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POINT OF VIEW

True and false contraindications to vaccines

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Abstract Nowadays, the awareness of risks related to infectious diseases has decreased, whereas THE perception of risks related to vaccination is growing. Therefore, it may be difficult for health care providers to convince people of the importance of vaccination and adherence to the immunisation schedule.

Selected situations that might raise uncertainties about vaccine recommendations are discussed in order to help health care providers to identify real and perceived contraindications to vaccines, and cases to be referred to specialised pre-vaccination consultation due to an increased risk of adverse events to vaccines.

Introduction

Nowadays, the incidence of several infectious diseases and, consequently, awareness of infection-related risks has decreased notably, whereas the perception of risks related

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to health interventions, especially vaccinations, is increasing. Now, more than ever, people want to have an active role in the protection of their own health. Therefore, health-care providers should be able to give people complete information on the importance of immunisation. This is, however, sometimes a difficult task.

The most common clinical conditions which may raise doubts about vaccine recommendations are discussed below. The aim of this review is to facilitate identification of those situations that are true contraindications to vaccination, and disorders requiring specialised pre-vaccination consultation due to an increased risk of adverse events to vaccines.[1,2]

Contraindications, precautions and warnings

Before administrating a vaccine, health personnel must verify if there are diseases that create risks of serious adverse events present in the vaccinee (''Contraindications'' – see Table 1), or conditions which are more likely to be associated with adverse events or decreased vaccine efficacy: the vaccination may be offered with precautions in these cases, after assessment of risks versus benefits (see Table 2). Situations should be further identified in which the vaccine is safe and effective, but might interfere with an ongoing, or a recently stopped drug therapy (''Warnings for vaccination'' – Table 3). Data on patient's medical history collected according to a standardised, specifically arranged format, are suitable in most cases for this scope. Evidence is lacking regarding the possibility of decreasing the risk of adverse events by clinical evaluation, or any diagnostic tests performed in apparently healthy subjects; therefore they are not recommended.

If true contraindications to vaccination are identified (Table 1), vaccination should be avoided and the patient is to be referred to specialised consultation where available. If a risk/benefit assessment is indicated, health personnel should consider: the vaccinee's risk of contracting the infectious disease to be prevented; incidence and seriousness of complications associated with the infectious disease, taking into account all the patient's individual factors; levels of specific antibody titres to estimate protection; efficacy of the specific vaccine dose to be administered, and incidence and seriousness of adverse events associated with the vaccine. Consulting summaries of vaccine product characteristics and published guidelines, e.g. ''Guide to Contraindications of Vaccinations'',[3,4] is useful in decision-making: all contraindications, precautions and warnings are listed in these references. Updates of both general and specific guidelines about vaccinations should be consulted as well.

Table 1 Contraindications to vaccination.

For all vaccines
Anaphylactic reactions to vaccine components
Serious adverse events to a previous dose of vaccine
Anaphylactic reactions to the same vaccine or same vaccine components but low/moderate risks due to that specific infectious disease and its complications If the risk of infection for potentially lethal or disabling diseases is high, and specific antibody titres are not protective, the patient should be referred to an allergist to undergo skin tests with the vaccine and its components. If vaccine or vaccine component skin test results are positive, the vaccine might still be administered in graded doses according to a standardised protocol, in a hospital setting.
Patient who had complications requiring long-term or invasive treatment after previous vaccination and risks related to the disease to be prevented are low/moderate
Patient with complications without *restitutio ad integrum*, with low/moderate risks related to the disease to be prevented
For live attenuated vaccines:
Agammaglobulinaemic syndrome
Complete T-cell deficiency
HIV immunodeficiency with CD4+ lymphocyte count <15% of total lymphocyte count
Solid or haematological neoplasia during treatment
Transplant within six months
Current therapies
Chemo/radiotherapy up to six months from suspension
High-dose steroids for at least two weeks and up to one month from suspension
High-dose immunosuppressive drugs
Pregnancy
Contraindications concern live attenuated vaccines Varicella, Measles-mumps-rubella and Calmette-Guerin Bacillus and are related to the paucity of clinical trials. Accidental administration of Measles-mumps-rubella vaccine in pregnant women did not demonstrate an increase of teratogenic risk and it is not an indication for pregnancy interruption.

True contraindications to vaccinations

Contraindications to vaccines (Table 1) are as follows:

1. A personal history of previous anaphylactic reactions to vaccine components or substances used in the vaccine production.[3,4] This is the only true contraindication applicable to all vaccines. An anaphylactic reaction is defined by a number of symptoms and signs involving at least two organs or systems among skin and cardiovascular, respiratory and gastrointestinal systems.[5] By definition, an anaphylactic reaction is caused by mastocyte degranulation and it is very likely to occur in the presence of respiratory and/or cardiovascular symptoms. Although an anaphylactic reaction due to vaccines might occur up to 4 h after administration, it generally occurs within 1 h.[6–8] Since anaphylactic reactions are life-threatening, vaccinations with the same product or vaccines sharing any possibly implicated substances must be avoided when disease-related risks are mild to moderate. If the risk of infection for potentially lethal or disabling diseases is high, and specific antibody titres are not protective, the patient should be referred