Investigations of Potential Covid-19 Vaccine Harms: Myocarditis

Rick Bradford, 19/11/22

1. Outline of Investigation

By July 2022 there were more than 1,250 published studies or case reports which considered unintended medical effects of the Covid-19 vaccines, as listed here. The largest number of publications (164) related to Pemphigus Vulgaris, an autoimmune condition causing painful blistering on the skin and mucous membranes. The second largest number of publications (134) were for cardiac conditions, of which by far the most common (94 papers) was Myocarditis (damage to the heart muscle). The latter 94 papers are listed in the Appendix.

Of the 94 papers considering Myocarditis, 41 were detailed reports of single cases, 18 were general studies (e.g., of mechanisms), and 35 were reports or analyses of multiple cases. All told the papers included studies of 3,821 cases of Myocarditis – but not all attributable to vaccines. The six papers which analysed data from the largest number of cases involved 1626, 1077, 269, 236, 214 and 53 cases. I first summarise the findings of those top six papers.

Those papers are focussed on data collected in 2021, and hence refer largely or solely to people who had had one or two doses of the Covid-19 vaccines (not boosters). Whilst these studies clearly and unambiguously establish a connection between the Covid-19 vaccines and raised incidence of Myocarditis, the elevation in rates they report are low, between 1 and 28 cases of clinical-level Myocarditis per 100,000 vaccinees.

I then go on to consider a couple of more recent publications which address an issue that arises from the examination of the earlier papers: what about sub-clinic levels of heart damage? Evidence is emerging that sub-clinical damage is extremely common, with rates perhaps two or three orders of magnitude more common than the reported clinical Myocarditis cases. Damage appears to accumulate with repeated doses.

In what follows please note that “troponin” is a substance which is released into the blood when heart muscle is damaged. It is commonly used to diagnose heart attacks after the event, for example. Its relevance will become clear when we look at sub-clinical levels of Myocarditis.

I close with some general observations from leading cardiologists.

As a lay person I was already aware of publications linking the Covid-19 vaccines to Myocarditis in December 2021. Some of the papers reviewed below were published as early as June 2021 (and reports from Israel go back as early as February 2021). And yet, in November 2022, the NHS is still pushing people in the UK to get their 4th dose.

2. The Six 2021-Based Papers

2.1 Qualitative Results

Ref.1: "*SARS-CoV-2 Vaccination and Myocarditis in a Nordic Cohort Study of 23 Million Residents*", Karlstad et al. JAMA Cardiol. 2022 Jun 1;7(6):600-612. Doi:10.1001/jamacardio.2022.0583.

1077 myocarditis patients plus 1149 pericarditis. All four Nordic countries.

Conclusion: This large cohort study indicated that both first and second doses of mRNA vaccines were associated with increased risk of myocarditis and pericarditis. The second dose was associated with higher risk of myocarditis.

Ref.2: "*Myocarditis Cases Reported After mRNA-Based COVID-19 Vaccination in the US From December 2020 to August 2021*", Oster et al. JAMA. 2022 Jan 25;327(4):331-340. doi: 10.1001/jama.2021.24110.

USA: Among 192,405,448 persons receiving a total of 354,100,845 mRNA-based COVID-19 vaccines during the study period, there were 1991 reports of myocarditis to VAERS and 1626 of these reports met the case definition of myocarditis.

Conclusion: Based on passive surveillance reporting in the US, the risk of myocarditis after receiving mRNA-based COVID-19 vaccines was increased across multiple age and sex strata and was highest after the second vaccination dose in adolescent males and young men.

Ref.3: "*SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study*", Husby et al. BMJ. 2021 Dec 16;375:e068665. doi: 10.1136/bmj-2021-068665.

Denmark: 269 participants developed myocarditis or myopericarditis.

Conclusion: Vaccination with mRNA-1273 (Moderna) was associated with a significantly increased risk of myocarditis or myopericarditis in the Danish population, primarily driven by an increased risk among individuals aged 12-39 years, while BNT162b2 (Pfizer) vaccination was only associated with a significantly increased risk among women.

NB: That last conclusion should not be misinterpreted as stating that the absolute risk to women exceeded the absolute risk to men. The paper found the opposite (as did all the papers), see below.

