Raynaud's phenomenon: A whiter shade to winter's pale

During the winter months, complaints of pain associated with cold fingers and toes increase. In New Zealand, it is estimated that 19% of females and 5% of males experience symptoms consistent with Raynaud's phenomenon.[1] This is a circulatory disorder, characterised by episodic attacks where arteries in the fingers and toes spasm, restricting blood flow and causing pain and marked colour changes of the skin.[2] In some people it may also affect other peripheral areas, such as the tip of the nose and ears.

In New Zealand, Raynaud's phenomenon is reported to affect Māori and people with manual occupations more severely.[1] Initial vasoconstriction causes a white appearance to the skin as blood flow decreases, which is often followed by a cyanotic blue phase, as the trapped blood deoxygenates.[2] Attacks may last from minutes to hours and usually end with rapid perfusion of blood back into the digits, which then appear red. Episodes of Raynaud's frequently cause pain and a "pins and needles" sensation due to sensory nerve ischaemia.[2] The cause of Raynaud's is unknown, however, it is likely to involve increased activation of sympathetic nerves due to cold, or emotional stimulus.[2] In secondary Raynaud's, abnormalities of vascular structure and function from the underlying condition contribute to the phenomenon.

Diagnosis is based on clinical symptoms and signs

A diagnosis of Raynaud's phenomenon is based on a history of repeated and sudden episodes with the characteristics as described above. Patients may report attacks being triggered by cold weather, or other cold environments such as refrigerated areas in supermarkets or from cold air conditioning.[3] There may be a family history present. An occupational history should be taken – people who use vibrating hand tools or have ongoing exposure to cold, e.g. meat packers, are at an increased risk of Raynaud's.[3]

Raynaud's can be primary or secondary

It is important to distinguish between primary and secondary Raynaud's so that a potentially serious, underlying condition, is not overlooked. Primary Raynaud's has no underlying etiology and clinical examination may be normal, therefore it is a diagnosis of exclusion.

Secondary Raynaud's can occur due to a number of connective tissue diseases such as systemic sclerosis (scleroderma), systemic lupus erythematosus and rheumatoid arthritis, but can also occur with a range of

other conditions, including carpal tunnel syndrome and hypothyroidism. Raynaud's may also be secondary to medicines or trauma, particularly vibration injury.[3] Patients with secondary Raynaud's may have skin changes such as ulcerated or necrotic patches around the affected area.[4]

The presence of any of the following factors suggest a diagnosis of secondary Raynaud's:[3]

- Age of onset > 30 years
- Intense, painful, asymmetric attacks or attacks associated with ischaemic skin lesions
- Symptoms suggestive of an underlying disorder, especially a connective tissue disease – such as systemic sclerosis, where in up to 90% of cases Raynaud's is one of the presenting symptoms.[5]

Laboratory testing is unhelpful in people with primary Raynaud's, but if a diagnosis of secondary Raynaud's is suspected, testing may help confirm the presence of an underlying condition. Initially, testing may include complete blood count, CRP and antinuclear antibody (ANA), however, other tests may be indicated depending on the clinical findings and suspected underlying condition. In some cases, treating the underlying condition will also ameliorate Raynaud's phenomenon.[6]

Conservative treatment is often the best

Behaviour modification is the first strategy for alleviating symptoms of Raynaud's phenomenon. A "common sense" strategy of avoiding abrupt changes in temperatures, therefore preventing peripheral vasoconstriction, can be effective. Considerations include clothing, home heating and workplace conditions.

Practical tips for avoiding or minimising episodes of Raynaud's include:[7]

- Keep the whole body warm and wear warm socks, gloves and a hat when going out in cold weather
- Avoid carrying objects in the hand, e.g. a handbag, which can restrict blood to the fingers when gripped
- Maintain regular movement, e.g. squeezing a stress ball or walking round the room
- Avoid smoking as this causes vasoconstriction
- The consumption of "warming" foods such as porridge or chilli has been reported by some people to ameliorate symptoms[6]
- When an attack occurs, place hands in warm water or under the armpits, or rotate arms in a windmill pattern

People who experience Raynaud's should avoid medicines which reduce blood flow to the peripheries, such as:[4]

- Serotonin receptor agonists, e.g triptans used to treat migraines
- Ergots (Claviceps fungi derivatives), e.g. ergotamine used to treat migraines
- Clonidine (which decreases cardiac output)

Historically there have been reports that non-selective beta-blockers, e.g. propanolol, carvedilol, nadolol, exacerbate Raynaud's. Recent studies have shown that beta blockers with beta-1 selectivity, e.g. metoprolol, are less likely to cause vasoconstriction in patients with Raynaud's. However, beta blockers should be used cautiously, in people who experience severe Raynaud's symptoms.[8]

Medication is the second option

In severe cases of Raynaud's, the use of medicines that cause vasodilation of the digits may be considered. Calcium channel antagonists such as nifedipine, amlodipine and felodipine are frequently effective in the treatment of Raynaud's and are all fully funded in New Zealand. However, calcium channel blockers are less effective for treating patients with secondary Raynaud's, notably Raynaud's secondary to systemic sclerosis (sclerodoma).[9]

Adverse effects of treatment are experienced by up to three-quarters of patients with Raynaud's and may include headache, flushing, dizziness and peripheral oedema.

However, these effects can be controlled with careful dosing and if mild, are often considered by the patient to be preferable to the symptoms of Raynaud's itself.[9]

It is recommended that patients are started on the lowest dose of the chosen medicine (Table 1). The dose can then be increased incrementally as required and tolerated. If a patient reports that one calcium channel blocker is ineffective then another can be trialled.[9] Primary Raynaud's may spontaneously remit, therefore treatment can be stopped from time to time in order to confirm persistence.[4] Some people report that intermittent use of the medicine prior to exposure to cold weather is sufficient.

Patients with secondary Raynaud's, who find calcium channel blockers ineffective, may benefit from the concomitant administration of an additional vasodilator such as transdermal nitroglycerin.[9]

Table 1: Calcium channel blockers for Raynaud's phenomenon[9]

Medicine	Dose
Nifedipine (sustained-release)	30 – 120 mg/day
Amlodipine	5 – 10 mg/day
Felodipine (extended release)	2.5 – 10 mg/day

Many other medicines, such as other vasodilators, endothelin antagonists, phosphodiesterase-5 inhibitors, prostaglandin derivatives, statins, botulinum toxin and N-acetyl-cysteine have been trialled in patients unresponsive to calcium channel blockers, however, there is limited evidence as to their effectiveness.

Rarely, in severe cases, surgical destruction of sympathetic nerves (sympathectomy) may be required to alleviate symptoms.

References:

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