICU level care, the age details, the predominant co-morbidity of the population, and mortality

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Country** | **Single or Multi-Center** | **Study start and end date** | **Number of patients** | **Needing ICU Care** | **Age Details (Median/Range)** | **Predominant Co-morbidity** | **Mortality** |
| Abdel-Haq N (2021)19 | USA | Single | 4/2020 - 6/2020 | 33 | 22 | 6.0; 3 mon-17 yrs | 21% Asthma | 0 |
| Abrams JY (2021)44 | USA | Multi | 3/2020 - 10/2020 | 1080 | 648 | 8.0; 10 days-21 yrs | 26% Obesity | 18 |
| Acevedo (2021)84 | Colombia | Multi | 4/2020 - 1/2021 | 78 | 78 | 7 yrs; IQR 1-11 | 37% Obesity | 7 |
| Aeschlimann (2021)85 | France | Multi | 3/2020 - 4/2021 | 111 | 87 | 10; IQR 7-13.8 | 25% (Bronchiolitis or asthma) | 0 |
| Al-Harbi (2021)45 | Saudi Arabia | Multi | 4/2020 - 12/2020 | 54 | 54 | 3.4 | 7.4% NeuroMSK; Cardiac disease | 9 |
| Alkan (2021)28 | Turkey | Single | 9/2020 - 2/2021 | 36 | 4 | 7.8; 17 mon-17 yrs | 25% Obesity | 0 |
| Angurana (2021)8 | India | Single | 9/2020 - 1/2021 | 40 | 34 | 7; 2-12 yrs | 2.5 % CHD | 2 |
| Bagri (2021)89 | India | Single | 7/2020 - 6/2021 | 31 | 13 | 96 mon; 3-181 | 13% Seizures | 4 |
| Bar-Meir (2021)46 | Israel | Single | 2/2020 - 10/2020 | 10 | 8 | 136 mon; 60-204 | No Mention | 0 |
| Basar (2021)47 | Turkey | Single | 6/2020 - 12/2020 | 24 | 2 | 111 mon; 10-180 | 2.5% Cerebral Palsy; 2.5% Metabolic disorder | 1 |
| Basu (2021)49 | USA | Single | 3/2020 - 3/2021 | 65 | 46 | 8.5 yrs; IQR 4.2-13.4 | 3% Undetermined | 0 |
| Bautista-Rodriguez (2021)48 | Multi-national | Multi | 3/2020 - 6/2020 | 183 | 90 | 7 ± 4.7 yrs | 26.2% Obesity | 3 |
| Belay (2021)50 | USA | Multi | 3/2020 - 1/2021 | 1733 (only 1563 had ECHO performed) | 1009 | 11 yrs; IQR 6-15 | No mention | 24 |
| Belhadjer (2020)7 | France | Multi | 3/2020 - 4/2020 | 35 | 35 | 10 yrs; 2-16 | 17% Overweight | 0 |
| Belozerov51 | Russia | Single | No mention | 12 | 6 | Not reported | No Mention | - |
| Ben-Shimol (2021)9 | Israel | Multi | 3/2020 - 3/2021 | 56 | 26 | 9.8; 3 mon-18yrs | 13% Obesity | 0 |
| Bermejo (2021)52 | United Kingdom | Single | 4/2020 - 6/2020 | 44 | No mention | 8 yrs (17 mon-14 yrs) | No mention | - |
| Blumfield (2020)10 | USA | Single | 2/2020 - 5/2020 | 19 (only 3 were MISC) | 14 | 8 yrs; 2 mon-18 yrs) | 26% Severe Neurologic Impairment | 2 |
| Bowen (2021)31 | USA | Multi | 2/2020 - 3/2021 | 2818 | No mention | (<1y - 20y) | 28% Obesity | 35 |
| Cantarutti (2021)11 | Italy | Multi | 3/2020 - 3/2021 | 46 | 27 | 9 ± 4.8 yrs | No mention | 0 |
| Capone (2020)16 | USA | Single | 4/2020 - 5/2020 | 33 | 26 | 8.6; IQR 5.5-12.6 | 39% Obesity | 0 |
| Capone (2021)86 | USA | Single | 4/2020 - 6/2020 | 50 | 31 | 8.5; IQR 5.4-11.5 | 40% Obesity | 0 |
| Caro-Patón (2021)18 | Spain | Single | 3/2020 - 4/2020 | 12 | 12 | 9.5 yrs (5-14) | None | 0 |
| Cattaneo (2021)53 | France | Single | 4/2020 - 8/2020 | 11 | 6 | 9 yrs (5-17) | 9% Obesity | 0 |
| Chang (2021)54 | USA | Multi | No mention | 43 | 31 | 10.1 ± 4.2 yrs | No mention | - |
| Cheung (2020)55 | USA | Single | 4/2020 - 5/2020 | 17 | 15 | 8 yrs (1.8-16) | 20% Asthma | 0 |
| Choi (2020)12 | USA | Single | 4/2020 - 5/2020 | 32 | 25 | 9 yrs (1-20) | No mention | 0 |
| Clark (2021)1 | Multi-national | Multi | 3/2020 - 5/2020 | 55 | 27 | 7 ± 5.2 yrs | No mention | 2 |
| Davies P (2020)13 | United Kingdom | Multi | 4/2020 - 5/2020 | 78 | 78 | 11 yrs; IQR 8-14 | 19% manageable by PCP | 2 |
