fortune Journals

Research Article

JOURNAL OF PEDIATRICS, PERINATOLOGY AND CHILD HEALTH

ISSN: 2641-7405

Intramuscular Injections Over Clothing: An Uncommon Yet Emerging Risk for Necrotizing Fasciitis in Pakistan

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Abstract

Purpose: This scientific article explores the relatively rare but emerging phenomenon of intramuscular injections administered over clothing and the potential association with the development of necrotizing fasciitis. Through a comprehensive analysis of reported cases, clinical outcomes, and underlying mechanisms, this research aims to shed light on this unanticipated complication, emphasizing the importance of proper injection techniques and heightened clinical vigilance.

Method: Patients presenting to the emergency department with necrotizing fasciitis were profiled and assessed.

Result: Out of 80 patients included in the study, male dominance was seen (62.5%). Most of the patients were administered intramuscular injection at the deltoid (87.5%), while other locations included the buttock (12.5%). Most of the patients administered intramuscular injections through clothing were over a shirt (58.8%), others included over a gown (33.3%) and trousers (10%). Symptoms started to occur in patients within 3-4 days.

Conclusion: Most of the patients had delayed presentation and a lack of awareness regarding the disease process.

Keywords: Intramuscular injection; Necrotizing fasciitis; Injection over clothing

Introduction

Intramuscular injections, a routine medical practice, are generally administered through the direct penetration of the skin into the underlying muscle tissue [1-4]. However, recent reports suggest an emerging trend wherein healthcare practitioners, or even non-professionals, administer intramuscular injections over clothing, raising concerns about the potential for severe complications, including necrotizing fasciitis [4-8]. This study aims to investigate the incidence and outcomes of intramuscular injections over clothing leading to necrotizing fasciitis, providing insights into the mechanisms, risk factors, and preventive strategies associated with this uncommon yet concerning practice.

The emergence of necrotizing fasciitis as a complication of such intramuscular injections is not well-documented, especially in Pakistan. This research aims to investigate this growing concern and highlight the potential connection between the improper administration of IM injections over clothing and the rising cases of necrotizing fasciitis in the country.

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Citation: Zahid Ali Memon, Osama Laeeque, Iqra Anees Rajput, Bushra Jawaid, Sumbla Salman, Sidra Anees, Muthar Anees, Noman Ahmed Khan. Intramuscular Injections Over Clothing: An Uncommon Yet Emerging Risk for Necrotizing Fasciitis in Pakistan. Journal of Pediatrics, Perinatology and Child Health. 9 (2025): 85-88.

Received: April 17, 2025
Accepted: April 24, 2025
Published: May 01, 2025

Memon ZA, et al., J Pediatr Perinatol Child Health 2025
DOI:10.26502/jppch.74050215

By examining the clinical cases, healthcare practices, and microbiological factors that contribute to this phenomenon, this study seeks to raise awareness among healthcare professionals, policymakers, and the general public about the importance of following proper injection protocols to reduce the risk of life-threatening complications such as NF.

In conclusion, this study will serve as an essential step in understanding an uncommon yet emerging risk in the medical landscape of Pakistan. By focusing on the intersection of healthcare practices, infection prevention, and the rising incidence of necrotizing fasciitis, it aims to contribute valuable insights into both clinical and public health domains. The findings could inform future healthcare policies, improve infection prevention strategies, and ultimately reduce the burden of necrotizing fasciitis associated with intramuscular injections over clothing in Pakistan.

Methodology

Study Design: This retrospective cohort study included patients who underwent surgical debridement for necrotizing fasciitis between January 2021 and January 2023 at Civil Hospital, Karachi.

Data Collection: Electronic medical records were reviewed, collecting information on patient Demographic data, injection site, clothing material, presenting symptoms, and microbiological analyses considered to characterize the clinical profile of affected individuals.

Statistical Analysis: Descriptive statistics were used to summarize patient demographic data.

Incidence and Clinical Outcomes: The incidence of intramuscular injections over clothing leading to necrotizing fasciitis was assessed based on the identified cases, exploring geographical, temporal, and demographic patterns. Clinical outcomes, including the severity of necrotizing fasciitis, complications, and patient outcomes, were examined to elucidate the impact of this unconventional injection method.

