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Recommendations for vaccination against shingles

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ABSTRACT:
Introduction and purpose:
Shingles, or herpes zoster, is a painful condition caused by the reactivation of the varicella-zoster virus, the same virus responsible for chickenpox. Vaccination is the most effective way to prevent shingles and its complications, including postherpetic neuralgia (PHN), a chronic and debilitating nerve pain condition. Vaccination is the most effective way to prevent shingles and its associated complications. This article provides an overview of current recommendations for shingles vaccination, including who should be vaccinated, the available vaccines, and key considerations.
Materials and methods:
A literature search was conducted by analysing scientific articles published in Google Scholar, PubMed, and UpToDate using keywords included: *shingles, vaccination, varicella-zoster virus, infection.* We also searched current recommendations of Centers for Disease Control and Prevention.
Description of the state of knowledge:
Shingles is a common condition, especially in older adults and those with weakened immune systems. While the disease itself can cause significant pain and discomfort, the risk of complications increases with age and other health conditions. Vaccination offers robust protection against shingles and its complications, reducing the overall health burden. Consulting a healthcare provider is advised to determine the best vaccination approach based on individual health conditions.
Conclusion:
Vaccination against shingles is a critical preventive measure for adults, particularly those aged 50 and older or individuals with weakened immune systems. Shingrix is the recommended vaccine due to its high efficacy and long-lasting protection. Patients should discuss their vaccination plans with healthcare provider to determine the optimal timing and ensure it aligns with their health needs. By staying proactive, individuals can significantly reduce their risk of shingles and enjoy better long-term health.

Keywords: *shingles, vaccination, varicella-zoster virus, infection*

BACKGROUND:

Shingles is an infectious viral disease that is a symptomatic reactivation of latent infection with the varicella-zoster virus (VZV). It usually presents as vesicles on an erythematous base, preceded by pain affecting the area of one dermatome. The group particularly susceptible to the occurrence of shingles includes people over 50 years of age and those belonging to risk groups. In the course of the disease, severe complications may develop, of which the most clinically significant is postherpetic neuralgia. It occurs in up to 30% of patients and leads to a significant decrease in the quality of life and chronic suffering. Treatment of postherpetic neuralgia is long-term, often ineffective and poses a huge challenge to the healthcare system. The most effective method of protection against shingles and its complications is vaccination. Due to the epidemiology of shingles and the occurrence of its complications, vaccination is especially recommended for all people >50. years of age and younger adults (≥18 years of age) who have risk factors for developing this disease.

MATERIALS AND METHODS:

A literature search was conducted by analysing scientific articles published in Google Scholar, PubMed, and UpToDate using keywords included: *shingles, vaccination, varicella-zoster virus, infection.* We also searched current recommendations of Centers for Disease Control and Prevention.

DESCRIPTION OF THE STATE OF KNOWLEDGE:

Pathophysiology of shingles

Shingles is an infectious disease caused by reactivation of VZV (another name - human herpesvirus 3 [HHV-3]). This disease develops only in people who have had a primary VZV infection in the past - most often in the form of chickenpox. Less often, the disease develops when the infection occurred intrauterine, and very occasionally as a result of vaccination against chickenpox. VZV becomes dormant in the dorsal root ganglia or cranial nerve ganglia. Under certain conditions, the virus can reactivate with a decrease in cellular immunity associated with specific T lymphocytes[1]. Immunity decreases with age and during the course of certain diseases or immunosuppressive treatment. During reactivation, VZV spreads along sensory fibers, causing symptoms in the skin area innervated by a given spinal nerve (dermatome). In the case of locations other than the skin (in the case of cranial nerve involvement), the symptoms will vary [2].

Manifestations of shingles

Shingles most often occurs in a localized cutaneous form, which is characterized by the development of erythema in the affected area with severe pain, and then the appearance of a group of vesicles that may take on a pustular or hemorrhagic form. The vesicles contain serous contents with infectious VZV particles. Symptoms are usually limited and involve an area of one to two dermatomes. The appearance of skin lesions is usually preceded by nonspecific prodromal symptoms such as itching, burning, tingling, hypersensitivity or pain. During the remission of the disease, the vesicles dry out and crusts form, which usually heal within two to four weeks [3].

If the trigeminal nerve (specifically the ophthalmic branch) is affected, shingles can involve the eye (herpes zoster ophthalmic), potentially causing vision loss. In the case of the ocular form, viral lesions may appear on the skin of the upper eyelid, the bridge of the nose and the frontal area, the conjunctiva, as well as on the cornea itself, which can lead to the formation of very painful ulcers there [4]. Another characteristic form of the disease is ear zoster, which is the result of reactivation of the virus from the geniculate ganglion. In this form, the auricle, external auditory canal and tympanic membrane are affected. If these changes are accompanied by ear pain and symptoms of peripheral paresis of the facial nerve on the same side, we are dealing with the involvement of not only sensory fibers, but also motor fibers of the VIIth nerve (so-called zoster motoricus) in the form of Ramsay Hunt syndrome [5,6]. Rarely, VZV can cause widespread infection in immunocompromised individuals, leading to complications such as pneumonitis, hepatitis, or encephalitis [7,9].