| DeBiasi (2021)93 | USA | Single | 3/2020 - 9/2020 | 63 | 33 | Not reported | No mention | 0 |
| Dhanalakshmi (2020)56 | India | Single | 3/2020 - 7/2020 | 19 | 12 | 6 yrs; IQR 1-6 | 5% global developmental delay | - |
| Diniz (2020)6 | Brazil | Single | 3/2020 - 6/2020 | 48 (20 with MISC) | 20 | 7.5 yrs(0-18.6) | 54% Immunosuppression | 7 |
| Dionne (2020)14 | USA | Single | 3/2020 - 5/2020 | 25 | 14 | 9.7 (2.7-15) | 15% Asthma;  15% Obesity | 0 |
| Dufort (2020)57 | USA | Multi | 3/2020 - 5/2020 | 99 | 79 | Not reported | 29% Obesity | 2 |
| Elilarasi (2021)90 | India | Single | 7/2020 - 10/2020 | 65 | 33 | 5 yrs (2 mon-12yrs) | 4.6% Seizures;  4.6% Asthma | 4 |
| Erol (2021)15 | Turkey | Single | 12/2020 - 8/2021 | 26 | 5 | 3.7 yrs (2mon-17yrs) | No mention | 0 |
| Fabi (2021)91 | Italy | Multi | 4/2020 - 4/2021 | 24 | 11 | 82 mon; IQR 60-108 | No mention |  |
| Farooqi (2021)92 | USA | Single | 4/2020 - 12/2020 | 45 | 34 | Not reported | 14% Asthma | 0 |
| Feldstein (2020)20 | USA | Multi | 3/2020 - 5/2020 | 186 | 148 | 8.3; IQR 3.3-12.5 | 29% Obesity | 4 |
| Feldstein (2021)26 | USA | Multi | 3/2020 - 10/2020 | 1116 (539 as MISC) | 398 | 8.9; IQR 4.7-13.2 | 36.2% Obesity | 10 |
| Felsenstein (2020)58 | United Kingdom | Multi | 3/2020 - 6/2020 | 27 (29) | - | 6.0; IQR 3.8-9.9 | No mention | - |
| Felsenstein (2021)29 | United Kingdom | Single | 2/2020 - 2/2021 | (34 as PIMS) | 13 | 8.65; IQR 0.17-15.0 | No mention | - |
| García-Salido (2020)4 | Spain | Multi | 3/2020 - 6/2020 | 45 | 45 | 9.4; IQR 5.5-11.8 | No mention | 0 |
| Godfred-Cato (2021)87 | USA | Multi | 5/2020 - 1/2021 | 86 | 28 | 7.7 mon; (14 days - 12 mon) | 4.7% CLD | 1 |
| Grimaud (2020)17 | France | Multi | 4/15/2020 - 4/27/2020 | 20 | 20 | 10 yrs (2.9-15) | None | 0 |
| Gün (2021)23 | Turkey | Single | 4/2020 - 1/2021 | 19 | 19 | 12.5 yrs; IQR 5.8-14.0 | 26% Obesity | 1 |
| Haslak (2021)59 | Turkey | Multi | 7/2020 - 5/2021 | 76 | 27 | 8.2 ± 4.4yrs | 2.5% Asthma;  2.5% ALL | 1 |
| Harahsheh (2021)60 | USA | Single | 3/2020 - 9/2020 | 39 | 31 | 7.8 yrs; IQR 3.6-12.7 | No mention | 0 |
| Harasheh (2021)94 | USA | Single | 3/2020 - 4/2021 | 106 | 79 | 8.4 yrs; IQR 4.7-13.4 | No mention | 0 |
| Jain (2020)61 | India | Multi | 5/2020 - 7/2020 | 23 | 23 | 7.2 yrs; (0.8-14) | No mention | 1 |
| Kaushik (2020)62 | USA | Multi | 4/2020 - 5/2020 | 33 | 32 | 10 yrs; IQR 6-13 | 15% Asthma | 1 |
| Kavurt (2021)2 | Turkey | Single | 11/2020 - 1/2021 | 50 | 40 | 10.1 yrs (7.3-14) | No mention | - |
| Kiymet (2021)3 | Turkey | Single | 3/2020 - 2/2021 | 58 | 15 | 6 yrs (2mon-16 yrs) | No mention | 1 |
| Kobayashi (2021)5 | USA | Single | 3/2020 - 6/2020 | 25 | 12 | 11.4 yrs; IQR 7.5 - 16 | 52% Overweight or Obese | 0 |
| Kolganova (2020)95 | Russia | Multi | 5/2020 - 9/2020 | 32 | 12 | 6 yrs; (3-10.5) | 51% Overweight or Obese | 1 |
| Kostick (2021)63 | Russia | Multi | 5/2020 - 4/2021 | 72 | 37 | 8.9 (5.3,11.8) | No mention | - |
| Kucera (2021)64 | United Kingdom | Single | 2/2020 - 6/2020 | 80 | 39 | Not reported | No mention | 1 |
| Lee (2020)65 | USA | Single | 3/2020 - 6/2020 | 28 | 17 | 9 yrs (1 mon - 17 yrs) | 15% Overweight | 0 |
| Lima-Setta (2021)24 | Brazil | Multi | 3/2020 - 7/2020 | 56 | 56 | 6.2; IQR 2.4-10.3 | 10% Chronic Neurological Disease | 1 |
| Mamishi (2020)27 | Iran | Multi | 3/2020 - 6/2020 | 45 | - | 7 yrs; IQR 4-9.9 | 13% Multiple | 5 |
| Matsubara (2020)66 | USA | Single | 4/2020 - 6/2020 | 28 | - | 11.4 (8.0-13.7) | No mention | - |
