



A CASE REPORT ON PRIMARY RAYNAUD'S PHENOMENON

Pharmaceutical Science

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ABSTRACT

Raynaud's phenomenon is a vascular condition that mostly affects the fingers and toes and is characterised by a brief constriction of peripheral blood arteries. Primary Raynaud's disease is idiopathic, whereas secondary Raynaud's disease is linked to underlying illnesses or drugs. There is no difference in the development of Raynaud's phenomenon across various subtypes of systemic sclerosis. Diagnosing related disorders can help determine the transition from primary to secondary Raynaud's syndrome. In cases of Raynaud's phenomenon, smoking has been associated with poorer results. One method of treatment is to manage symptoms using calcium-channel blockers such as dihydropyridine. For Raynaud's phenomenon to be effectively managed, it is essential to comprehend the pathophysiology, diagnostic methods such as capillaroscopy, and the relationship with other disorders. **Case Report:** The authors present a case of 34 year old Female patient admitted in hospital with complaints of fever since 7 days and history of joint pains, tingling sensations of fingers, headache with bluish discoloration of digits and toes. The patient does not have any allergies. Patient care began after being diagnosed. **Result:** Symptoms were alleviated, body temperature remained normal, and the patient was stabilised after six days of medication. **Conclusion:** A prevalent ailment known as Raynaud's phenomenon is linked to serious morbidity, such as pain and incapacity. A thorough history and physical examination will determine the breadth of the work-up, which is crucial to do because Raynaud's disease frequently manifests as the first sign of an underlying connective tissue condition.

KEYWORDS

INTRODUCTION:

The hallmark of Raynaud's phenomenon (RP), an episodic vasospastic condition, is digital vascular impairment that occurs after being exposed to cold or emotional stresses.⁽¹⁾ The body adjusts to cold conditions by limiting blood flow to the skin. This serves as a thermoregulating mechanism to maintain the body's core temperature and stop further heat loss. Blood flow restriction in the Raynaud phenomenon happens in cold weather and under stressful emotional conditions. More specifically, the digital arteries and cutaneous arterioles contract during the Raynaud phenomenon. Sir Thomas Lewis conducted research on this phenomenon in 1930 after it was initially reported by Maurice Raynaud in 1862. In general, the peripheral vasoconstrictive reaction to cold temperatures or emotional stress is known as the Raynaud phenomenon. There are two types of Raynaud phenomena: primary and secondary.⁽²⁾⁽³⁾⁽⁴⁾

The majority of people (80–90%) have primary (or "idiopathic") Raynaud's phenomenon (PRP), but a wide range of illnesses and drug-related factors can induce secondary RRP (SRP). Regardless of the underlying reason, Raynaud's phenomenon significantly lowers a person's quality of life and can lead to subsequent manifestations of the condition that cause ulceration and gangrene as well as chronic digital ischaemia.⁽⁵⁾⁽⁶⁾⁽⁷⁾

The underlying pathophysiology of Raynaud's syndrome, which is typified by sporadic vasospasm of tiny arteries, is complex.⁽⁸⁾⁽⁹⁾ Vascular dysregulation is the occurrence of heightened vasoconstriction in response to cues such as emotional stress or exposure to cold is central to this.⁽¹⁰⁾⁽¹¹⁾ Endothelial dysfunction may be the cause of this aberrant vascular response, affecting the endothelial cells' capacity to appropriately control vascular tone. Sympathetic nervous system involvement also makes symptoms worse by intensifying vasoconstriction due to elevated sympathetic activity.⁽¹²⁾⁽¹³⁾ While secondary Raynaud's phenomena is linked to autoimmune illnesses such as lupus,⁽¹⁴⁾ rheumatoid arthritis,⁽¹⁵⁾ and systemic sclerosis,⁽¹⁶⁾ where the underlying condition contributes to the vascular irregularities, primary Raynaud's phenomenon frequently occurs without an underlying cause.⁽¹⁷⁾ The complicated interaction of vascular, neurological, and perhaps autoimmune variables emphasises the significance of customised treatment interventions and highlights the intricacy of Raynaud's pathophysiology.