Risk groups

The risk of developing shingles increases with age, especially after the age of 50. An increased risk also applies to people with impaired immune function due to, among others, congenital immunodeficiency, immunosuppressive treatment, neoplastic disease, infection with human immunodeficiency virus (HIV), transplantation and iatrogenic immunosuppression [8]. Studies conducted so far have identified additional factors that increase the risk of developing shingles. These include: female gender, systemic lupus erythematosus, rheumatoid arthritis, chronic obstructive pulmonary disease, cardiovascular disease, nonspecific inflammatory bowel disease, chronic kidney disease, bronchial asthma, diabetes, depression, chronic psychological stress or physical trauma (e.g. surgery or physical trauma) [10,11]. Having shingles does not protect against another episode of the disease.

Shingles treatment

Shingles can cause significant pain, requiring a tailored approach to manage discomfort. For mild pain Over-the-Counter Analgesics, include paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs) and metamizole, can be taken. Opioids can be used for severe pain under medical supervision. Lidocaine patches or creams provide localized relief [12]. In the event of symptoms of acute neuropathic pain, antiepileptic drugs (gabapentin or pregabalin) and/or antidepressants (tricyclics [such as amitriptyline] or serotonin and noradrenaline reuptake inhibitors [such as duloxetine]) are recommended. The use of antiviral drugs, primarily acyclovir (orally most often), less frequently valacyclovir or famciclovir, alleviates the course of the disease and inhibits the replication and spread of the virus. However, acyclovir does not reduce the risk of developing postherpetic neuralgia [13,14].

Complications of Shingles

Shingles often leads to complications. The most common of these is postherpetic neuralgia. It is diagnosed when pain in the affected dermatome persists for >3 months after the skin lesions appear. The pain is mainly neuropathic in nature, causes significant suffering and significantly reduces the patient's quality of life [15]. In the ocular form of herpes zoster, damage to the cornea and the formation of ulcers on its surface, followed by scarring, can occur.

Occasionally, damage to the retina can also occur. In turn, involvement and damage to the auditory nerve can lead to partial hearing loss or tinnitus. After herpes zoster, secondary bacterial infections of the skin and soft tissues are often observed, caused primarily by Staphylococcus aureus or Streptococcus pyogenes. In some cases, aseptic meningitis or pneumonia may develop [16]. Having shingles before the age of 40 has also been shown to increase the risk of having a stroke, transient ischemic attack (TIA), or heart attack in the future.

Prevention

The most effective method of preventing shingles and its complications is vaccination. Currently, two vaccines against shingles are registered in the European Union: Shingrix (Recombinant Zoster Vaccine) and Zostavax (Live Zoster Vaccine). Shingrix is the preferred vaccine in many countries. It is highly effective and provides long-lasting protection against shingles and PHN among people ≥18 years of age. The full vaccination schedule includes two doses administered 2–6 months apart. In immunocompromised individuals who would benefit from achieving optimal immunization in a shorter time, an abbreviated regimen of 2 doses administered ≥1 month apart may be used. The vaccination schedule that has been initiated does not need to be repeated if >6 months have passed since the first dose. In such a situation, the second dose of vaccine should be administered as soon as possible. If the second dose of vaccine was administered <4 weeks after the first, it should be repeated. The safety of the vaccine was demonstrated in high-risk groups of autologous HSCT recipients, patients with hematologic or solid malignancies, HIV infection or renal transplant recipients. Shingrix can be administered at the same visit with other vaccines. If multiple vaccines are to be administered at the same visit, each injection should be administered into a different anatomical site. [17,18] Zostavax, a live attenuated vaccine, was previously used but is no longer available in the U.S. since 2020. While less effective than Shingrix, it provided some protection against shingles. Individuals who received Zostavax are encouraged to get Shingrix for better protection [19].

Groups of people who are recommended to be vaccinated against shingles:

- over 50 years of age;
- taking glucocorticosteroids or other immunosuppressive drugs chronically;
- during chemotherapy or radiotherapy causing immunosuppression;
- treated with immunosuppressive drugs after solid organ transplantation;
- with comorbidities that increase the risk of developing shingles
- from risk groups who have regular and close contact with children [20,21,22].

The percentage of people in the adult population still susceptible to primary VZV infection is very small (and decreases with age), therefore serological testing to confirm a history of primary VZV infection before vaccination is not recommended [23]. The only permanent contraindication to administering the vaccine is hypersensitivity to any of its components or after administration of a previous dose. As with other vaccinations, in individuals with moderate or severe disease (with or without fever) or exacerbation of a chronic disease, it is suggested to delay vaccination against herpes zoster until the disease symptoms have resolved and the clinical condition has stabilized.

Having had shingles does not protect against recurrence, therefore people who have had shingles in the past are recommended to be vaccinated according to general recommendations. However, the vaccine should not be administered during active shingles. In such a situation, it is recommended to delay vaccination until the symptoms of the disease have subsided (in the case of ocular shingles, ≥12 months after the inflammatory changes in the eye have subsided). The shingles vaccine can be administered to people who have been vaccinated against chickenpox in the past [24,25].

CONCLUSIONS:

Vaccination against shingles is a critical preventive measure for adults, especially those aged 50 and older or individuals with weakened immune systems. Shingrix, the preferred vaccine, offers strong and long-lasting protection against shingles and its complications, such as postherpetic neuralgia. By following these recommendations and consulting with healthcare providers, individuals can significantly reduce their risk of shingles and enjoy better health outcomes. Prioritizing shingles vaccination helps not only individuals but also the broader healthcare system by reducing the burden of this painful and preventable disease.

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Author's contribution:

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