| Miller (2021)30 | USA | Multi | 2/2020 - 7/2021 | 4470 | - | 9 yrs (5-13) | 25% Obesity | 37 |
| Minocha (2021)25 | USA | Multi | 3/2020 - 6/2020 | 33 | 22 | 2.8 yrs; IQR 1.4-9 | 21% Obesity | 0 |
| Mohsin (2021)67 | Pakistan | Multi | 5/2020 - 8/2020 | 30 | 26 | 24 mon; IQR 9.5-60 | No mention | 6 |
| Niño-Taravilla (2021)68 | Chile | Single | 5/2020 - 8/2020 | 26 | 26 | 6.5 yrs; IQR 2-10.5 | No mention | 0 |
| Öcal Demir (2021)21 | Turkey |  | 11/2020 - 1/2021 | 20 | 7 | 80 mon; IQR 47-132 | 10% Obesity | 0 |
| Ozsurekci (2021)69 | Turkey | Single | 3/2020 - 11/2020 | 30 | 14 | 9 yrs | 6.7% CLD; 6.7% Obesity | 0 |
| Patnaik (2021)32 | India | Single | Dates unclear | 21 | 10 | 8.4 ± 4.3 yrs | No mention | 0 |
| Pereira (2020)70 | Brazil | Single | 4/2020 - 6/2020 | (6 as MISC) | 6 | 7.8 (0.01-17.6) | 67% Immunocompromised | 4 |
| Pick (2021)71 | USA | Single | 3/2020 - 8/2020 | 28 | - | 8 yrs; IQR 0.9-13 | No mention | - |
| Pouletty (2020)72 | France | Multi | 4/2020 - 5/2020 | 16 | 7 | 10 yrs; IQR 4.7-12.5 | 24% Overweight | 0 |
| Racko (2021)33 | Latvia | Single | 12/2020 - 2/2021 | 13 | 7 | 8.8 yrs (4-17) | No mention | 0 |
| Rakha (2021)73 | Egypt | Single | 5/2020 - 11/2020 | 16 | - | 12 mon; IQR 4.5-27 | No mention | 0 |
| Ramcharan (2020)36 | United Kingdom | Single | 4/2020 - 5/2020 | 15 | 10 | 8.8 yrs; IQR 6.4-11.2 | No mention | 0 |
| Regan (2020)38 | United Kingdom | Single | 4/2020 - 6/2020 | 63 | 43 | 10 yrs (0.3-16) | No mention | 1 |
| Sanil (2021)74 | USA | Single | 4/2020 - 1/2021 | 54 | 35 | 6.8 ± 4.4 yrs | 22% Asthma | 0 |
| Savas Sen (2021)75 | Turkey | Single | 8/2020 - 3/2021 | 45 | 11 | 8.7 yrs; IQR 5.6 - 11.7 | 6.6% Overweight | 0 |
| Shabab (2021)34 | USA | Single | 4/2020 - 2/2021 | 26 | 15 | 105 ± 57 mon | 12% Obesity | 1 |
| Shobhavat (2020)76 | India | Single | 4/2020 - 7/2020 | 21 | 21 | 7 yrs; IQR 1.9-12.1 | 5% Aplastic Anemia | 3 |
| Sirico (2021)39 | Italy | Single | 4/2020 - 2/2021 | 23 | 4 | 8.1 ± 4 yrs | 4.3% CHD | 0 |
| Son MBF (2021)77 | USA | Multi | 3/2020 - 10/2020 | 518 | 385 | 8.7 yrs; IQR 4.9-12.8 | 13% Respiratory | 9 |
| Sözeri (2021)35 | Turkey | Single | 4/2020 - 4/2021 | 67 | 21 | 9 yrs ± 5.2 | 13.5% Obesity | 2 |
| Swann (2020)96 | United Kingdom | Multi | 1/2020 - 7/2020 | 52 | 38 | 4.6 yrs; IQR 0.3-13.7) | 7.4% Hematologic | 0 |
| Theocharis (2021)78 | United Kingdom | Single | 4/2020 - 5/2020 | 20 | - | 10.6 ± 3.8 yrs | No mention | 0 |
| TIbi (2020)79 | USA | Single | 3/2020 - 5/2021 | 14 | 8 | 8.5 yrs; IQR 4-12 | No mention | 0 |
| Tiwari (2021)97 | India | Multi | 3/2020 - 4/2021 | 41 | 36 | 6.2 ± 4 yrs | 8% Obesity | 2 |
| Tolunay (2021)80 | Turkey | Single | 9/2020 - 4/2021 | 52 | 14 | 9 yrs (5-13) | 7.5% Malignancy | 0 |
| Torres (2020)88 | Chile | Multi | 5/2020 - 6/2020 | 27 | 16 | 6 yrs (0-14) | 15% Overweight or Obese | 0 |
| Toubiana (2020)98 | France | Single | 4/2020 - 5/2020 | 21 | 17 | 7.9 (3.7-16.6) | 24% Obesity | 0 |
| Türe (2021)104 | Turkey | Single | 6/2020 - 10/2020 | 32 | 5 | 97.8 mon (1.5-204) | None | 0 |
| Valverde (2021)81 | Multi-national | Multi | 2/2020 - 6/2020 | 286 | 162 | 8.4 yrs; IQR 3.8-12.4 | 4.2% Autoimmune | 1 |
| Vukomanovic (2021)82 | Serbia | Single | 1/2018 - 11/2020 | 6 | 4 | 11.8 ± 6.5 yrs | No mention | - |
| Whittaker (2020)83 | United Kingdom | Multi | 3/2020 - 5/2020 | 58 | 29 | 9 yrs; IQR 5.7 - 14 | 5% Asthma | 1 |
| Yagnam (2021)99 | Chile | Single | 6/2020 - 8/2020 | 20 | 20 | 6 yrs (1-7) | 20% Asthma | 0 |