Case Report:

History of Present illness: A 34-year-old patient has been admitted to the hospital with a complaint of fever since 1 week, sudden onset of chills and body pains.

Past Medical history: Tingling sensation of fingers since 3 months, headache with bluish discoloration of digits and toes which were more marked on cold exposure. The patient have a known case of hypothyroidism.

Allergies: No allergies.

Laboratory test performed: The laboratory tests have been performed at the first day of admission, which are as follows (table: 1)

Table 1: Laboratory Tests		
Lab Parameter	DAY-1	Normal value
HB	10.6	13-18gms%
WBC	5200	4000-11000c/cmm
RBC	3.5	4.3-5.7c/mcl
PLATELETS	1.93	1.5-4.5 lakhs/cumm
ESR	60mm	0-15mm
CRP	0.56 mg/dL	0-0.74
Sr.cr	1.6	0.9-1.3mg/dl
T3	0.85	5-7 pmol/L
T4	10.9	15-23 mIU/L
TSH	1.97	0.5-4.5 mIU/L
Globulin	4.27gm/dl	2.9-3.1g/dl
A/G ratio	0.9	1-2
Culture report: Sample : Salmonella typhi IgA Ab-0.208 Salmonella typhi IgM Ab-0.237 Antinuclear antibody test was positive -- 1:160 Note: = Objective Evidence		

Treatment: The primary goal of the treatment is to cure the condition, stabilise the patient, and alleviate fever, joint discomfort, and tingling sensations.

Treatment options: Pharmacological or non-pharmacological therapies are available for the treatment of Raynaud's syndrome.

Non-Pharmacological: In most people, Raynaud's phenomenon can be controlled by making lifestyle changes. The following tips can

decrease the number and severity of attacks you have.

- **Keep warm:** It's essential to keep your hands, feet, and entire body warm. The "core body," which consists of the chest, belly, and head, must also be kept warm.
- **Quit smoking:** The nicotine included in some vaping solutions and cigarettes can restrict blood vessels, which raises the risk of an attack. Smoking also carries the risk of permanently damaging blood vessels, which is especially harmful to those who have Raynaud's phenomenon.
- **Act quickly to end an attack:** If you experience an attack, place your hands or feet in a warm spot, such as beneath warm (not hot) water or a heating pad. Warm your hands by windmilling your arms or placing them beneath your armpits.
- **Cope with stress:** The ability to control stress is crucial since it has the potential to trigger an attack. Deep breathing, meditation, and other relaxation methods could be beneficial.



Fig 1: Raynaud's phenomenon in a woman with primary Raynaud's. The second, third fingers appear white due to vasospasm (the 'white phase'). The remaining fingers are spared.

The laboratory tests were carefully assessed, and the data was obtained as ANA test was positive, decrease in haemoglobin levels, elevated ESR and globulin levels and low T3 and T4, TSH levels. After complete evaluation of the laboratory data, the final diagnosis of Primary Raynaud's phenomenon was initiated.

Pharmacological:

- **General treatment options:** First identify the underlying cause. Only when the cause has been identified and treated individually, will it result in an end of Raynaud's phenomenon.
- **Alpha-1 blockers:** They can counter the effect of norepinephrine, which constricts blood vessels. Examples include doxazosin and prazosin.
- **Dihydropyridine calcium channel blockers:** It relaxes the smaller blood vessels of the hands and feet. Examples include amlodipine, nifedipine, and felodipine.
- **Topical nitro-glycerine ointment:** When applied to the affected area appears to relieve the symptoms by improving blood flow and cardiac output and decreasing blood pressure.
- **Other vasodilators:** dilate the veins, easing symptoms. Examples include losartan, sildenafil (Viagra), fluoxetine (Prozac), and prostaglandin.