Ref.4: "*Myocarditis following COVID-19 vaccination in adolescents and adults: a cumulative experience of 2021*", Ilonze and Guglin. Heart Fail Rev. 2022 Nov;27(6):2033-2043. doi: 10.1007/s10741-022-10243-9.

238 Myocarditis cases within 60 days of vaccination, 87% male. Data taken from others' case reports. Myocarditis occurred most commonly after the Pfizer-BioNTech mRNA vaccine (n = 183; 77%) and after the second dose.

Ref.5: "*COVID-19 vaccines and myocarditis*", Kerneis et al. Arch Cardiovasc Dis. 2021 June-July; 114(6): 515–517. 2021 Jun 26. doi: 10.1016/j.acvd.2021.06.001

European: Used the international VigiBase database up to 7 May 2021, which then contained a total of 25,728,751 adverse drug reaction reports (over all time and all types of drug or vaccine), including 8664 reports of myocarditis, of which 1251 involved a suspected culprit

vaccine. Among these latter reports, 214 (17.1%) were associated with COVID-19 vaccines. 64% were male.

Conclusion: Vaccines are a known, but rare, cause of myocarditis, considering the population exposed. Despite the inherent limitation of such an analysis, this report suggests that, similar to other vaccines, mRNA COVID-19 vaccines are associated with myocarditis.

Ref.6: "*Myocarditis Following COVID-19 Vaccination: A Systematic Review of Case Reports*", Behers et al. Yale J Biol Med. 2022 Jun 30;95(2):237-247. eCollection 2022 Jun.

53 eligible case reports identified up to 3 February 2022.

Conclusion: This study revealed an observable association between COVID-19 vaccines and myocarditis. However, the clinical course and prognosis seem favourable and less prevalent than those conferred from natural infection. Of the 52 cases 42 (80.8%) occurred after the second dose. (The paper quotes a source suggesting that patients presenting with primary Covid-19 infection had a 5% chance of developing myocarditis/pericarditis).

2.2 Quantitative Results for Myocarditis Rates and Troponin Assays

Ref.1: The findings were compatible with between 4 and 7 excess events within 28 days per 100,000 vaccinees after BNT162b2 (Pfizer), and between 9 and 28 excess events per 100,000 vaccinees after mRNA-1273 (Moderna).

Ref.2: The rates of myocarditis were highest after the second vaccination dose in young males. Rates below are per dose so should be doubled for people with two doses,

- Males aged 12 to 15 years: 7.07 per 100,000 doses of the BNT162b2 (Pfizer)
- Males aged 16 to 17 years: 10.59 per 100,000 doses of the BNT162b2 (Pfizer)
- Males aged 18 to 24 years: 5.24 and 5.63 per 100,000 doses of the BNT162b2 (Pfizer) and the mRNA-1273 (Moderna) vaccines respectively.
- Males comprised 82% of the myocarditis cases for whom sex was reported.
- There were 826 cases of myocarditis among those younger than 30 years of age who had detailed clinical information available; of these cases, 792 of 809 (98%) had elevated troponin levels.

Ref.3: The estimated rates of Myocarditis per 100,000 vaccinees within 28 days of vaccination were,

- BNT162b2 (Pfizer): females 1.3, males 1.5, 12-39 year olds 1.6
- mRNA-1273 (Moderna): females 2.0, males 6.3, 12-39 year olds 5.7

Increased troponin levels was used as an outcome marker.

Ref.4: No quantitative results on rates.

Of the patients who had cardiac troponin recorded (n = 212), all patients had elevated troponins.

Ref.5: No quantitative results on rates.

Ref.6: No quantitative results on rates.

Troponin levels were measured in each of the 53 reports, with elevated ranges present in all but one (98.1%).

2.3 Potential shortcomings of the quantitative results

Ref.1

- Only cases within 28 days of vaccination were considered as potentially attributable to the vaccines, so cases beyond that time period would be missed;
- 20,211 persons with any myocarditis or pericarditis prior to vaccine roll-out were excluded. This means that those people particularly susceptible to the condition were discounted;
- The study terminated on 5 October 2021 and so would not include boosters (3rd vaccinations). This is significant because the evidence indicates a cumulative adverse effect.
- Many cases of Myocarditis might be either sub-clinical or insufficiently severe for medical treatment to have been sought, hence the number of cases might be under-estimated. This issue is taken up in section 3, below.