**Legend**

ALL – Acute Lymphocytic Leukemia

CHD – Congenital Heart Disease

CLD – Chronic Lung Disease

MSK - Muscular

PCP – Primary Care Physician

**Supplementary Table S2** Risk of bias assessment of included studies, based on the appropriate definition of population, prognostic factors, outcomes measurements, confounding variables, and statistical analysis, as well as the overall assessment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Studies** | **Participation** | **Prognostic factors measurement** | **Outcome measurement** | **Confounding variables** | **Statistical analysis** | **Overall Risk** |
| Abdel-Haq (2021)19 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊖ | ⊕⊕⊕ |
| Abrams (2021)44 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Acevedo (2021)84 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Aeschliman (2021)85 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Al-Harbi (2021)45 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Alkan (2021)28 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Angurana (2021)8 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊖⊖ | ⊕⊕⊖ |
| Bagri (2021)89 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊖⊖ | ⊕⊖⊖ |
| Bar-Meir (2021)46 | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Basar (2021) 47 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Basu (2021)49 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Bautista-Rodriguez (2021)48 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Belay (2021)50 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Belhadjer (2020)7 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Belozerov (2021)51 | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ |
| Ben-Shimol (2021)9 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Bermejo (2021)52 | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ |
| Blumfield (2020)10 | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ |
| Bowen (2021)31 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Cantarutti (2021)11 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Capone (2020)16 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Capone (2021)86 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Caro-Paton (2020)18 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊖ | ⊕⊕⊕ |
| Cattaneo (2021)53 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Chang (2021)54 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Cheung (2020)55 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊖ | ⊕⊕⊕ |
| Choi (2020)12 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Clark BC (2020)1 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Davies (2020)13 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| DeBiasi (2021)93 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Dhanalakshmi (2020)56 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊖⊖ | ⊕⊖⊖ |
| Diniz (2020)6 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Dionne (2020)14 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Dufort (2020)57 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Elilarasi (2021)90 | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊖⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Erol (2021)15 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Fabi (2021)91 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Farooqi (2021)92 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ |
| Feldstein (2020)20 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Feldstein (2021)26 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Felsenstein (2021)29 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Felsenstein (2020)58 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Garcia-Salido (2020)4 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Godfred-Cato (2020)87 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Grimaud (2020)17 | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊖ |
| Gün (2021)23 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Harasheh (2021)94 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Harasheh (2021)105 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Haslak (2021)59 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Jain (2020)61 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Kaushik (2020)62 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Kavurt (2021)2 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Kiyemet (2021)3 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Kobayashi (2021)5 | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Kolganova (2020)95 | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊖⊖ |
| Kostik (2021)63 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊖ |
| Kuchera (2021)64 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Lee (2020)65 | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Lima-Setta (2020)24 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Mamashi (2020)27 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊕ |
| Matsubara (2020)66 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Miller (2020)30 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Minocha (2021)25 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Mohsin (2021)67 | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊖⊖ |
| Nino Taravilla (2021)68 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Ocal Demir (2021)21 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Ozsurekci (2021)69 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Patnaik (2021)32 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Periera (2021)70 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Pick (2021)71 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Pouletty (2020)72 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Racko (2021)33 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Rakha (2021)73 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Ramacharan (2020)36 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Regan (2021)38 | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊖⊖ |
| Sanil (2021)74 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Savas Sen (2021)75 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | N/A | ⊕⊕⊕ | ⊕⊕⊖ |
| Shabab (2021)34 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Shobhavat (2020)76 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊖⊖ | ⊕⊕⊖ |
| Sirico (2021)39 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Son (2021)77 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Sozeri (2021)35 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ |
| Swann (2020)96 | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Theocharis (2020)78 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊖⊖ | ⊕⊕⊖ |
| Tibi (2021)79 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ |
| Tiwari (2021)97 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Tolunay (2021)80 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Torres (2020)88 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | N/A | ⊕⊕⊖ | ⊕⊕⊖ |
| Toubiana (2020)98 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊖ |
| Türe (2021)106 | ⊕⊕⊕ | ⊕⊕⊖ | ⊕⊕⊖ | ⊕⊖⊖ | ⊕⊖⊖ | ⊕⊖⊖ |
| Valverde (2021)81 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊖⊖ | ⊕⊕⊕ | ⊕⊕⊕ |
| Vukomanovic (2021)82 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Whittaker (2020)83 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
| Yagnam (2021)99 | ⊕⊕⊕ | ⊕⊕⊕ | ⊕⊕⊕ | N/A | ⊕⊕⊕ | ⊕⊕⊕ |
|  |  |  |  |  |  |  |
| ⊕⊕⊕: Low Risk of Bias                       ⊕⊕⊖: Moderate Risk of Bias ⊕⊖⊖: High risk of Bias | | | | | | |
| N/A: Information not available or not provided | | | | | | |