Treatment Given:

- Tab. Dolo (Paracetamol) in a dose of 650 mg is administered orally three times a day for six days in order to treat the fever and reduce the discomfort. Additionally, if a temperature was higher than 101, injection of 1 gram of paracetamol were administered intravenously for the first two days.
- From the third to the fourth day, the patient received intravenous fluids (DNS and NS) at a rate of 100 ml per hour. This type of fluid administration is used to supplement the body when additional fluids and electrolytes are required.
- From the fourth to the sixth day, tepid sponge bathing was also applied. This method is widely utilised to lower fever in people,

bringing comfort and solace during sickness. It may also be used to cool down overheated people who are suffering from heat exhaustion or heatstroke, which helps control body temperature and avert more problems.

- Oral administration of the capsule doxy (doxycycline 100mg) is initiated on the third day and continued every day until the sixth day.
- Intravenous administration of the Inj. Monocef (Ceftriaxone 1mg) is given twice a day, starting on the fourth day and continuing until the sixth day. Similar to this, from the first to the sixth day of treatment, an intravenous injection of 1 ampoule of Inj. Optineuron (Vitamin B complex with Vitamin B12) and Inj. Pan (Pantoprazole 40 mg) is administered once daily. During the duration of therapy, Inj. Zofer (Ondansetron) is given intravenously as needed.

Day wise assessment:

Day 1: The patient's temperature and pulse rate were 102°F and 104 bpm on the day of admission. To determine the true cause, a number of laboratory tests were recommended, including the ANA, erythrocyte sedimentation rate, liver function test, renal function test, and complete blood count. These tests revealed the presence of primary Raynaud's phenomenon, and therapy was started.

Day 2: Upon examination, the patient reported green-coloured vomiting; the temperature was recorded at 100°F, and the pulse rate was 104 beats per minute. The patient is now having a surge in temperature, headache, and joint and body pain.

Day 3: The temperature was recorded as moderate on the third day of therapy, and the patient's pulse rate—92 bpm—was likewise within control. The patient's temperature has now subsided, but joint pain and a dry cough have started.

Day 4: The patient's body temperature and pulse rate on the fourth day of treatment were both within normal ranges at 82 bpm and 98° F, respectively. The patient is beginning to stabilise gradually.

DISCUSSION:

Patients with primary Raynaud phenomenon in young adults have a fair prognosis with little morbidity and death. It is possible for ischemia to cause necrosis at the distal tips of the fingers if the patient does not alter their lifestyle or quit smoking. Compared to the general population, there are reports that the elderly with Raynaud phenomenon may have a higher risk of unfavourable cardiac events. The underlying illness determines the prognosis for people with secondary Raynaud syndrome. Because they must lead strict lifestyles, these patients generally have low quality of life. Furthermore, relapses are frequent and many additional secondary causes are incurable. ⁽³⁾⁽¹⁸⁾⁽¹⁹⁾

Women were represented in the overwhelming majority of reports, probably owing to the epidemiology of both migraine and Raynaud's phenomenon. ⁽²⁰⁾⁽²¹⁾ It is true that some authors have given Systemic sclerosis patients with PRP and SRP different perfusion values; however, in our study, the perfusion was assessed at basal condition, whereas in other studies, the perfusion was assessed either during or after various types of stress, such as the cold or occlusion test. ⁽²²⁾

In our case report, the patient was found to have a seven-day history of fever, joint pain, and hypothyroidism. Raynaud's phenomenon was the ultimate diagnosis. Tepid sponge baths and antipyretic medication were given to the patient to relieve their symptoms. To facilitate the patient's full recovery, the non-pharmacological intervention should be maintained, and any further developments should be closely observed.

CONCLUSION:

A prevalent ailment known as Raynaud's phenomenon is linked to serious morbidity, such as pain and incapacity. Since Raynaud's syndrome is a somewhat common occurrence, patients should be sent to a rheumatologist as soon as possible to help distinguish between primary and secondary Raynaud's. A thorough history and physical examination will determine the breadth of the work-up, which is crucial to do because Raynaud's disease frequently manifests as the first sign of an underlying connective tissue condition. For all Raynaud's Phenomenon patients, nonpharmacological management is recommended.

Conflict of interest: The authors declare that there is no conflict of interest.

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