Ref.2

- This study relied on VAERS reports which are known to under-report by a large factor. Comparison with Ref.1 suggests under-reporting by at least a factor of 5.5 (i.e., 1626 cases out of a population of 192M, cf. 1077 cases out of a population of 23M), which is very credible as some sources suggest under-reporting by up to an order of magnitude.
- There is a logical flaw in using VAERS reports to examine any relationship between vaccination and a disease if such a relationship is not expected, or not known to be expected by the public, and the effect is delayed beyond a week or two – because individuals will probably cease to associate a problem with vaccination that occurred (say) two weeks earlier. In addition, most individuals would not have the wherewithal to raise a VAERS report.
- Data was taken from VAERS up to 30 September 2021, and so would not include boosters (3rd vaccinations). This is significant because the evidence indicates a cumulative adverse effect.

Ref.3

The data cutoff was 5 October 2021, so boosters do not figure in this study. This is significant because the evidence indicates a cumulative adverse effect.

Ref.4

Data from the whole of 2021, so any boosters would probably be confined to the older age groups. No rate quantification deduced.

Ref.5

Data to 7 May 2021, so essentially just for single-dosed people. Despite that an effect was reported.

Ref.6

Data to 3 February 2022, but a small study with only 53 cases.

3. Emerging Data on Sub-Clinical Heart Damage

Two key studies were reported in August 2022 which are less reassuring regarding the incidence of heart damage associated with Covid-19 vaccines, one from Thailand and one from Switzerland. Professor of Epidemiology, Dr Vinay Prasad, has recorded a presentation of their content at layperson level. I summarise their content below.

3.1 The Thai Study

Thai Study: "*Cardiovascular Effects of the BNT162b2 mRNA COVID-19 Vaccine in Adolescents*", Mansanguan et al. preprints.org > medicine & pharmacology > cardiology > doi: 10.20944/preprints202208.0151.v1.

This prospective cohort study enrolled students from two schools aged 13–18 years who received the second dose of the BNT162b2 mRNA (Pfizer) Covid-19 vaccine. 314 participants were enrolled; of these, 13 participants were lost to follow up, leaving 301 participants for analysis.

The most common cardiovascular effects were tachycardia (7.64%), shortness of breath (6.64%), palpitation (4.32%), chest pain (4.32%), and hypertension (3.99%). Seven participants (2.33%) exhibited at least one elevated cardiac biomarker or positive lab assessments.

Cardiovascular effects were found in 29.24% of patients, ranging from tachycardia, palpitation, and myopericarditis. Myopericarditis was confirmed in one patient after vaccination. Two patients had suspected pericarditis and four patients had suspected subclinical myocarditis.

The take-away message is the very high prevalence of adverse cardiac effects, though mostly at a level that would not be picked up in the earlier studies which concentrated on hospitalisation cases of Myocarditis. Dr Vinay Prasad has summarised the most significant findings of this Thai study thus,

"*The story are rates of cardiac biomarkers and how often they are elevated. 3 patients had chest pain and biomarker elevation; 4 patients had no chest pain but elevated cardiac biomarkers. These were all in boys.*

7 out of 202 boys had overt or subclinical myocarditis (3.5%) or roughly 2 orders of magnitude more common than prior reports from passive adverse event reporting of myocarditis."

Cardiologist Anish Koka has published a detailed review of the Thai study. It opens with this statement, "*It has long ago been established that the messenger RNA vaccines cause myocarditis, the controversial question now relates to what the actual rate of myocarditis is*". As Prasad observes, the Thai study suggests alarmingly high rates of subclinical Myocarditis, around 3 cases per 100, not the 1 to 28 cases per 100,000 suggested by the earlier clinical studies. Koka has this to say about the tendency in the medical literature recently to be dismissive about "mild Myocarditis"…

"I can assure you, and the mostly ER doctor contingent on twitter that brays about "mild myocarditis", that there are no cardiologists who want to see their child have a cardiac troponin that is 2x normal or 40x normal after administration of some therapeutic. What exactly does one to do with an adolescent with a troponin that is 2x normal that is

asymptomatic? Given the theoretical risk of malignant cardiac arrhythmias I would imagine most cardiologists would follow the current guidelines for myocarditis and advise against strenuous cardiac activity for some months. Sudden cardiac death in young athletes is obviously a fearsome complication that is very real and it is likely some proportion of sudden cardiac death is from subclinical myocarditis."