**Supplementary Table S3: Specific Definitions of Depressed Left Ventricular Function; normal lab ranges for Troponin, Brain Natriuretic Peptide, and Pro-Brain Natriuretic Peptide; Method of Diagnosis Myocarditis; Breakdown of Coronary abnormalities; Breakdown of ECG dysrhythmias and abnormalities**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Study (Publication Date)** | **Definition of Depressed LVEF** | **Definition of Normal Troponin/BNP/Pro-BNP** | **Method of Diagnosing Myocarditis** | **Definition of Myocarditis According to Study** | **Breakdown of Coronary Abnormalities: Dilated vs Aneurysms** | **Breakdown of ECG dysrhythmias and abnormalities** |
| Abdel-Haq (2021)12 | <55% | Troponin <17 ng/l BNP <101 pg/ml | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 5: Dilated | 4: Accelerated junctional rhythm, 1: PVCs |
| Abrams (2021)43 | Not defined | Troponin < 0.04 ng/mL | Predetermined Criteria | (ventricular dysfunction or ↓ EF) on ECHO with ↑Troponin or Pro-BNP | Not specifically defined | 28: Ventricular arrhythmia, 28: SVT, 117: other unspecified |
| Acevedo (2021)82 | <60% | BNP < 400 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 8: Dilated 27: Aneurysms | 3: SVT, 1: VT,  1: PVCs |
| Aeschliman (2021)83 | <55% | Troponin < 26 ng/L BNP < 100 ng/L Pro-BNP < 300 ng/L | CMR | Lake Louise Criteria | 17: Dilated | 45: non-specific T-wave/ST-segment abnormalities |
| Al-Harbi (2021)44 | Not defined | Troponin <15.6 pg/L BNP < 28.9 pmol/L | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 3: Aneurysms | 6: Unspecified abnormalities |
| Alkan (2021)41 | Not defined | Troponin < 17.5 ng/L, Pro-BNP < 125 pg/mL | Predetermined Criteria | Criteria not defined for reader | 4: Aneurysms | 17: ST abnormalities, incomplete RBBB, 1° AV Block |
| Angurana (2021)8 | <55% | Pro-BNP < 125 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 10: Aneurysms | 2: Junctional rhythm, ST elevations |
| Bagri (2021)88 | <55% | Pro-BNP <125pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Dilation, 1: Aneurysm | Not reported |
| Bar-Meir (2021)45 | Not defined | Troponin < 20 ng/L BNP < 100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 0 dilations or aneurysms | Not reported |
| Basar (2021)46 | <55% | Reported median (min-max) | Predetermined Criteria/CMR | (EF <55%/SF<28%) on Echo with ↑Troponin/Pro-BNP; 3 independently via CMR | 3: Dilations 1: hyper- echogenicity | 0 abnormalities |
| Basu (2021)48 | <55% | Troponin < 0.3 ng/mL BNP < 500 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | Not recorded | Not reported |
| Bautista-Rodriguez (2021)47 | Not defined | Troponin < 0.4 ng/mL Pro-BNP < 300 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 38: Dilations | 58: Unspecified signs of ischemia, arrythmias |
| Belay (2021)25 | Not defined | Not defined | Predetermined Criteria | Criteria not defined for reader | Not specifically defined | Not reported |
| Belhadjer (2020)33 | <50% | Troponin < 26 ng/L BNP < 100 pg/mL Pro-BNP < 300 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 6: Dilations | 1: ST elevation |
| Belozerov (2021)49 | <60% | Troponin <17.5 pg/mL | CMR | Lake Louise Criteria | Not recorded | 2: 1° AV block, 2: Prolonged QT, 2: RBBB, 2: PVCs, 4: Impaired repolarization |
| Ben-Shimol (2021) | Not defined | Troponin < 25 ng/L | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 10: Dilations | Not reported |
| Bermejo (2021)50 | <55% | Not defined | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 5: Aneurysms | Not reported |
| Blumfield (2020)34 | Not defined | Troponin < 0.1 ng/mL Pro-BNP < 125 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Dilated | Not reported |
| Bowen (2021)26 | Not defined | Troponin (elevated if > upper limit of normal) Pro-BNP > 1000 pg/mL | Predetermined Criteria | Criteria not defined for reader | Not specifically defined | Not specified |
| Cantarutti (2021)35 | Not defined | Not defined | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | Not specifically defined | 13: Long QT, 3: unspecified arrhythmias, 10: unspecified ECG abnormalities |
| Capone (2020)7 | <55% | Troponin < 14 ng/L Pro-BNP < 300 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 3: Dilations 5: Aneurysms | Not reported |
| Capone (2021)84 | <55% | Troponin <14 ng/L Pro-BNP < 300 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 4: Dilations 14: Lack of tapering 8: Aneurysms | Not reported |
| Caro-Paton (2020)11 | <58% | Troponin < 15.6 ng/L Pro-BNP < 125 pg/mL | Predetermined Criteria | Criteria not defined for reader | 1: Dilation | 0 abnormalities |
| Cattaneo (2021)51 | Not defined | Not defined | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 0 dilations or aneurysms | 3: ST-T wave changes |
| Chang (2021)52 | <55% | Troponin < 0.09 ng/mL BNP < 500 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Aneurysm | Not reported |
| Cheung (2020)53 | <55% | Troponin < 22 ng/L Pro-BNP < 207 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Aneurysm | 10: Nonspecific ST-T wave changes, 1: low QRS voltage, 1: VT |
| Choi (2020)36 | Not defined | Troponin < 14 ng/L Pro BNP < 242 pg/mL | Not reported or able to determine | − | Not recorded | 6: 1° AV Block, 4: Prolonged QT, 22: unspecified ECG abnormalities |
| Clark BC (2020)1 | <60% | Troponin < 0.1 ng/mL Pro-BNP < 1,121 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 9: Dilation 1: Aneurysm | 14: Sinus tachycardia, 9: Non-specific T-wave changes, 4: ST changes from pericarditis, 2: Abnormal QRS axis, 1: 1°AV Block |
| Davies (2020)37 | Not Defined | Troponin <10 ng/L | Not reported or able to determine | − | 18: Aneurysms 10: unusually echogenic | Not reported |
| Dhanalakshmi (2020)54 | Not defined | Troponin < 4 pg/mL Pro-BNP < 180 pg/mL | Not reported or able to determine | − | 3: Dilations | Not reported |
