

Injection site abscess post infant vaccines — a rare but real complication

Mel Addison^{1,2} Georgina Lewis^{1,2} Rachael McGuire^{1,2} Nigel Crawford^{1,2,3}

1. The Royal Children's Hospital, Melbourne; 2. SAEFVIC, Murdoch Children's Research Institute, Melbourne; 3. Department of Paediatrics, The University of Melbourne

Context

Injection site abscess (ISA) is a known but rare complication following infant immunisations. An abscess is a defensive reaction of the immune system in response to an infectious agent or foreign material. The clinical presentation of an ISA often includes pain, erythema, oedema and fluctuance. ISAs may heal spontaneously or require medical or surgical intervention. The source or cause of infection is difficult to determine. Causes for ISA include bacterial isolates identified in the nose and throat of the attending healthcare workers, contamination of a multi-dose vial, skin (host) contaminant and a breach of sterility during the immunisation process (1,4).

Process

Data was extracted from the SAEFVIC (Surveillance of Adverse Events Following Vaccination in the Community) Victorian database (2007–2017).

Inclusion criteria: abscess; infants ≤ 12 months of age

Exclusion criteria: BCG abscess

Diagnostic criteria as per the Brighton Collaboration Local Reaction Working Group: spontaneous or surgical drainage of material from the mass and laboratory confirmation (gram stain, culture or other tests) of microbiological organisms with or without polymorphonuclear leukocytes in material drained or aspirated from the mass. The definition of abscess at injection site defines a clinical entity only without inferring a causal relationship to a given exposure (2).

AIR (Australian Immunisation Register) was accessed for immunisation status (April 2018). The Electronic Medical Record (EMR), Royal Children's Hospital (RCH) was accessed for medical/surgical management of cases treated at RCH.

References

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Analysis

14 cases of ISA post infant vaccines ≤ 12 months of age were reported to SAEFVIC over the 10 year period (2007–2017). 9 of the 14 cases (64%) required surgical intervention (see Table 1). 3 of the 9 (33%) cases had active eczema at the time of immunisation and 1 case went on to develop mild eczema of infancy. The source of infection was not identified in any of the cases. There is a lack of published data implicating active or infected eczema for ISA.

Table 1. Nine cases requiring surgical intervention at RCH

Case	Vaccine/age	Onset of symptoms	Symptoms	Investigations	Diagnosis and Management	Outcome	History of eczema	Immunisation status AIR
1	Infanrix hexa (2) 4 months	3–4 weeks	Decreased movement of right leg; lump at site	Ultrasound Culture — Staphylococcus Aureus	Infectious abscess Surgical incision and drainage IV Antibiotics SAEFVIC referral/consult Dermatology follow-up HITH daily dressings	SAEFVIC Sterile wash of sites for subsequent vaccines Nil recurrence Scarring	Infected eczema at time of vaccines	UTD
2	Prevenar (2) 4 months	10 days	Fever Decreased movement of leg; fluctuant lump at site	Ultrasound Culture — Group A Streptococcus (GAS) Pathology CRP 83	Infectious abscess Surgical incision and drainage IV Antibiotics SAEFVIC referral/consult Dermatology review	SAEFVIC Nil recurrence Scarring	Poorly controlled eczema at time of vaccines	UTD
3	H-B-VAX [®] II (Birth) 2 days	Over 4 weeks	Thigh swelling ++ Pain ++ Fever	Ultrasound MRI Culture — Staphylococcus Aureus Pathology CRP 54	Infectious abscess IV antibiotics Surgical incision and drainage Drainage tube Oral antibiotics SAEFVIC referral/consult	SAEFVIC Sterile wash of sites for subsequent vaccines Nil recurrence	Developed mild eczema	UTD
4	Infanrix hexa/Prevenar 13 (3) Site not identified 4 months	Over 8 weeks	Increasing thigh swelling Erythema	Ultrasound Culture — Methicillin Resistant Staphylococcus Aureus (MRSA)	Infectious abscess Surgical incision and drainage IV antibiotics Oral antibiotics Dressings SAEFVIC referral/consult	SAEFVIC Sterile wash of site for subsequent vaccines Nil recurrence	Nil	UTD
5	H-B-VAX [®] II (Birth) 1 day	36 hours	Thigh swelling Erythema	Uncertain	Surgical debridement Wound dressings	SAEFVIC follow-up at Monash Medical Centre Nil recurrence	Unknown	UTD
6	Infanrix hexa (1) 6 weeks	Over 2 weeks	Thigh swelling	Culture — Staphylococcus Aureus	Infectious abscess Surgical incision and drainage IV antibiotics Wound dressings Oral antibiotics	SAEFVIC Sterile wash of injection sites for subsequent vaccines Nil recurrence	Unknown	Unable to access
7	H-B-VAX [®] II (Birth) 1 day	Over 5 weeks	Thigh swelling Erythema	Ultrasound Culture — Staphylococcus Aureus	Infectious abscess Surgical incision and drainage Drain tube IV antibiotics Wound dressings	SAEFVIC Sterile wash of injection sites for subsequent vaccines Nil recurrence	Unknown	Overdue Varicella, MMR dose 2 and DTaP/IV 4
8	Infanrix hexa (1) 2.5 months	11 days	Thigh swelling Erythema Fever	No swabs Pus exudate	Hospital admission Surgical review Spontaneous drainage while an inpatient Oral antibiotics	SAEFVIC Sterile wash of injection site for subsequent vaccines Scarring at site Nil recurrence	Eczema at time of vaccines	Unable to access
9	Infanrix hexa (3) 6 months	4 weeks	Thigh swelling Fever	No swabs Pus exudate Immune function testing	Infectious abscess Oral antibiotics $\times 4$ courses Spontaneous rupture and drainage (pus) GP management Immunologist	No recurrence post 12-month vaccines — no sterile wash Recurrence after 18 month Infanrix — requiring surgical incisions and drain and IV antibiotics — no sterile wash Infectious disease consult SAEFVIC	Nil	UTD

Outcomes

- 14 cases of ISA were followed up in the RCH Immunisation clinic by an Immunisation specialist.
- Subsequent vaccines were given at the RCH Immunisation clinic using sterile wash with Chlorhexadine or alcohol swab.
- No recurrence of abscess post subsequent immunisations reported to SAEFVIC. No long term follow-up has been carried out.
- 11 of the 14 (79%) patients were up to date (UTD) on the AIR (April 2018).
- 1 case was overdue and access to AIR was blocked for 2 cases.

Implications of ISA

- Pain
- Medical/surgical intervention
- Hospital admission/HITH
- Medical costs
- Scarring
- Parental anxiety
- Medico-legal implications

Recommendations and future considerations

- Adherence to optimal sterility during the immunisation process in line with the Australian Immunisation Handbook 2.2 'Administration of Vaccines' (3) and with the World Health Organisation (WHO) and Safe Injection Global Network (SIGN) guidelines (4).
- Education of immunisation providers to ensure adequate knowledge of the recommended administration procedures.
- Timely assessment, diagnosis and treatment of suspected ISA.
- Consider referral to Immunisation Specialist Clinic or hospital emergency department for further investigation and treatment.
- Report ISA to SAEFVIC (Victorian reports only) online at <https://www.aefvic.org.au>
- Consideration of those infants who present with active eczema at injection sites — choose a suitable alternative site or delay vaccines (within reason) until skin is clear (advise medical consultation).
- Sterile wash of skin prior to subsequent immunisations to prevent recurrence of abscess in patients with a history of ISA.
- Parental reassurance for future immunisations.

Figure 1. Images of ISA: Case 1 from table.

