

## **Reports on myocarditis caused by current mRNA vaccines suggest proactivity in identifying cases is needed**

### **Abstract**

SARS-CoV-2 has led to a global pandemic that resulted in a mass vaccination program in many western countries to combat the spread and severity of the illness caused by the virus. Recent studies have shown that myocarditis and pericarditis are rarely occurring side effects caused by some of the vaccines. There have been various studies that have tried to analyze how often it occurred. These estimates are driven by symptomatic cases [1], though myocarditis is known to be underreported due to lack of (severe) symptoms, while it may leave long-term damage even when asymptomatic [2]. It is also one of the most common causes of sudden death in young adults. [3]

### **Analyzing at the data**

We will analyze 2 papers from Israel where mass vaccination has achieved great numbers

First we look at the myocarditis paper that studied a Large Health Care Organization

Each suspected case was adjudicated through review of the patient's electronic health record. A patient was considered to have had myocarditis if the CDC case definition for suspected, probable, or confirmed myocarditis had been met. The case definition had originally been written in 2003 for use in determining the incidence of medical disorders after the administration of the smallpox vaccine

The paper refers to a CDC case definition from 2003 [4], this case definition insists that one or more specific symptoms must be reported before the case will be looked at as possible myocarditis. Reported dyspnea, palpitations or chest pain of probable cardiac origin is the requirement to do further investigation. The paper refers to most of the myocarditis cases as "mild" myocarditis.

Cases of non fulminant myocarditis were further classified as mild or intermediate, according to published definitions

Acute (non-fulminant) myocarditis (65%) may have a clinically more subtle onset, with moderate cardiovascular compromise and incomplete recovery, sometimes resulting in cardiac dysfunction, heart failure and, less frequently, death. [6] The publishing [7] referred to by the paper does not provide a clinical definition of mild myocarditis. It's important to note that mild myocarditis can be very serious and does not indicate long-term complications will be negligible [8].

Myocarditis can easily be subclinical in healthy young men [9]. In a recent paper on athletes being checked on myocarditis it turned out that there were 3 times as many subclinical as symptomatic cases. [10]

Another research [11] used the same method to identify the number of myocarditis cases, which relies on patients reporting symptoms.

The rate ratio 30 days after the second vaccine dose in fully vaccinated recipients, as compared with unvaccinated persons, was 2.35 (95% CI, 1.10 to 5.02); the rate ratio was again highest in male recipients between the ages of 16 and 19 years (8.96; 95% CI, 4.50 to 17.83), with a ratio of 1 in 6637.

The study describes most of the myocarditis cases as mild, referring to the severity of the symptoms.

The clinical presentation of myocarditis after vaccination was usually mild.

Based on the recent athletes research the myocarditis cases in adolescent men might be 3 fold compared to what is diagnosed and reported. Myocarditis is commonly found as a reason for sudden deaths in adolescent men, which likely indicates underdiagnosis[12].

What could also be a factor in underreporting is that common symptoms that are used to identify myocarditis are also common in anxiety disorders. Panic attack symptoms include: palpitations, pounding heart, or accelerated heart rate, sweating, trembling or shaking, sensations of shortness of breath or smothering, feelings of choking, chest pain or discomfort, feeling dizzy, unsteady, light-headedness, or faint, chills or heat sensations, paresthesias (numbness or tingling sensations), derealization (feelings of unreality) or depersonalization (being detached from oneself), fear of losing control or "going crazy", and fear of dying [13][14].

The Pfizer Comirnaty vaccine includes the following side effects to the European Medicine Agency

[https://ema.europa.eu/en/documents/product-information/comirnaty-epar-product-information\\_en.pdf](https://ema.europa.eu/en/documents/product-information/comirnaty-epar-product-information_en.pdf)

Very common symptoms:

- Fever
- Chills
- Swelling
- Injection site swelling

Common:

- Vomiting
- Nausea

Uncommon:

- Lymphadenopathy
- Insomnia
- Pain in extremity
- Hyperhidrosis
- Night sweats
- Hypersensitivity reactions (e.g. rash, pruritus, urticaria, angioedema)

If someone has insomnia they might use over the counter or prescribed medication (e.g. melatonin / benzodiazepines) which could somewhat negate the already mild myocarditis symptoms [15][16]. Someone experiencing extreme pain or a vomiting-spree could also more easily miss the symptoms that suggest mild myocarditis, due preoccupation with the more intense symptoms, for a disease that is already very underreported in general.

Benzodiazepines are also commonly (mis)used [17][18] to treat insomnia and anxiety, which is a common problem in adolescents during pandemics [19].

Historically speaking these groups avoid doctors the most [20]:

- Younger age groups comprising a greater proportion of avoiders.
- Other segments containing a comparatively larger percent of avoiders were characterized by lower income, lower education, being uninsured, and being male.

A possible addition to the avoiders group is people who fear contracting the virus [21]. CDC chooses to wait 2 weeks before considering someone fully vaccinated [22]. This results in a paradoxical effect for those who fear medical care facilities due to the virus.

Therefore healthcare avoidance could also lead to mild myocarditis underreporting.

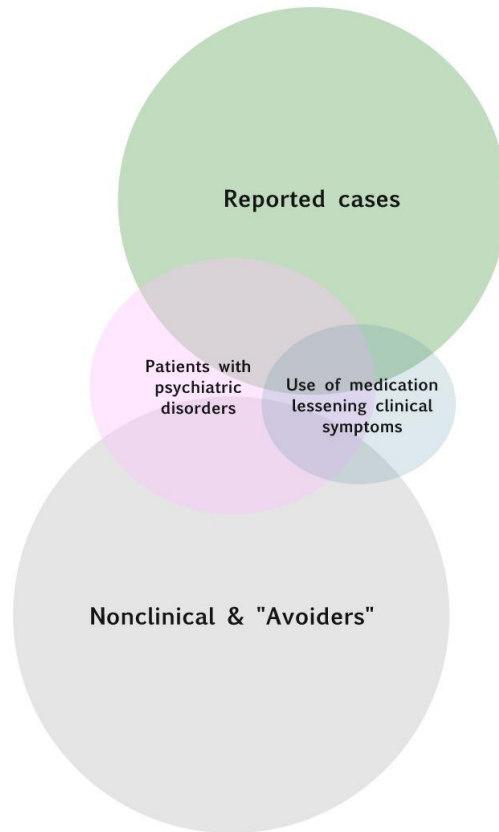
Epidemics are associated with adolescent Post Traumatic Stress, Depression, and Anxiety symptoms, yet data is scarce on adolescent psychiatric disorders during epidemics and pandemics [23]. Depending on how many young men in that age group are affected by anxiety symptoms it's a possibility that in certain individuals myocarditis symptoms will identify their symptoms as psychiatrically induced, leading to even more underreporting.

## **Discussion**

It is important to check the hearts of adolescents before and after vaccination. The statistics gained through active surveillance are not conclusive enough to determine the vaccine-induced myocarditis rate. (fig.1)

Observing patients' hearts with both MRI scans and electrocardiograms post vaccination until collecting accurate statistics on the myocarditis rates seems like an essential process to determine the safety for the mRNA vaccines that are currently still provided to adolescent men, who statistically suffer the most of that adversity [24][25].

## ADOLESCENT MEN & VACCINE-INDUCED MYOCARDITIS CASES



(fig.1)

### References

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