| DeBiasi (2021)92 | <55% | As defined by the lab | Zero reported | − | 7: Dilations 4: Aneurysms | Not reported |
| Diniz (2020)6 | <55% | Reported median (Range) | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 12: Aneurysms | Not reported |
| Dionne (2020)9 | <55% | Troponin <0.09 ng/mL BNP <100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 3: Dilations 2: Aneurysms | 5: 1°AV Block, 3: 2° AV Block, 1: 3° AV Block, 7: Prolonged QTc |
| Dufort (2020)55 | Not defined | Troponin - no mention Pro-BNP varied according to age | Predetermined Criteria | (Ventricular dysfunction or hypokinesia or ↓contractility or EF) or arrhythmia and ↑BNP or Pro-BNP | 9: Aneurysms | Not reported |
| Elilarasi (2021)89 | Not defined | Not mentioned | Not reported or able to determine | − | 8: Dilations 38: Aneurysms | 1: SVT |
| Erol (2021)10 | <55% | Troponin < 0.003 | Zero reported | − | 4: Dilations 1: Aneurysm | 0 abnormalities |
| Fabi (2021)90 | <55% | Troponin <19.8 ng/L BNP <100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 7: Dilations 4: Aneurysms | 8: unspecified arrhythmias |
| Farooqi (2021)91 | <50% | Troponin <14 ng/L Pro-BNP < 242 pg/mL | CMR | Lake Louise Criteria | 4: Dilations 3: Aneurysms | Not reported |
| Feldstein (2020)13 | <55% | Troponin - defined on basis of hospital cutoff for upper limit normal range; BNP <400 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 15: Aneurysms | 22: unspecified arrhythmias |
| Feldstein (2021)18 | <55% | Troponin - defined on basis of hospital cutoff for upper limit normal range BNP ≤1000 pg/mL | Not reported or able to determine | − | 57: Aneurysms | 46: unspecified arrhythmias |
| Felsenstein (2021)42 | Not defined | Troponin ≤ 15 ng/L BNP < 400 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | Not specified b/w dilations/aneurysms | 2: unspecified arrhythmias |
| Felsenstein (2020)56 | Not defined | Troponin < 14ng/L BNP < 400 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 12: Dilations 2: Aneurysms | 1: junctional rhythm, 1: bradycardia w/ RBBB |
| Garcia-Salido (2020)4 | Not defined | Troponin < 19ng/L Pro-BNP < 450 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 2: Dilations 1: Aneurysm | Not reported |
| Godfred-Cato (2020)85 | Not defined | only gave median/range | Predetermined Criteria | Criteria not defined for reader | Not specified b/w dilations/aneurysms | 0 abnormalities |
| Grimaud (2020)38 | <55% | only gave median/range | Predetermined Criteria | ↑Troponin, ST seg ↑or↓ on ECG, regional wall motion abnormalities with ↓ LV function by ECHO | 0 dilations or aneurysms | 20 Unspecified Sinus tachycardia w/ ST-elevation or depression |
| Gun (2021)15 | <55% | Troponin < 14 pg/mL Pro-BNP < 125 pg/mL | Predetermined Criteria | ↑Pro-BNP & ↑Troponin | 1: Dilation | 1: Atrial fibrillation |
| Haslak (2021)57 | Not defined | Not mentioned | Predetermined Criteria | Echo findings (coronary dilaions, pericardial effusions, or ↓systolic function) and ↑Troponin & Pro-BNP | 6: Dilations | Not reported |
| Harasheh (2020)93 | <55% | Troponin <0.04 ng/mL, BNP <1100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 7: Dilations 2: Aneurysms | Not reported |
| Harasheh (2021)58 | <55% | Troponin <0.04 ng/mL, BNP <1100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 5: Dilations 3: Dual coronary involvement | Not reported |
| Jain (2020)59 | <50% | only gave median/range & described as elevated | Predetermined Criteria | LVEF<50% on ECHO and/or ↑cardiac markers | 6: Dilations | 0 abnormalities |
| Kaushik (2020)60 | <50% | Troponin < 0.1 ng/mL BNP < 100 pg/mL Pro-BNP <450 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 2: Dilations 6: Aneurysms | Not reported |
| Kavurt (2021)2 | <55% | Troponin < 45 ng/L Pro-BNP < 500 ng/L | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 2: Aneurysms | 7: Unspecified abnormalities |
| Kiymet (2021)3 | <50% | Did not measure | Not reported or able to determine | − | "involvement" otherwise no specification | Not reported |
| Kobayashi (2021)5 | <55% | Troponin < 0.1 ng/mL BNP < 100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 2: Dilations 4: Aneurysms | 4: Unspecified AV Block |
| Kolganova (2020)94 | <60% | Troponin < 10 pg/mL | Not reported or able to determine | − | Not specified b/w dilations/aneurysms | Not reported |
| Kostik (2021)61 | Not defined | Troponin < 25 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | conjoined number for dilation/aneurysm | Not reported |
| Kucera (2021)62 | <55% | Troponin <34 ng/L Pro-BNP < 1000 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 11: Aneurysms | 9: QTc Prolongation, 3: 1°AV Block, 1: Junctional rhythm |
| Lee (2020)63 | <55% | Troponin < 0.09 ng/mL BNP < 100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 2: Dilations 4: Aneurysms | Not reported |
| Lima-Setta (2020)16 | Not mentioned | Troponin < 0.1ng/mL Pro-BNP < 502 ng/L | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 9: Dilations | 6: unspecified ECG abnormalities |
| Mamishi (2020)40 | Not mentioned | Troponin <0.1 ng/mL | Predetermined Criteria | Criteria not defined for reader | 14: Dilations | Not reported |
| Matsubara (2020)64 | <55% | Troponin < 0.3ng/mL BNP < 500 pg/mL | Predetermined Criteria | ↑BNP and Troponin | 1: Dilation | Not reported |
| Miller (2020)27 | Not mentioned | Troponin elevated (according to lab) Pro-BNP <1000 pg/mL | Predetermined Criteria | Criteria not defined for reader | Not specifically defined | 116: Ventricular arrhythmias, 107: SVT, 23: AV Block unspecified |
| Minocha (2021)17 | <55% | Troponin <0.04 ng/mL BNP <100 pg/mL | CMR | Lake Louise Criteria | 2: Dilations | 8: T-wave changes, 6: ST-seg abnormalities, 3: QTc prolonged |