Results

Out of 80 patients included in the study, male dominance was seen (62.5%). Most of the patients were administered intramuscular injection at the deltoid (87.5%), while other locations included the buttock (12.5%). Most of the patients administered intramuscular injections through clothing over a shirt (58.8%), others included over a gown (33.3%) and trousers, i.e., salwar (10%). Symptoms started to occur in patients within 3-4 days. Most of the patients had delayed presentation and a lack of awareness regarding the disease process. The common clinical manifestations included redness, swelling, discharging abscess, pain, fever, skin necrosis, and foul-smelling discharge. Bacteroides and E. coli were the organisms mainly isolated in this study. Most of the patients belonged to a poor socioeconomic status. According to the patients, they went to the local clinic in their area for fever as their chief complaint, and they were administered medication through the intramuscular route using a syringe. Patients did not know whether the syringes were reused. According to patients, they had just a single dose administration of medication through the intramuscular route, and symptoms began to appear within 3 days after administration (Figure 1-4).

Discussion

Intramuscular injections, a routine medical practice, are considered a safe and effective means of delivering medications [9]. However, it is crucial to acknowledge the potential risks associated with this common medical intervention [10]. One rare but severe complication that has been documented in the literature is the development of necrotizing fasciitis (NF)

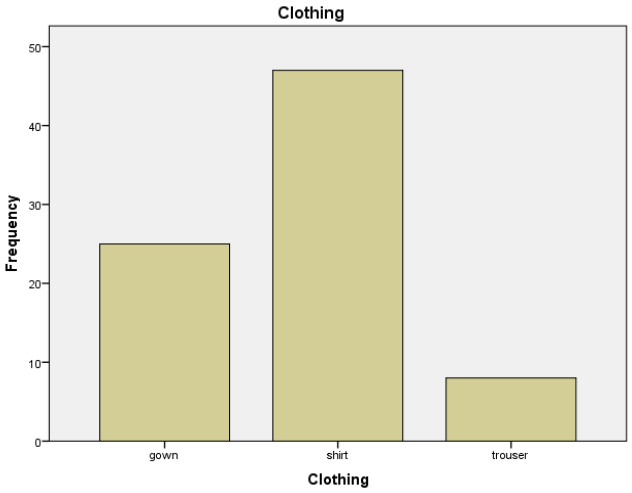

Figure 1: Clothing.

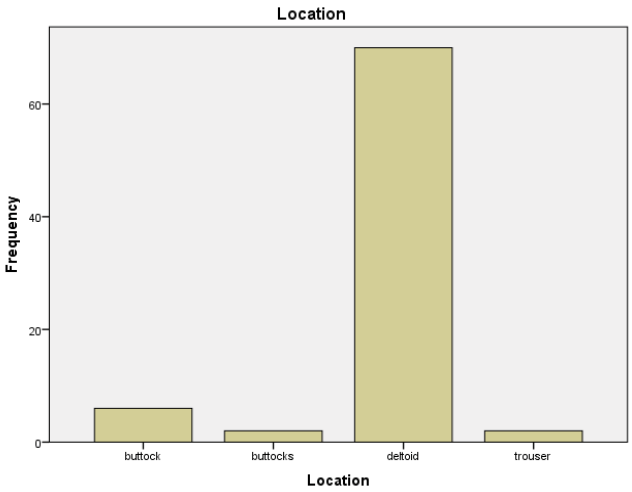

Figure 2: Location.

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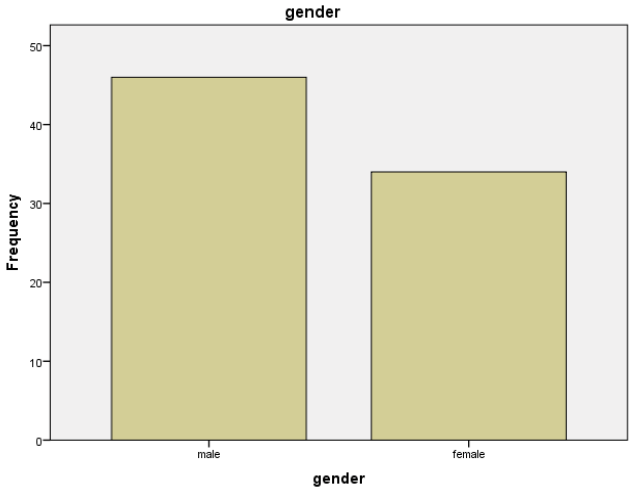

Figure 3: Gender.

