

Jarisch Herxheimer Reaction in an Adolescent with Secondary Syphilis: A Case Report

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ABSTRACT

The Jarisch-Herxheimer reaction is defined as a transient immunological reaction, classically seen in patients during antimicrobial treatment of syphilis. Clinically, it manifests within 24 h with short-term constitutional symptoms (fever, chills, headache, myalgia) and exacerbation of existing cutaneous lesions. Herein, we present a case of Jarisch-Herxheimer reaction in an adolescent.

Key words: Jarisch-Herxheimer reaction, Syphilis, Adolescent, Immunological reaction, Antimicrobial treatment.

INTRODUCTION

Jarisch, Herxheimer and Krause described this reaction at the turn of the century, but it was initially noted in the 15th century when topical arsenic was first used to treat syphilis.¹ The initial literary description was given by Adolf Jarisch (Austrian dermatologist) in 1895, when he noted exacerbation of lesions in roseolar syphilis patients after treatment with mercury.² Subsequently, in 1902, Karl Herxheimer (German dermatologist) independently reported a similar phenomenon.³ The reaction, typically occurring 6–12 h after therapy for syphilis is initiated, consists of fever, rigor, malaise, diaphoresis and an exacerbation of pre-existing cutaneous lesions.⁴ We present here a case of Jarisch-Herxheimer Reaction (JHR) in an adolescent.

CASE REPORT

A 17-year-old boy presented to the Department of Skin and VD at National Institute of Medical Sciences Hospital Jaipur, Rajasthan, India, with multiple asymptomatic elevated solid lesions over the inner thighs, scrotum, penis, palms and soles for 5 days. On examination, multiple discrete skin-colored papules and

plaques were seen on the inner thighs, scrotum and penile skin. Multiple discrete hyper pigmented to slightly erythematous papules were seen on the palms and soles (Figure 1). The patient did not give any history of penile ulcers. Peri-anal and oral examination was unremarkable. The patient gave a history of single heterosexual contact in the 8 weeks prior to the eruption. On laboratory examination, the patient had positive venereal disease research laboratory (VDRL) in a dilution titer of 1:64. Based on clinical and laboratory findings, a diagnosis of secondary syphilis was made. The patient was prescribed injection benzathine penicillin 2.4 million units deep intramuscular on buttocks after sensitivity testing at around 1 pm. Patient presented to the emergency department at around 7 pm with fever and myalgia and on examination we observed the appearance of new lesions bilaterally over the forearms, which were erythematous and slightly painful. (Figures 2 and 3) Patient was febrile with a temperature of 101° F. The patient refused a biopsy testing. Therefore, based on the history of penicillin injection within 24 h along with clinical correlation, a diagnosis of JHR was made and the patient was started

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Figure 1: Multiple discrete hyperpigmented to slightly erythematous papules over palms and soles.



Figure 2: Multiple discrete erythematous papules and plaques over bilateral forearms post- penicillin injection.

on prednisolone 20 mg for 7 days. There was complete clearance of lesions within 7 days.

This study was conducted ethically in accordance with the Declaration of Helsinki and the patient provided written informed consent for using clinical images and other information.



Figure 3: Multiple erythematous papules and plaques over right ante-cubital fossa plaques.

DISCUSSION

The JHR is defined as a transient immunological reaction, classically seen in patients during antimicrobial treatment for syphilis. It manifests within 24 h with short-term constitutional symptoms (fever, chills, headache, myalgia) and exacerbation of existing cutaneous lesions.² The terms “Herxheimer reaction”, “Herxheimer effect”, “therapeutic shock,” and informally “Herx” are now used synonymously.⁵ The reaction is known to occur in seronegative primary syphilis (55%), seropositive primary syphilis (95%) and secondary syphilis (95%).⁶ It usually does not occur in latent syphilis. It is observed very rare in late syphilis, except in patients with general paresis of insane where it can occur in 75% of patients.⁶ On rare occasions, patients with neurosyphilis may experience seizures monoplegia, or hemiplegia.⁴ Another possibly dangerous outcome, although rare, is inflammation of the aorta or coronary Ostia in patients with cardiovascular involvement.^{4,7} This is a systemic febrile reaction occurring in about 60% of patients treated with penicillin for syphilis.⁷ Reactions similar to the JHR may occur in other infections. (Table 1)

Table 1: Infections associated with JHR.

| A. Well-documented |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syphilis Louse-borne relapsing fever leptospirosis Tick-borne relapsing fever Lyme disease |
| B. Case reports |
| Vincent's angina, Yaws Rat bite fever, Anthrax, Brucellosis, Glanders, Tularemia, Bartonellosis Meningococcal meningitis, Q-fever Whipple's disease, Pneumocystis carinii pneumonia, African trypanosomiasis Onchocerciasis (Mazzotti reaction), Strongyloidiasis Trichinellosis Falciparum malaria |

Table 2: Depicting difference between JHR due to penicillin and penicillin hypersensitivity reaction.

| Features | Jarisch-Herxheimer reaction | Penicillin hypersensitivity reaction |
|-----------------------------------|------------------------------------------------------------------------|---------------------------------------|
| Onset of reaction | Within 2–8 h | Within few minutes |
| Symptoms | Triad–fluctuation in body temperature, flare and physiological changes | Urticaria/wheals |
| Laboratory findings | Not specific (Polymorphonuclear leukocytosis, lymphopenia, raised ESR) | Eosinophilia |
| Re-occurrence | Does not recur | Reoccurs on subsequent administration |
| Specific antibodies to penicillin | Negative | Positive |
| Treatment | Self-resolving, symptomatic treatment | Stop Penicillin |

Herxheimer postulated that the liberation of an endotoxin from degenerating treponemes following treatment of syphilis was the underlying mechanism. These products react with the “sensitized” syphilitic tissues and cause aggravation of lesions.⁸ There is transient elevation of pyogenic cytokines, such as TNF- α (first to rise), IL-6 (rises at the onset of symptoms) and IL-8. JHR is a self-resolving condition that can be managed symptomatically. JHR can also be confused with penicillin allergy (Table 2). Complete bed rest, fluids and antipyretics such as

aspirin or acetaminophen are adequate for mild cases (early syphilis) associated with constitutional symptoms, whereas desensitization is required when beta-lactam hypersensitivity is confirmed and beta-lactam antibiotics are the treatment of choice. Oral and intravenous protocols for beta-lactams desensitization have been published starting from very low doses that are usually every 15 min until the full therapeutic dose is achieved.⁹

CONCLUSION

Clinicians should not confuse the JHR with a penicillin allergy as this is the drug of choice.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given consent for clinical images and other information to be reported in the journal. The patients understands that name and initials will not be published and due efforts will be made to conceal patient identity.

ABBREVIATIONS

JHR: Jarisch-Herxheimer Reaction; **VDRL:** venereal disease research laboratory.

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