Rosacea
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What is rosacea?
Rosacea is a chronic rash involving the central face that most often affects those aged 30 to 60. It is common in those with fair skin, blue eyes and Celtic origins. It may be transient, recurrent or persistent and is characterised by its colour, red.

Although once known as “acne rosacea”, this is incorrect, as it is unrelated to acne.

What is the cause of rosacea?
There are several theories regarding the cause of rosacea, including genetic, environmental, vascular and inflammatory factors. Skin damage due to chronic exposure to ultraviolet radiation plays a part.

The skin’s innate immune response appears to be important, as high concentrations of antimicrobial peptides such as cathelicidins have been observed in rosacea. Cathelicidins are part of the skin’s normal defence against microbes.

Cathelicidins promote infiltration of neutrophils in the dermis and dilation of blood vessels. Neutrophils release nitric acid also promoting vasodilation. Fluid leaks out of these dilated blood vessels causing swelling (oedema); and proinflammatory cytokines leak into the dermis, increasing the inflammation.

Matrix metalloproteinases (MMPs) such as collagenase and elastase also appear important in rosacea. These enzymes remodel normal tissue and help in wound healing and production of blood vessels (angiogenesis). But in rosacea, they are in high concentration and may contribute to cutaneous inflammation and thickened, hardened skin. MMPs may also activate cathelicidins contributing to inflammation.

Hair follicle mites (Demodex folliculorum) are sometimes observed within rosacea papules but their role is unclear.

An increased incidence of rosacea has been reported in those who carry the stomach bacterium Helicobacter pylori, but most dermatologists do not believe it to be the cause of rosacea.

Rosacea may be aggravated by facial creams or oils, and especially by topical steroids.

What are the clinical features of rosacea?
Rosacea results in red spots (papules) and sometimes pustules. They are dome-shaped rather than pointed and unlike acne, there are no blackheads, whiteheads or nodules. Rosacea may also result in red areas, scaling (rosacea dermatitis) and swelling.

Characteristics of rosacea include:

- Frequent blushing or flushing
- A red face due to persistent redness and/or prominent blood vessels – telangiectasia (the first stage or erythematotelangiectatic rosacea)
- Red papules and pustules on the nose, forehead, cheeks and chin often follow (inflammatory or papulopustular rosacea); rarely, the trunk and upper limbs may also be affected
- Dry and flaky facial skin
- Aggravation by sun exposure and hot and spicy food or drink (anything that reddens the face)
- Sensitive skin: burning and stinging, especially in reaction to make-up, sunscreens and other facial creams
- Red, sore or gritty eyelid margins including papules and styes (posterior blepharitis), and sore or tired eyes (conjunctivitis, keratitis, episcleritis) – ocular rosacea
- Enlarged unshapely nose with prominent pores (sebaceous hyperplasia) and fibrous thickening – rhinophyma
- Firm swelling of other facial areas including the eyelids – blepharophyma
- Persistent redness and swelling or solid oedema of the upper face due to lymphatic obstruction – Morbihan disease

Rosacea
What is the differential diagnosis of rosacea?

Rosacea may occasionally be confused with or accompanied by other facial rashes including:

- Acne vulgaris
- Steroid rosacea
- Perioral dermatitis
- Rosacea fulminans
- Seborrhoeic dermatitis
- Irritant contact dermatitis

How is rosacea diagnosed?

In most cases, no investigations are required and the diagnosis of rosacea is made clinically. Occasionally a skin biopsy is performed, which shows chronic inflammation and vascular changes.

What is the treatment for rosacea?

General measures

- Where possible, reduce factors causing facial flushing.
- Avoid oil-based facial creams. Use water-based make-up.
- Never apply a topical steroid to the rosacea as although short-term improvement may be observed (vasoconstriction and anti-inflammatory effect), it makes the rosacea more severe over the next weeks (possibly by increased production of nitric oxide).
- Protect yourself from the sun. Use light oil-free facial sunscreens.
- Keep your face cool to reduce flushing: minimise your exposure to hot or spicy foods, alcohol, hot showers and baths and warm rooms.
- Some people find they can reduce facial redness for short periods by holding an ice block in their mouth, between the gum and cheek

Oral antibiotics for rosacea

Tetracycline antibiotics including doxycycline and minocycline reduce inflammation. They reduce the redness, papules, pustules and eye symptoms of rosacea. The antibiotics are usually prescribed for 6 to 12 weeks, with the duration and dose depending on the severity of the rosacea. Further courses are often needed from time to time, as the antibiotics don't cure the disorder.

