CAD, corona virus, and vaccination

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The Covid-19 pandemic has raised questions from people with CAD regarding risk and need for precautions. With the emerging availability of a vaccine in North America, Europe and some other parts of the world, people are also speculating on the pros and cons of being vaccinated. Unfortunately, specific scientific data on Covid-19 in patients with CAD are scarce, but despite this, it is possible to put forward some recommendations.

CAD and response to vaccines

In contrast to what is seen in other autoimmune diseases, people with CAD who are not being treated have an intact immune system. This means that even through some of their antibodyproducing cells are abnormal and only occupied with the production of cold agglutinins, their immune system still has plenty of cells that can produce normal antibodies in response to an infection or a vaccine.

There are a few exceptions, however. Patients who have received therapy with rituximab during the last 3 months, or rituximab plus bendamustine (or similar combination chemoimmunotherapy) during the last 4-6 months will have a weaker antibody response than normal. Therefore, those who recently have received such treatment may have a weaker antibody protection in case of infection, but also a reduced or absent benefit from vaccination. This does not mean that vaccination will imply a higher risk of side effects than in healthy people.

Currently, some patients with CAD are participating in trials with sutimlimab or other complement inhibitors. These drugs inhibit quite another part of the immune system, known as the complement system. There is no reason to believe such treatment will affect the ability to respond to vaccination or increase any risk of adverse effects.

Is vaccination dangerous?

In general, there are several types of vaccine against virus infections. (1) Live attenuated vaccines apply whole virus particles that have been changed in order not to produce the disease you are vaccinated against. They are able to give a high degree of protection, often life-long, but there are some concerns of adverse effects in patients who do not have a normal immune system. (2) In killed virus vaccines, the effective ingredient is entirely inactivated, whole virus particles that are unable to find their way into cells, but are still able to produce an immune response.

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These vaccines are generally highly safe, but the immunity may be weaker than with the live vaccines and is often transient after several years. (3) In component vaccines, which is a relatively new type of vaccine, the person is not given whole virus particles at all, but a smaller component of the virus. These components may be part of the virus DNA, RNA, or protein fragments. These virus components are not infectious agents and cannot cause any infection, but they are "seen" by the immune system and can trigger an immune response against the virus from which they are derived. These vaccines are highly safe according to very large, recent trials. They also seem to provide a reasonably good protection, but the duration of the effect is unknown.

Covid-19 vaccines that are under early development can be of any of these types. All of the three vaccines that are about to be introduced the US, EU, and UK, however, are component vaccines. Therefore, the chance of being protected is high and the risk of severe adverse effects is extremely low, but we do not know how long the immunity will last. Most recent Covid-19 vaccines will require two doses in order to be protected, but this may change. In the US, EU and UK, the requirements for approval are very strict. Vaccines that are approved for distribution and mass vaccination have been tested in controlled trials comprising many thousands of subjects and are therefore safe. Requirements have been less strict in for example Russia and India. Some people have been concerned about the very low temperatures at which most Covid-19 vaccines have to be kept until administration, but this is not a problem. The vaccine is thawed before injection, and the volume is very small and does not cause any cooling of blood.

Even with component vaccines, some of those who are vaccinated will experience mild and temporary side effects like tenderness at the injection site, slight muscle stiffness and discomfort in the arm used for vaccination, or mild flu-like symptoms that will resolve in few days. In contrast to common belief, such symptoms are NOT caused by a mild variant of the infection, but are symptoms of the immune reaction, which is an intended effect. Most recipients do not experience such symptoms but will still be protected.

People may ask which of the three vaccines should be preferred. There is no answer because they have not been investigated in comparative trials (trials in which two or more vaccines were compared in the same study). Results from different studies cannot always be compared because the investigators may have used different methods, criteria or definitions.

What happens if you are not vaccinated?

As people with CAD have an intact immune system, many of them can experience a mild and indolent disease even if they are infected with Covid-19. However, there are some risk factors for severe disease and complications.

First, many CAD patients are old, and high age is a risk factor. Second, any treatment that suppresses the immune system (rituximab alone or in combination) may, at least in theory, increase the risk for contracting a virus infection which then may be more severe. Third, some CAD patients are at an increased risk of having thrombosis, and this risk can further increase during a Covid-19 infection. Fourth, the possibility that a Covid-19 infection might trigger a temporary worsening of CAD ("acute exacerbation") cannot be excluded.

What is to be recommended?

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Based on the knowledge summarized above, vaccination against Covid-19 is strongly recommended in all patients with CAD. If you have recently been treated with rituximab or rituximab-based combinations, however, consult your hematologist regarding the optimal time for vaccination.

CAD patients who have not yet been vaccinated should comply strictly with the official recommendations and regulations in their countries to avoid being infected. Observe that

keeping a safe distance, avoiding masses of people, and having sick people stay at home are the most efficacious of all measures, although hand hygiene and the use of a facemask in appropriate situations should not be neglected.

People with CAD who have a Covid-19 infection despite these measures should have a phone consult with their doctor of hematologist. Have an extra hemoglobin measurement followed by a phone consult if you develop extreme fatigue or other symptoms of anemia.

Seek hospital care if required. CAD patients with Covid-19 infection may need prophylaxis against thrombosis, which should be discussed with the doctor or specialist.