| Mohsin (2021)65 | <50% | No specification | Predetermined Criteria | Age related tachycardia, tachypnea, hypotension, ↑ Pro-BNP/Troponin, ↓LV function | 2: Dilations (Z-score 2-3), 2: Aneurysm (Z-score >3), 6/10 Echo brightness | Not reported |
| Nino Taravilla (2021)66 | Not defined | Troponin < 0.03ng/mL Pro-BNP < 125 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 4: Dilations (Z score 2.5-2.8), 1: Aneurysm ( Z score 6) | 0 abnormalities |
| Ocal Demir (2021)39 | <50% | Only median & IQRs given | Predetermined Criteria | LV dysfunction on ECHO and ↑cardiac markers | 2: Dilations | 15: QT prolongation, ST-Depression, ST-Elevation |
| Ozsurekci (2021)67 | Not defined | Only min and max given | Predetermined Criteria | LV dysfunction on ECHO and ↑cardiac markers | 0 dilations or aneurysms | Not recorded |
| Patnaik (2021)99 | Not defined | Not defined | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 0 dilations or aneurysms | Not recorded |
| Pereira (2021)68 | Not defined | Troponin < 0.014 ng/mL | Predetermined Criteria | Criteria not defined for reader | 3: Aneurysms | 0 abnormalities |
| Pick (2021)69 | <55% | not mentioned | Not reported or able to determine | − | 12: Aneurysms | Not reported |
| Pouletty (2020)70 | <50% | only median and IQR given | Predetermined Criteria | cardiogenic shock or acute LVEF <50% and abnormal troponin and/or Pro-BNP | 3: Dilations | 0 abnormalities |
| Racko (2021)19 | Not defined | Troponin < 19 ng/mL Pro- BNP < 125 pg/mL | Predetermined Criteria | ↑cardiac biomarkers with clinical signs and ECG and ECHO findings; MRI in 1 pt | 2: Dilations | 11: ST/T-wave changes, 6: Bradyarrhythmias, 6: Tachyarrhythmias, 8: Intraventricular conduction defects, 1: AV dissociation |
| Rakha (2021)71 | Estimated using M-mode with fractional shortening assessment; <25% | Troponin < 0.01 ng/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 5: Aneurysms | 3: SVT |
| Ramcharan (2020)22 | EF <55% FS <25% | Troponin < 35 ng/L Pro-BNP < 400 pg/mL | Predetermined Criteria | ECHO findings and ECG | 6: Dilated, 1: Aneurysm, 6: Prominent but normal measurements | 8: T-wave changes, 2: PR interval increased |
| Regan (2021)24 | Not mentioned | Not mentioned | Not reported or able to determine | − | Not defined | 4: 1°AV Block, 4: Junctional 14: Prolonged QTc, 6: Prolonged QRS |
| Sanil (2021)72 | <55% | Troponin < 50 ng/L | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 6: Dilations | 10: ST-segment changes, 3: Junctional rhythm, 3: 1°AVB, 2: Accelerated idioventricular, 3: VT |
| Savas Sen (2021)73 | <55% | Troponin < 0.039 ng/mL Pro-BNP < 93 pg/mL | Predetermined Criteria | cardiac dysfunction (LVEF <55%) on ECHO, ↑Troponin and/or ↑Pro-BNP | 5: Dilations | 7: Bradycardia |
| Shabab (2021)20 | not defined | Troponin < 17ng/L BNP < 101 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 12: Dilations | 20: Non-specific ST-segment findings, prolonged QT, low voltage QRS |
| Shobhavat (2020)74 | <55% | Troponin < 15.6 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 5: Dilations | 1: Junctional rhythm, 1: SVT, 1: RBBB |
| Sirico (2021)28 | Not defined | Troponin < 34 ng/L | CMR | Lake Louise Criteria | 6: Dilations | 7: Sinus Bradycardia, 2: Unspecified AV Block, 2: Unspecified abnormalities |
| Son (2021)75 | <55% | only median & IQRs given | Not reported or able to determine | − | 64: Aneurysms | Not reported |
| Sozeri (2021)21 | <50% | only median & IQRs given | Predetermined Criteria | Criteria not defined for reader | 2: Dilations | 11: Unspecified Bradyarrhythmias |
| Swann (2020)95 | not defined | Not mentioned | Predetermined Criteria | Criteria not defined for reader | 3: Dilations, 2: Aneurysms | 1: Unspecified Heart Block, 1: Junctional rhythm, 1: T- wave inversion |
| Theocharis (2020)76 | <55% | Not mentioned | CMR | Lake Louise Criteria | 8: Dilations | Not reported |
| Tibi (2021)77 | Not defined | Troponin < 34 ng/l Pro-BNP < 391 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Aneurysm | Not reported |
| Tiwari (2021)96 | <55% | Troponin < 20 ng/l Pro-BNP < 125 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 4: Dilated, 8: Aneurysms, 3: Hyperechoic | 1: 3°AV Block, 6: bradycardia |
| Tolunay (2021)78 | Not defined | Troponin <16 ng/l | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 0 dilations or aneurysms | Not reported |
| Torres (2020)86 | <60% | Not mentioned | Not reported or able to determine | − | not specifically defined | Not reported |
| Toubiana (2020)97 | <60% | Troponin <26 pg/mL BNP <100 ng/L | Predetermined Criteria | LV dysfunction on ECHO, ECG changes, and needing inotropes | 5: Dilations, 3: Hyperechoic | 1: Prolonged QTc, 1:ST-Seg Elevation |
| Türe (2021) | Not defined | Troponin <11.6 ng/L Pro-BNP <75 pg/mL | Not reported or able to determine | − | 2: Dilations | 4: ST-Seg changes |
| Valverde (2021)79 | EF < 55%, Fractional shortening < 25% | Troponin < 0.01 ng/mL BNP < 24.5 pg/mL Pro-BNP < 125 pg/mL | Strict Criteria and some also had CMR | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology; Lake Louise Criteria | Can't calculate w/o double counting | 63: Abnormal ST- seg, 18: Prolonged PR, 11: BBB, 9: Prolonged QTc, 6: Unspecified AVB |
| Vukomanovic (2021)80 | only mean and SD given | only median & IQRs given | Zero reported | − | 2: Dilations | 6: Prolonged QTc |
| Whittaker (2020)81 | Not defined | Troponin <15 ng/L Pro-BNP <100 pg/mL | Strict Criteria | EF < 55%, ↑Troponin and/or Pro-BNP, and symptomatology | 1: Dilation 7: Aneurysms | 1: 1° AV Block, 1: 2° AV Block, 1: Wide Complex Tachycardia 1: AFib |
| Yagnam (2021)98 | Not defined | Troponin < 60 ng/dL Pro-BNP <300 pg/mL | Not reported or able to determine | − | 7: Dilations 2: Aneurysms | 1: VT w/ Pulse |

