Case Report / *Olgu Sunumu*

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Skin Lesion After DaBT-Hib-IPV Vaccine: Vaccine Reaction? Bacterial Cellulitis?

DaBT-Hib-IPV Aşısı Sonrası Cilt Lezyonu: Aşı Reaksiyonu mu? Bakteriyel Selülit mi?

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Abstract

After the discovery of the smallpox vaccine, vaccination has become an essential component of preventive healthcare policies. However, vaccines can have mild side effects. Typically, these side effects present themselves as local reactions. A two-year-old patient was admitted 24 hours after the diphtheria, acellular pertussis, tetanus-haemophilus influenzae type b-inactive polio vaccine showing symptoms of a rash and swelling at the injection site. Acute phase reactants were negative, and complete blood count was normal. Patient was conscious and his general condition was well with vital signs were stable. The negative infectious markers were attributed to a reactionary response to the vaccine. The patient was given no medication aside being kept hydrated, and the reaction subsided on the third day of hospitalization. Being able to differentiate vaccine-related local reactions from bacterial cellulitis will prevent unnecessary hospitalization and antibiotic usage.

Keywords: Children, DaBT-Hib-IPV, vaccine, vaccine reaction

Öz

Çiçek aşısının keşfinden sonra aşı, koruyucu sağlık politikalarının önemli bir bileşeni haline geldi. Bununla beraber aşıların hafif yan etkileri olabilir. Tipik olarak, bu yan etkiler kendilerini lokal reaksiyonlar olarak gösterir. İki yaşında hasta difteri, aselüler boğmaca, tetanoz-Haemophilus influenzae tip b-inaktif çocuk felci aşısından 24 saat sonra aşı bölgesinde kızarıklık ve şişlik belirtileri ile başvurdu. Akut faz reaktanları negatifti, kan sayımı normal sınırlardaydı. Hastanın bilinci açık, genel durumu iyi, vital bulguları stabildi. Negatif enfeksiyöz belirteçler sonucunda lezyon; aşıya karşı meydana gelen bir reaksiyona bağlandı. Hastaya hidrasyon dışında bir tedavi uygulanmadı ve yatışının üçüncü gününde reaksiyon geriledi. Aşıya bağlı lokal reaksiyonları bakteriyel selülitten ayırt edebilmek gereksiz hastaneye yatış ve antibiyotik kullanımını önleyecektir.

Anahtar Kelimeler: Çocuklar, DaBT-Hib-IPV, aşı, aşı reaksiyonu

Introduction

With the discovery of the smallpox vaccine in the 18th century, vaccines became an important component of preventive health policies. It is estimated that 2-3 million children are saved each year as a result of vaccinations (1). According to our country's current vaccination schedule, diphtheria (D), acellular pertussis (aB), tetanus (T)-Haemophilus influenzae type b (HiB)-inactive polio (IPV) (DaBT-Hib-IPV) vaccines are administered postpartum at 2, 4, 6 and 18 months. The DaBT-IPV vaccine is then administered at 48 months, and the booster dose is administered at the age of 13 (2). A common side effect of vaccines is a local reaction that may appear soon after vaccination (3). Cellulitis is a bacterial soft-tissue infection that causes an inflammatory response in the dermis and subcutaneous tissue (4). If presented with skin lesions after vaccination, distinguishing the cause is vital for appropriate clinical follow-up and treatment. We present a two-year-old patient

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Figure 1. A. Approximately 20x15 cm lesion on the anterolateral region of right thigh at time of presentation (Standing up). **B.** Approximately 20x15 cm lesion on the anterolateral region of right thigh the at time of presentation (Lying down).

showing localized redness and swelling symptoms after being administered the DaBT-Hib-IPV vaccine. With this, we will aim to clarify the diagnostic process for physicians.