The subtext here relates to the many instances of young sportsmen collapsing whilst playing, the significance of which has been minimised or ignored by the authorities.

3.2 The Swiss Study

The Swiss Study: "*Myocardial Injury after COVID-19 mRNA booster vaccination*", Professor Christian Mueller, University Hospital Basel, Switzerland. Presented at the European Society Cardiology Congress, 28 August 2022.

Mueller described this work as an "investigator-initiated, industry-independent, active surveillance study". He notes that Myocarditis following Pfizer or Moderna vaccination has thus far been considered rare (and quotes 0.0035%), but that such estimates have been based on passive surveillance which only detects severe cases requiring hospitalisation. However, he states that vaccine-associated injury is much more common as symptoms may be mild, unspecific or absent. The Swiss study aims to determine the true rate of vaccine-induced heart damage.

The bulk of cases in the study had had a booster, i.e., three vaccine doses (714 out of 777).

The study used hs-cTnT (high-sensitive cardiac troponin) as a marker for damage. Recall from the other studies that clinical Myocarditis was almost always associated with raised troponin levels, so the use of troponin as a marker for vaccine-related heart damage has been established.

Of the 777 vaccinees in the study cohort, 40 had troponin raised above an action level. Of these 40, 18 cases were adjudicated as having a non-vaccine related cause for the troponin elevation, leaving 22 cases of troponin elevation attributed to vaccination.

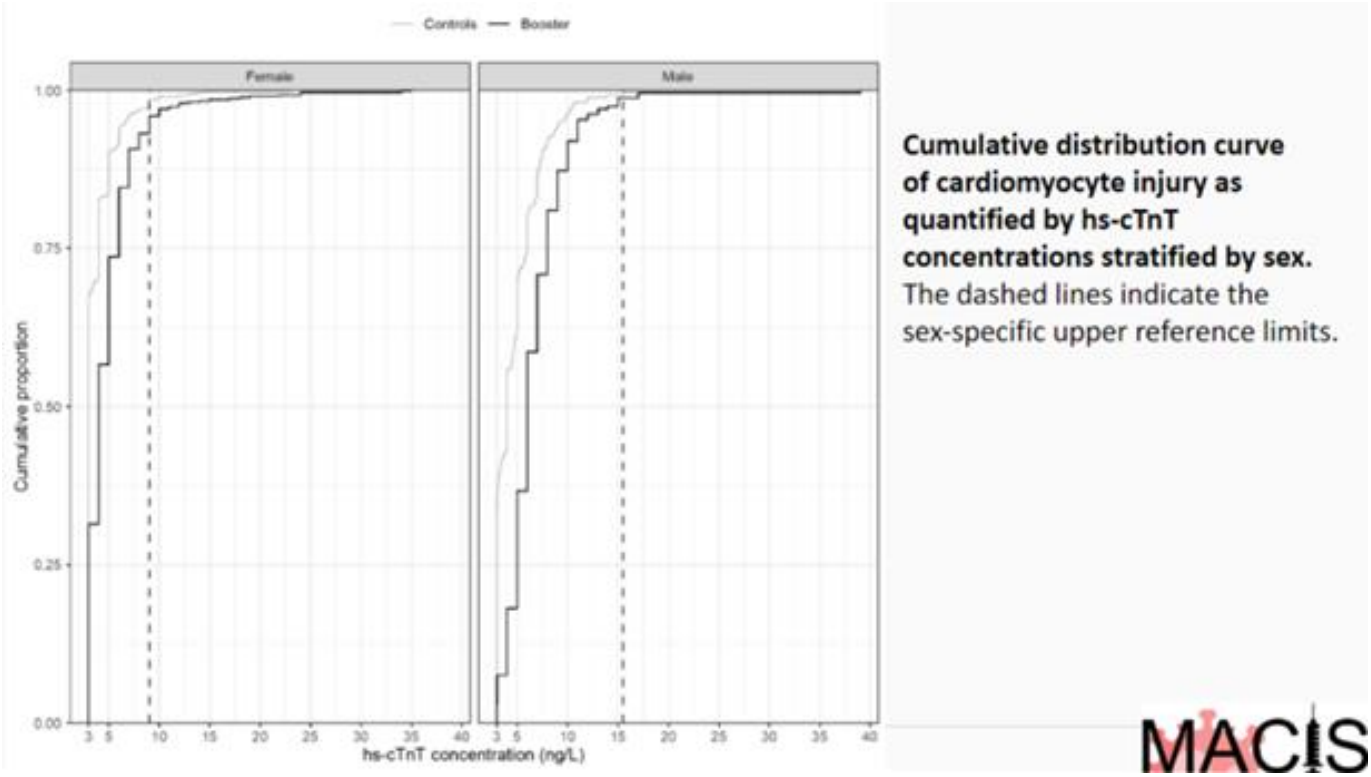
This implies a vaccine-related Myocardial injury rate of 2.8% (22 out of 777). That result is very similar to the outcome of the Thai study.