**Legend**

AFib – Atrial Fibrillation

AV – AtrioVentricular

BBB- Bundle Branch Block

ECG - Electrocardiogram

RBBB – Right Bundle Branch Block

SVT – Supra Ventricular Tachycardia

PVC – Premature Ventricular Contraction

VT – Ventricular Tachycardia

A picture containing nature, rain

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**Supplementary Figure S1:** Meta-analysis of the prevalence of Vasopressor Utilization reported in eighty-six studies (A)

Diagram

Description automatically generated

**Supplementary Figure S1:** Meta-analysis of the prevalence of Vasopressor Utilization in low and moderate risk of bias studies (B)

Diagram, engineering drawing

Description automatically generated

**Supplementary Figure S2:** Meta-analysis of the prevalence of LV Systolic Dysfunction reported in eighty-eight studies (A)

A picture containing diagram

Description automatically generated

**Supplementary Figure S2:** Meta-analysis of the prevalence of LV Systolic Dysfunction in low and moderate risk of bias studies (B)

A picture containing diagram

Description automatically generated

**Supplementary Figure S3.** Meta-analysis of the prevalence of myocarditis reported in eighty studies (A)

Diagram

Description automatically generated

**Supplementary Figure S3.** Meta-analysis of the prevalence of myocarditis in all in low and moderate risk of bias studies (B)

Diagram

Description automatically generated with medium confidence

**Supplementary Figure S4.** Meta-analysis of the prevalence of electrocardiographic abnormalities reported in fifty-nine studies (A)

Diagram

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**Supplementary Figure S4.** Meta-analysis of the prevalence of electrocardiographic abnormalities in low and moderate risk of bias studies (B)

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**Supplementary Figure S5.** Meta-analysis of the prevalence of coronary abnormalities reported in ninety studies (A)

Chart

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**Supplementary Figure S5.** Meta-analysis of the prevalence of coronary abnormalities in low and moderate risk of bias studies (B)

**Supplementary Figure S6.** Meta-analysis of the prevalence of ECMO runs reported in seventy-seven studies (A)

Table

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**Supplementary Figure S6.** Meta-analysis of the prevalence of ECMO runs in low and moderate risk of bias studies (B)

A picture containing chart

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Table

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**Supplementary Figure S7.** Meta-analysis of the prevalence of mortality reported in ninety studies (A)

Table

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**Supplementary Figure S7.** Meta-analysis of the prevalence of mortality in in all in low and moderate risk of bias studies (B)