



# A Rare Case of Shoulder Injury Related to Vaccine Administration (SIRVA) Following a Rabies Vaccine Injection

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## Introduction/Background

- Shoulder injury related to vaccine administration (SIRVA) is an uncommon but increasingly recognized complication resulting from improper intramuscular injection technique.
- SIRVA occurs when a vaccine is administered too high or too deep into the deltoid muscle, leading to inflammation of the shoulder structures (i.e. rotator cuff, subacromial bursa).
- While most reported cases involve influenza and pneumococcal vaccines, SIRVA following a rabies vaccination is very rare.
- This case highlights a 46-year-old female who developed acute rotator cuff tendonitis and bursitis after a misplaced rabies vaccine injection.
- Early recognition and intervention, including corticosteroid injection, led to significant symptom resolution, underscoring the importance of proper injection technique and prompt management.

## Case Presentation

- Patient: 46-year-old female
- Chief complaint: Severe left shoulder pain after third dose administration of the rabies vaccine
- Clinical exam findings:
  - Decreased range of motion in flexion, extension, adduction, and external rotation
  - Palpation shows tenderness at the greater tuberosity of the humerus, specifically at the biceps tendon
  - Motor Strength: Limited due to pain
- Ultrasound results:
  - Mid to high-grade rotator cuff tendinitis
  - Bursitis in subacromial-subdeltoid bursa
  - Focal hyperemia in supraspinatus and along the lateral most aspect of the subdeltoid bursa

## Clinical Course & Treatment

- Timeline of symptoms & treatment
  - Day 0: Rabies vaccine injected too high → Immediate shoulder pain following injection
  - 2 weeks later: Worsening pain, ROM restricted → Ultrasound shows tendinitis & bursitis
  - 1.5 months later: Persistent symptoms with little to no alleviation → Corticosteroid injection given during check-up
  - 6 months later: 96% pain relief, full ROM restored
- Treatment approach:
  - Corticosteroid Injection:
    - Immediate symptom relief observed
  - Physical therapy considerations:
    - Patient unable to attend due to insurance limitations
    - Despite this, nearly full recovery was achieved
- Outcome at follow-up: significantly increased range of motion and painless resistant during motor strength testing

## Discussion

- Comparing this case with existing SIRVA literature
  - Most SIRVA cases involve flu or pneumococcal vaccines
  - Only one prior rabies vaccine case reported in literature
  - Treatment for shoulder injury/rotator cuff varies: NSAIDs, PT, corticosteroids, surgery
- Potential mechanisms of SIRVA
  - Injection too high → Needle penetration into subacromial space in rotator cuff region
  - Adjuvants in vaccine → Immune response causes inflammation leading to shoulder injury symptoms to tissue
- Recovery rates in other literature SIRVA cases
  - Steroid injections: ~59% success rate
  - Physical therapy: ~65% success rate
- Rabies vaccine-induced SIRVA may be underreported due to the rarity of needing rabies immunization.

## Conclusion & Clinical Implications

- Proper injection technique is critical to prevent SIRVA
- SIRVA can occur with rabies vaccines, though rare
- Early diagnosis & treatment lead to better outcomes
- More research needed for vaccine administration training, long-term prognosis & best treatment approaches
- More studies are needed to correlate improper injection sites to treatment variations, especially for cases involving the rabies vaccine

## References

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