Case Report

A two-year-old male patient with no history of chronic disease is admitted showing signs of erythema and swelling in the lateral right upper-leg area. We learned that the patient had not been fully vaccinated due to the patient's refugee status, and so the fourth dose of the DaBT-Hib-IPV vaccine was administered to the lesion area a day prior. The patient's overall status was good. Upon physical examination, there was an approximately 20x15 cm lesion on the right thigh's anterolateral region, which shows stiffness and slight warmness with direct palpation (Figure 1A,B). Blood tests revealed a hemoglobin level of 10 g/L, a white blood cell count of 13.610/µL, a neutrophil count of 4.450/µL, and a C-reactive protein value of 5.8 mg/L. The other blood parameters were also within normal limits. Superficial ultrasonography reported a 10x7 cm lesion that is consistent with cellulitis. However, as the lesion occurred within 24 hours of vaccination and the infectious test markers were negative, along with no discomfort in the lesion and no pain-related restricted range of movements, it was diagnosed as a local reaction related with the vaccine. Intravenous fluid therapy was administered. On the patient's third day of admission, it was observed that the lesion's redness had subsided and showed no further signs of sensitivity, nor did the patient develop fever. The patient was discharged. In follow-up the lesion was totally regressed, there were no any complaints (Figure 2).

Discussion

Childhood vaccination is essential for protection of children against infectious diseases and also for public health. In our country vaccine scheme is carefully implemented. If the vaccination schedule is interrupted for any reason, the missing doses should be administered according to the vaccination planning (2). Our patient had been administered the missing fourth dose of the DaBT-Hib-IPV vaccine.

Figure 2. The lesion found to be healed in the outpatient clinic control.

Vaccine-related side effects are generally mild and cause little discomfort. The most common side effects are mild systemic symptoms, such as local reactions on the injection site, a mild to moderate fever, irritability, and a loss of appetite. Local reactions include pain, swelling, stiffness, and redness are common side effects of DaBT-Hib-IPV vaccine. It is thought to be caused by the DaBT component of the vaccine (5). A local vaccine reaction can be easily mistaken for bacterial cellulitis as they display similar symptoms, which may lead the physician taking an incorrect follow-up and treatment approach. Local inflammatory reactions appear most commonly after the fourth and fifth dose, and reactions with sizeable lesions can be mistaken for bacterial cellulitis (6). In a study, preschool children administered with booster doses showed symptoms of a rash and/or a swelling of 50 mm or more (19-33%) and displayed swelling which extended from the shoulder to the elbow (1-2%) (7). In another study, it was emphasized that all thigh swelling was seen in only 2% of cases after booster doses of the vaccine (8). Local reactions appear for reasons that are not fully understood, but they seem to be a response to the vaccine's contents. Other causes may be due to errors in vaccination techniques (application other than 90) or incorrect use of injector sizes (choosing a 16 mm long injector instead of 25 mm) (9). An inflammatory response can be observed within a few hours of administering the vaccine, and symptoms will be most intense between 24 to 48 hours after vaccination. Sensitivity will reach its peak within a few hours of vaccination and will diminish as the reaction area widens. Developing a restricted range of movement is rare. Systemic symptoms, such as fever, are also uncommon (6). Our patient was presented with redness and swelling in the vaccination area which developed hours after the vaccination. The size of the lesion was approximately 20x15 cm. The patient did not have systemic symptoms such as fever and limitation of movement.

The presence of systemic symptoms or response to antibiotic therapy can be used to diagnose bacterial cellulitis (10). Injection site reactions after vaccination can be mistaken as bacterial cellulitis. A 70-year-old patient presented with an injection site reaction after viral vaccine (Varicella zoster) and was treated as bacterial cellulitis, but there was no response to the antibiotic, the lesion healed spontaneously in the follow-up (11). Cellulitis symptoms include erythema, tenderness, pain, swelling, fever symptoms which may not be present in local vaccine reactions. Antibiotics are required for treatment. A local reaction as a result of vaccination will resolve within a week without antibiotic treatment (6). Our patient showed no sign of fever and his general condition was well. There was a slight rise in temperature on the lesion, and direct palpation showed no sensitivity that implied the patient was not experiencing pain. It should also be noted that single-dose vials and single-use injection tools rarely infect the tissues or cause cellulite (6). Our patient was vaccinated with a single-dose vial and a disposable needle. Because there were no signs of cellulitis, the patient was not treated with antibiotics. Patient treatment was only consisted of hydration. All symptoms had subsided by the third day of hospitalization.

Post-vaccination local reactions are relatively common. It is important to differentiate local reaction caused by vaccination from bacterial cellulitis. Distinguishing correctly is vitally important as a misdiagnosis can lead to unnecessary hospitalization and use of antibiotics. Increasing awareness about

local reactions will encourage parents only to seek medical attention in cases with systemic symptoms, such as fever, or when the local reaction develops abnormally.

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