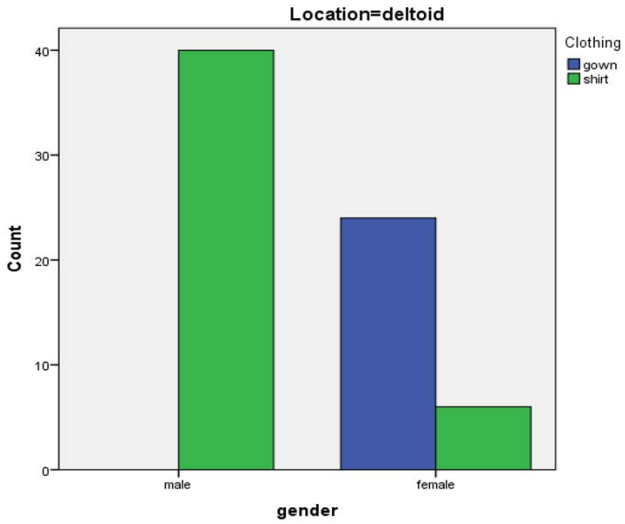

Figure 4: Association With Gender.

following intramuscular injections [11]. Necrotizing fasciitis is a rapidly progressing soft tissue infection characterized by the widespread necrosis of the fascial plane [12]. When associated with intramuscular injections, the potential mechanisms leading to NF merit careful consideration [13-14]. Introducing pathogenic microorganisms into the deep tissue layers during the injection process can be a primary instigator. Bacterial contamination, originating from the skin, the injection site, or even the injected substance itself, may lead to an aggressive infection [15]. Additionally, the forceful injection of material into the muscle can disrupt local blood vessels, compromising the blood supply to the surrounding tissues [16]. This compromised blood flow contributes to impaired tissue oxygenation, creating an environment conducive to bacterial proliferation and tissue necrosis [17-18]. Several factors may increase the risk of developing necrotizing fasciitis following intramuscular injections. These include **Poor Injection Technique:** Incorrect injection techniques, such as using a contaminated needle or injecting into a heavily colonized skin site, increase the likelihood of introducing pathogens into deeper tissues [19]. **Immunocompromised State:** Individuals with compromised immune systems, whether due to underlying medical conditions or immunosuppressive medications, are more susceptible to infections, including those triggered by intramuscular injections [20]. **Contaminated Substances:** The nature of the injected substance plays a role. Contaminated medications or substances may introduce harmful microorganisms into the tissue, setting the stage for infection. The clinical presentation of intramuscular injection-associated necrotizing fasciitis often involves a rapid onset of symptoms, including severe pain at the injection site, erythema, swelling, and systemic signs of infection such as fever and malaise [21]. As the infection progresses, the affected area may develop characteristic signs of necrosis, including discoloration and bullae formation [22]. Early diagnosis is critical for successful intervention. However, distinguishing the symptoms of necrotizing fasciitis from more common post-injection reactions can be challenging, highlighting the importance of heightened clinical awareness [23]. Preventing necrotizing fasciitis associated with intramuscular injections requires a multifaceted approach: **Adherence to Aseptic Technique:** Healthcare professionals must strictly adhere to aseptic techniques during injection procedures, minimizing the risk of introducing pathogens into deeper tissues. **Proper Injection Site Preparation:** Thoroughly cleaning and disinfecting the injection site can reduce the microbial load, decreasing the likelihood of infection. **Education and Training:** Healthcare providers should receive comprehensive training on injection techniques and infection prevention measures to minimize the risk of complications. The development and implementation of standardized guidelines for intramuscular injections, stressing the necessity of direct skin access, will be recommended to mitigate the risk of necrotizing fasciitis. **Immediate Recognition and Intervention:** Early recognition of symptoms and prompt intervention, including surgical exploration and debridement, are crucial for mitigating the progression of necrotizing fasciitis. Promoting awareness among healthcare professionals and the general public regarding the risks associated with intramuscular injections over clothing will be emphasized as a primary prevention strategy.

Conclusion

This research underscores the importance of recognizing and addressing the uncommon practice of administering intramuscular injections over clothing, which may contribute to the development of necrotizing fasciitis. By elucidating the mechanisms and risk factors associated with this practice, healthcare providers can enhance preventive strategies and promote safe injection practices. Heightened clinical awareness, coupled with educational initiatives, is

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imperative to mitigate the emerging risks associated with this unconventional injection method.

Limitation of Study

This study was conducted in a single Centre and having small sample size.

Funding Source: None

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