Mueller et al performed a more detailed analysis of their troponin data using covariant matching from a control group. This involves considering the distribution of covariates (sex, age, ethnicity, comorbidities, etc.) in the study population of 777 and contriving a subset of a large unvaccinated control group to have matching distributions of these covariates. The idea is that any difference in troponin between the two groups can then be attributed to vaccination (in this case, including boosters).

The result is presented in Figure 1 which shows that the booster-vaccinees have elevated troponin at all levels. In other words, the effect of vaccination is not only to increase serious clinical Myocarditis (at the highest troponin level) but to increase troponin (i.e., to cause damage) across the whole range of levels.

One has to be careful: this is just one study and covariate matching is a technique prone to error. However, the results are consistent with the hypothesis that mRNA Covid-19 vaccination causes heart damage to everyone who is vaccinated, to some degree…and that such damage is cumulative with further doses.

Figure 1: From the Swiss Study. Pale grey is the control; dark grey/black are the vaccinees.



4. And Finally…Dr Aseem Malhotra

Dr Aseem Malhotra is a British, award winning cardiologist. He was initially publicly active in promoting the COVID-19 vaccines. In recent months, following the death of his father from what may have been vaccine injury, he has become extremely outspoken on media platforms about vaccine-related harms, calling for a moratorium on their use pending thorough investigation. In September 2022 Malhotra published two devastating critiques of the mRNA vaccines in terms of both efficacy and safety as well as deconstructing the root causes of the debacle of mismanagement that has been the hallmark of the Covid era under the undue influence of the "tainted dollar of the medical-industrial complex".

Malhotra Part 1: "*Curing the pandemic of misinformation on COVID-19 mRNA vaccines through real evidence-based medicine - Part 1*", Aseem Malhotra. Journal of Insulin Resistance | Vol 5, No 1 | a71 | DOI: https://doi.org/10.4102/jir.v5i1.71. 26 September 2022.

Conclusion: It cannot be said that the consent to receive these agents (the Covid-19 vaccines) was fully informed, as is required ethically and legally. A pause and reappraisal of global vaccination policies for COVID-19 is long overdue.

Malhotra Part 2: "*Curing the pandemic of misinformation on COVID-19 mRNA vaccines through real evidence-based medicine - Part 2*", Aseem Malhotra. Journal of Insulin Resistance | Vol 5, No 1 | a72 | DOI: https://doi.org/10.4102/jir.v5i1.72. 26 September 2022.

Background: Authorities and sections of the medical profession have supported unethical, coercive, and misinformed policies such as vaccine mandates and vaccine passports, undermining the principles of ethical evidence-based medical practice and informed consent. These regrettable actions are a symptom of the 'medical information mess': The tip of a

mortality iceberg where prescribed medications are estimated to be the third most common cause of death globally after heart disease and cancer.

Results: Underlying causes for this failure include regulatory capture – guardians that are supposed to protect the public are in fact funded by the corporations that stand to gain from the sale of those medications.

Conclusion: There is a strong scientific, ethical and moral case to be made that the current COVID vaccine administration must stop until all the raw data has been subjected to fully independent scrutiny. Looking to the future the medical and public health professions must recognise these failings and eschew the tainted dollar of the medical-industrial complex. It will take a lot of time and effort to rebuild trust in these institutions, but the health – of both humanity and the medical profession – depends on it.

