Questions and Answers on Vaccination

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Questions on Immunization and Vaccination and Short Answers

Bağışıklama ve Aşı ile İlgili Sorular ve Kısa Cevaplar

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Question 1: Could a tattoo have an effect on the immune response to a vaccine?

Unfortunately, there are currently no specific regulations governing the inks used in tattooing, which has become increasingly popular in recent years.

In addition to various immune-related adverse effects that may develop in individuals with tattoos, pigmentation and enlargement of lymph nodes have also been reported. Studies conducted in mice have demonstrated that tattoo ink can accumulate in the lymph nodes draining the tattooed area.

A recent mice-model study evaluating the impact of this accumulation on vaccine-induced immune responses showed that tattoo ink reaches the lymph nodes through the lymphatic system, enters phagocytic cells, causes cell death, and leads to significant and long-lasting inflammation within the lymph nodes. It was also found to affect immune responses following vaccination. This effect was observed as a reduction in the immune response to COVID-19 vaccines, while the immune response to ultraviolet-inactivated influenza vaccines was enhanced.

Question 2: How should vaccines be administered when a tattoo is present at the injection site?

According to Immunize.org, both intramuscular (IM) and subcutaneous (SC) vaccines may currently be administered through tattooed skin.

Although no adverse events associated with vaccine administration through tattoos have been reported, several additional factors should be considered, including the age of the tattoo and the extent of the tattooed area.

Vaccines should never be administered into a newly applied and still-healing tattoo. The healing period is generally considered to be approximately one month.

For vaccination, the arm without a tattoo may be preferred whenever possible.

If tattoos are present on both arms, vaccination may be administered through a non-tattooed area if available.

If both arms are completely covered with tattoos, the vaccine may be administered through a pigment-free area within the tattoo.

Because of the potential risk of transmission of infectious diseases, individuals planning to receive a tattoo should ensure that their hepatitis B vaccination series has been completed before the procedure.

Question 3: Is there a recommended waiting period before getting a tattoo on a recently vaccinated area?

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In the United States, reports of smallpox inoculation complications in individuals who received tattoos shortly after smallpox vaccination led public health authorities to recommend avoiding tattooing for at least 30 days after inoculation. Depending on individual circumstances, this period may be extended to 60 days or longer.

In general, tattooing should not be performed immediately after vaccination, particularly following administration of a live attenuated vaccine, and especially not at the vaccine injection site.

Question 4: What should be considered when administering vaccines in the presence of scar tissue?

Direct vaccination into scar tissue should be avoided whenever possible, and an area without scar tissue should be selected.

The main reasons include:

- Confounding of local side effects: The most common vaccine side effects are redness, swelling, tenderness, and pain at the injection site. If the vaccine is administered into tissue that already contains a wound, hematoma, or infection, it may become impossible to distinguish vaccine-related reactions from the pre-existing condition, making the monitoring of potential complications more difficult.
- Risk of infection (Secondary infection): An open wound or an area with disrupted skin integrity may be colonized by bacteria. Even if the area is disinfected with alcohol, inserting a needle into deeper tissues (intramuscularly or subcutaneously) may carry surface pathogens into deeper layers.
- Lymphatic flow and immune response: Injured or inflamed tissues may have local edema and impaired circulation. Adequate blood and lymphatic flow at the injection site are essential for proper delivery of antigens to immune cells (antigen-presenting cells). Damaged tissue may negatively affect vaccine absorption and, consequently, immune effectiveness.

Additionally, increased thickness and reduced elasticity of scar tissue may make it difficult for the needle to reach the appropriate depth for IM or SC administration.

Injections into scar tissue may also increase the risk of severe local reactions and inflammation.

Recommended approach:

If a patient is due for vaccination and a wound or lesion is present at the routine injection site (for example, the left deltoid muscle), the following steps should be followed:

1. Choose an alternative site: This is the most practical and appropriate solution. If there is a wound on the left arm, the vaccine should be administered into the right deltoid muscle. If both arms have extensive lesions (e.g., severe eczema, burns, or infections), the anterolateral thigh (vastus lateralis muscle) should be used.
2. Postpone vaccination (Rarely): If the wound or infection is extensive and there is no urgent need for vaccination (e.g., a routine adult booster dose), vaccination may be postponed for a few days until the skin heals. However, this approach should never be applied to urgent or prophylactic vaccines such as rabies or tetanus vaccines.

Question 5: Can a vaccine be administered near a Bacillus Calmette-Guérin (BCG) scar?

Temporary reactivation (2-7 days) of a BCG vaccination scar has been reported following administration of influenza or COVID-19 vaccines near the BCG scar or, in some cases, in the opposite arm.

It is considered a non-serious vaccine-related adverse event and is not regarded as a contraindication to subsequent doses of the relevant vaccines.

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