Sometimes other oral antibiotics such as cotrimoxazole or metronidazole are prescribed for resistant cases.

Anti-inflammatory effects of antibiotics are under investigation. They have been shown to inhibit MMP function and in turn reduce cathelicidins and inflammation. The effective dose of tetracyclines in rosacea is lower than that required to kill bacteria, so they are not working through their antimicrobial function.
Disadvantages of longterm antibiotics include development of bacterial resistance, so low doses (eg 40-50mg doxycycline daily) that do not have antimicrobial effects are preferable.

**Topical treatment of rosacea**
Metronidazole cream or gel can be used intermittently or long-term on its own for mild inflammatory rosacea and in combination with oral antibiotics for more severe cases.

Azelaic acid cream or lotion is also effective for mild inflammatory rosacea, applied twice daily to affected areas.

Facial redness can be treated by brimonidine gel, an alpha-2 adrenergic agonist. A new product, oxymetazoline hydrochloride cream, an alpha1A adrenoceptor agonist, was approved by FDA in January 2017 and is expected to be marketed in May 2017.

Ivermectin cream was approved in the treatment of papulopustular rosacea in December 2014. It is thought to help rosacea by controlling demodex mites and as an anti-inflammatory agent.

**Isotretinoin**
When antibiotics are ineffective or poorly tolerated, oral isotretinoin may be very effective. Although isotretinoin is often curative for acne, it may be needed in low dose long-term for rosacea, sometimes for years. It has important side effects and is not suitable for everyone.

**Medications to reduce flushing**
Nutraceuticals targeting flushing, facial redness and inflammation may be beneficial.

Certain medications such as clonidine (an alpha2-receptor agonist) and carvedilol (a non-selective beta blockers with some alpha-blocking activity) may reduce the vascular dilatation (widening of blood vessels) that results in flushing. They are generally well tolerated. Side effects may include low blood pressure, gastrointestinal symptoms, dry eyes, blurred vision and low heart rate.

**Anti-inflammatory agents used for rosacea**
Oral non-steroidal anti-inflammatory agents such as diclofenac may reduce the discomfort and redness of affected skin. Although these are uncommon, serious potential adverse effects to these agents include peptic ulceration, renal toxicity and hypersensitivity reactions.

Calcineurin inhibitors such as tacrolimus ointment and pimecrolimus cream are reported to help some patients with rosacea.

**Vascular laser**
Persistent telangiectasia can be successfully improved with vascular laser or intense pulsed light treatment. Where these are unavailable, cautery, diathermy (electrosurgery) or sclerotherapy (strong saline injections) may be helpful. Papulopustular rosacea may also improve with laser treatment or radiofrequency.

**Surgery for rhinophyma**
Rhinophyma can be treated successfully by a dermatologic or plastic surgeon by reshaping the nose surgically or with carbon dioxide laser.

**Related information**

**References**

**On DermNet NZ**
- Ocular rosacea
- Rhinophyma
- Acne and acne-like conditions
- Steroid rosacea
- Perioral dermatitis
- Pyoderma faciale (rosacea fulminans)

**Other websites**
- Rosacea – Medline Plus
- National Rosacea Society – USA
- RosaceaNet – from the American Academy of Dermatology
- RosaceaGuide.com – Skin care and treatment information provided by North American dermatologists.
- Rosacea – Medscape Reference
- Rosacea Research & Development Institute
- Rosacea – British Association of Dermatologists

http://www.dermnetnz.org/topics/rosacea/
• Patient information: Rosacea (The Basics) – UpToDate (for subscribers)

**Books about skin diseases**
See the DermNet NZ bookstore.

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