Quotes from interviews of Aseem Malhotra,

Quote 1: "*The evidence [of vaccine injury] is so strong it shouldn't even be worthy of debate*"

Quote 2: "*Until proven otherwise, it is very likely that Covid-19 vaccines played a significant or primary role in all unexplained heart attacks, strokes, cardiac arrhythmias, and heart failure since 2021*"

Quote 3: "*What's happened with the COVID-19 vaccine is not an anomaly. If you trace things back, this is almost predictable, because of this increasing unchecked power…[this] will almost certainly go down as the greatest miscarriage of medical science, attack on democracy, damage to population health and erosion in…trust in medicine, that we will witness in our lifetime…*"

Appendix: The 94 papers investigating Myocarditis from React-19

Myocarditis in a 8yoM following Pfizer 2nd dose: https://pubmed.ncbi.nlm.nih.gov/35892184/
Myocarditis in 13yoM monochorionic diamniotic twins following 2nd dose of Pfizer:https://pubmed.ncbi.nlm.nih.gov/36008643/
Myocarditis in a 15yoM following 2nd dose of Pfizer with late gadolinium enhancement on cardiac MRI persisting over acute phase: https://pubmed.ncbi.nlm.nih.gov/36074060/
5 cases of covid-19 vaccine induced myocarditis in 5 teenagers, a case series with further follow-up:https://pubmed.ncbi.nlm.nih.gov/35329143/
Review of 40 cases of myocarditis adolescents in South Korea following covid-19 vaccination: https://pubmed.ncbi.nlm.nih.gov/35626870/
A systematic review of 53 case reports of myocarditis, age range 14-80: https://pubmed.ncbi.nlm.nih.gov/35782472/
1077 cases of myocarditis and 1149 pericarditis following vaccination in Nordic residents, a cohort study: https://pubmed.ncbi.nlm.nih.gov/35442390/
1626 cases of myocarditis in VAERS from Dec 2020-augut 2021, a review (JAMA): https://pubmed.ncbi.nlm.nih.gov/35076665/
Myocarditis/myopericarditis in 269 individuals, a population based Danish cohort study: https://pubmed.ncbi.nlm.nih.gov/34916207/
Myocarditis in adolescents and adults following vaccination in 2021, review of 238 cases: https://pubmed.ncbi.nlm.nih.gov/35449353/
Review of 40 published case reports of myocarditis following covid vaccination: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8887934/
Myopericarditis recurrence in a 27yoM after 3rd dose Pfizer: https://pubmed.ncbi.nlm.nih.gov/35602257/
Biopsy proven fulminant myocarditis in a 48yoF following 2nd dose Moderna: https://pubmed.ncbi.nlm.nih.gov/35187464/
Fulminant myocarditis in a 80yoF following Pfizer: https://pubmed.ncbi.nlm.nih.gov/35088026/
8 cases of myocarditis after mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34133884/
COVID-19 vaccine, myocardial infarction, and Kounis syndrome: https://pubmed.ncbi.nlm.nih.gov/35104343/
Myocarditis in a 17yoM following vaccination: https://pubmed.ncbi.nlm.nih.gov/35105392/
4 cases of myocarditis following Pfizer booster in Israel: https://pubmed.ncbi.nlm.nih.gov/35100809/
Moderna associated myopericarditis in a patient with a subclinical autoimmune predisposition: https://pubmed.ncbi.nlm.nih.gov/34868402/
Perimyocarditis in teens: https://pubmed.ncbi.nlm.nih.gov/34077949/
Vaccination associated myocarditis in Adolescents: https://pubmed.ncbi.nlm.nih.gov/34389692/
mRNA vaccination and myocarditis in adolescents: https://pubmed.ncbi.nlm.nih.gov/34393110/
Association of myocarditis with mRNA vaccination, a case review in children: https://pubmed.ncbi.nlm.nih.gov/34374740/
STEMI mimic: focal myocarditis in an adolescent patient after mRNA COVID-19 vaccine: https://pubmed.ncbi.nlm.nih.gov/34756746/
Recurrence of myocarditis after vaccination https://pubmed.ncbi.nlm.nih.gov/34166671/
Acute Myocardial Injury following COVID-19 vaccination: a case report and review of current evidence from VAERS: https://pubmed.ncbi.nlm.nih.gov/34219532/
Myocarditis in a 27yoM following Pfizer: CMR features: https://pubmed.ncbi.nlm.nih.gov/35626190/
Myocarditis in a 17yo Japanese male following Moderna: https://pubmed.ncbi.nlm.nih.gov/35495897/
Myocarditis and/or pericarditis after mRNA vaccination: head to head comparison of Moderna versus Pfizer: https://pubmed.ncbi.nlm.nih.gov/35750537/
Fulminant myocarditis requiring ECMO in a 60yoF following 2nd dose Pfizer: https://pubmed.ncbi.nlm.nih.gov/35650138/
Acute pericarditis following mRNA booster: https://pubmed.ncbi.nlm.nih.gov/35308666/
Myocarditis or pericarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/35749119/

