



Localized Lipoatrophy following DPT Injection

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Abstract:

Localized lipoatrophy has numerous causes. It is very unusual to see it at the site of diphtheria, pertussis and tetanus vaccination. A rare case of localized lipoatrophy following diphtheria, pertussis and tetanus vaccination is described.

Key words: Diphtheria, Diphtheria-Tetanus-Pertussis Vaccine, Tetanus, Vaccination, Whooping Cough.

Introduction

Diphtheria, pertussis, tetanus (DPT) vaccine is routinely administered to children under the universal immunization programme (UIP) [1]. Although local injection site complications are known, localized lipoatrophy (LL) following DPT vaccination has been seldom reported. A case of LL following a booster dose of DPT is reported. The patient did not have any other symptom and was conservatively managed.

Case Report

A 2 year old girl presented to the outpatient's clinic with a painless depression over her right buttock. Her mother gave a history of DPT vaccination at 19 months of age in a private clinic following which there were no complaints initially but after 2 months, a depression was noted at the site which initially increased in size but later stabilized. No other symptoms were present. On examination, a 3x3 cm

circular depression was seen in the superolateral quadrant of the right buttock [Fig.1,2]. No local signs of inflammation, any mass or any limitation of movement were found. Systemic examination was normal.

Routine hemogram, urine examination, blood urea, serum creatinine and erythrocyte sedimentation rate (ESR) were reported to be normal. Anti-nuclear antibody (ANA), anti - dsDNA, anti - Sm and anti U1 - RNP antibodies were negative on being assayed, ruling out connective tissue disease as a cause. Parents did not give consent for taking a biopsy from the site.

Patient's medical history, symptoms, lesion morphology and workup were all consistent with the diagnosis of LL occurring after DPT vaccination. She was told to follow up conservatively and no specific treatment was given. At 4 months since initial presentation, the lesion has become shallower and has started to show signs of improvement.

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Fig.1: LL following DPT vaccination at improper site.



Fig.2: Localised lipoatrophy over gluteal region.

Discussion

Lipoatrophy refers to loss of adipose tissue or fat without any evidence of inflammation [2]. It can be generalized, partial or localized. LL may be a manifestation of connective tissue disorders like systemic lupus erythematosus, subcutaneous morphea, scleroderma, dermatomyositis, Sjogren's disease and panniculitis. It is also seen to be associated with nephritis, hypocomplementemia, recurrent pyogenic infections, idiopathic thrombocytopenic purpura (ITP) and thyroiditis [3]. Antiretroviral medications and acquired immunodeficiency syndrome (AIDS) and drugs like insulin, penicillin, growth hormone, steroids, glatiramer acetate, vasopressin, methotrexate, copolymer 1, iron dextran, amikacin, DPT vaccine and acupuncture have been variously reported to have caused LL [2,4-7]. However, the exact pathogenesis of LL is not known.

A patient who first turns up with features of LL should be examined and investigated to rule out these commonly observed causes. Routine blood, urine, ESR, renal function tests and antibody assay for connective tissue disorders are done to see if any significant systemic pathology is the primary

cause. History about local injection and its content should be obtained. On histopathology, LL can demonstrate either involutinal or inflammatory characteristics [8].

UIP recommends DPT vaccination to all children between 0 to 5 years of age [1]. This includes 3 doses at 6, 10 and 14 weeks of age and 2 booster doses at the age 18 months and 5 years [1]. DPT as such is a safe vaccine. Adverse reactions which have been commonly associated with its administration include local redness, inflammation, edema or induration with or without tenderness. Systemic symptoms like fever, rash, inconsolable crying and screaming and occasional convulsion and collapse have also been reported in literature [9]. On most occasions, these are mild and get corrected with symptomatic treatment.

There is paucity of literature regarding the occurrence of LL following DPT vaccination. Sardana *et al.* first reported eight cases of LL following DPT vaccination [5]. The exact mechanism for the development of LL in such cases is not known. However, both local trauma and the content of the medication have been thought to play an important role. Macrophage and cytokine action at the site

of trauma have been found to promote lipocyte catabolism [10] and also the role of mediators like tumor necrosis factor-alpha and interleukin 6 have been suggested [11].

In this patient, LL occurred after 2 months of the first booster DPT injection. Child did not have any local complication after the first three doses of the same vaccine given in infancy. The vaccine was erroneously given in the buttock and possibly most of the drug went into the subcutaneous fat thereby initiating the pathogenesis of LL. As the patient did not have any other symptom, she was observed conservatively and with time the lesion was found to regress.

Conclusion

DPT vaccination can rarely lead to LL at the injection site. A child with LL over the gluteal region should be prospectively followed and investigated to rule out any other causative factor. It is very important to correctly administer DPT vaccine through the intramuscular route into the thighs of young children.

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