Myocarditis with hemorrhagic pericardial effusion following Pfizer: https://pubmed.ncbi.nlm.nih.gov/35646594/
Myopericarditis in young adults presenting to the ED: https://pubmed.ncbi.nlm.nih.gov/34310793/
Pericarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34364831/
Symptomatic pericarditis following Pfizer: https://pubmed.ncbi.nlm.nih.gov/34693198/
Myocarditis following J&J in a healthy, young male: https://pubmed.ncbi.nlm.nih.gov/34420869/
Acute myocarditis after Moderna in young male: https://pubmed.ncbi.nlm.nih.gov/34308326/
Myocarditis in a healthy male: https://pubmed.ncbi.nlm.nih.gov/34229940/
Acute myocarditis following vaccination: https://pubmed.ncbi.nlm.nih.gov/34331307/
Acute myocarditis following Pfizer in a healthy man with previous COVID infection: https://pubmed.ncbi.nlm.nih.gov/34367386/
Acute fulminant myocarditis following mRNA vaccination requiring ECMO: https://pubmed.ncbi.nlm.nih.gov/34778411/
Myocarditis case report: https://pubmed.ncbi.nlm.nih.gov/34118375/
Case report: probable myocarditis after mRNA vaccine in a patient with arrhythmogenic left ventricular cardiomyopathy: https://pubmed.ncbi.nlm.nih.gov/34712717/
Myocarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34393273/
A late presentation of vaccine induced myocarditis: https://pubmed.ncbi.nlm.nih.gov/34660088/
Myocarditis in 24yoM: https://pubmed.ncbi.nlm.nih.gov/34268277/
Myocarditis in a 24yoM nurse after Pfizer: https://pubmed.ncbi.nlm.nih.gov/34400043/
Myocarditis in a 15yo following Pfizer: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8369878/
Myopericarditis in a 16yo following vaccination https://pubmed.ncbi.nlm.nih.gov/34133825/
Myocarditis in a 16yo, late gadolinium enhancement: https://pubmed.ncbi.nlm.nih.gov/34778788/
Myocarditis in a 22yoM following Moderna: https://pubmed.ncbi.nlm.nih.gov/34348657/
4 cases of myocarditis after 3rd dose of Pfizer: magnetic resonance imaging study (18-44yo): https://pubmed.ncbi.nlm.nih.gov/35310989/
5 cases of myocarditis after Pfizer: https://pubmed.ncbi.nlm.nih.gov/34092429/
7 cases of myocarditis after mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/35479661/
Myocarditis presenting with hyperechoic nodule in a 17yoM following Pfizer: https://pubmed.ncbi.nlm.nih.gov/35470603/
Myocarditis in a 18yoM following Pfizer: https://pubmed.ncbi.nlm.nih.gov/34804729/
Myocarditis in a middle aged male with significant left ventricular dysfunction following Pfizer: https://pubmed.ncbi.nlm.nih.gov/34795198/
70yoF with myocarditis following J&J Vaccination: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8270733/
Biopsy proven lymphocytic myocarditis following 1st mRNA vaccination in a 40yo: https://pubmed.ncbi.nlm.nih.gov/34487236/
Cardiac imaging of acute myocarditis following mRNA in a 24yoM: https://pubmed.ncbi.nlm.nih.gov/34402228/
Cardiac MRI findings in young adults following mRNA vaccination: a case series: https://pubmed.ncbi.nlm.nih.gov/34496880/
Case report: probable myocarditis after mRNA vaccine in a patient with arrhythmogenic left ventricular cardiomyopathy: https://pubmed.ncbi.nlm.nih.gov/34712717/
Myocarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34393273/
A rare case of myocarditis and pulmonary embolism after Pfizer: https://pubmed.ncbi.nlm.nih.gov/35343473/
A late presentation of vaccine induced myocarditis: https://pubmed.ncbi.nlm.nih.gov/34660088/
5 cases of myocarditis after Pfizer (age 16 and up): https://pubmed.ncbi.nlm.nih.gov/34092429/
Myocarditis in a 13yoM following Pfizer: https://pubmed.ncbi.nlm.nih.gov/35475062/
Follow-up cardiac magnetic resonance in 7 children with Pfizer vaccine associated myocarditis (80% with persistent abnormalities at 90 days): https://pubmed.ncbi.nlm.nih.gov/35482094/

7 cases of myocarditis after mRNA vaccination (age 16 and up): https://pubmed.ncbi.nlm.nih.gov/35479661/
Followup CMR imaging in 15 patients 6 months after Pfizer associated myocarditis (age 14-19): https://pubmed.ncbi.nlm.nih.gov/35320390/
Follow-up cardiac magnetic resonance (CMR) in 7 children with Pfizer vaccine associated myocarditis: https://pubmed.ncbi.nlm.nih.gov/35482094/
Followup CMR imaging in 15 patients 6 months after Pfizer associated myocarditis: https://pubmed.ncbi.nlm.nih.gov/35320390/
2 cases of myocarditis presenting with ST segment elevation in adolescent males after Pfizer: https://pubmed.ncbi.nlm.nih.gov/34180390/
Cardiac complications following mRNA vaccination: a systematic review of case reports and case series: https://pubmed.ncbi.nlm.nih.gov/34921468/
Myopericarditis following mRNA vaccination: the role of cardiac biomarkers and multimodality imaging: https://pubmed.ncbi.nlm.nih.gov/34487161/
Myocarditis should be consider in those with a troponin rise and unobstructed arteries following Pfizer vaccination: https://pubmed.ncbi.nlm.nih.gov/34463755/
Myocarditis Associated with COVID-19 vaccination: echocardiography, cardiac tomography, and magnetic resonance imaging findings: https://pubmed.ncbi.nlm.nih.gov/34428917/
Cardiac magnetic resonance characteristics of acute myocarditis occuring after mRNA vaccine immunization: https://pubmed.ncbi.nlm.nih.gov/34787887/
Fulminant myocarditis and systemic hyperinflammation in 2 patients following mRNA: https://pubmed.ncbi.nlm.nih.gov/34416319/
2 cases of histological confirmed myocarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34407340/
Myocarditis and Pericarditis: 2 case reports: https://pubmed.ncbi.nlm.nih.gov/34277198/
Two cases of myocarditis https://pubmed.ncbi.nlm.nih.gov/34166884/
3 cases of cardiac manifestation following Pfizer: https://academic.oup.com/qjmed/advance-article/doi/10.1093/qjmed/hcab177/6311674
4 cases of Myocarditis and their Cardiac MRI findings: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8245050/
4 cases of myocarditis: https://pubmed.ncbi.nlm.nih.gov/34396358/
6 cases of men age 17-37 with myocarditis: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8219373/
8 cases of myocarditis in adolescents following Pfizer: https://pubmed.ncbi.nlm.nih.gov/34319393/
13 cases of Myocarditis in adolescents following Pfizer: https://www.jpeds.com/article/S0022-3476(21)00665-X/fulltext
Review of 15 published cases of myocarditis: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8272967/
Myocarditis and pericarditis due to mRNA vaccines in 19 cases: https://pubmed.ncbi.nlm.nih.gov/34805376/
Myocarditis in 23 military members: https://jamanetwork.com/journals/jamacardiology/fullarticle/2781601
Review of 29 published cases of acute myopericarditis following mRNA vaccination: https://pubmed.ncbi.nlm.nih.gov/34356586/
Review of 214 myocarditis cases:: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8233865/