INTRODUCTION

The human skin is a reservoir for many different bacteria, the majority of which are non-pathogenic commensals. Changes in the host defence system may allow previously non-pathogenic commensals to become pathogens. An intact skin and mucosal barrier provide an important defence system against infection particularly in the elderly in whom age-related and environmental changes predispose to infection. The aged skin appears dry and wrinkled with a waxy yellowish hue lacking the suppleness of youth. The eccrine and apocrine sweat glands are reduced in number and activity but the sebaceous glands, although less active in post-menopausal women, retain near-optimum function in men in spite of age and are capable of normal function if stimulated by exogenous androgens. Chemical changes in dermal collagen and elastin result in a loss of elasticity. There is also a decrease in blood supply, which in some areas is secondary to peripheral vascular disease.

Normal skin flora include Micrococcaceae, Propionibacterium acnes (P. acnes) and the aerobic diphtheroids. The Micrococcaceae group include micrococci, staphylococci and sarcinia organisms. These bacteria are present in the stratum corneum and the pilosebaceous follicles. The frequency with which these bacteria can be found differs with age but the normal flora of elderly skin consists largely of streptococci, staphylococci and the aerobic diphtheroids. P. acnes becomes less abundant with decreased levels of skin lipid which occurs in old age. Both alpha-haemolytic streptococci and non-haemolytic streptococci are found more commonly on elderly skin, whereas
the beta-haemolytic streptococci are seldom found on the skin but may be isolated from the throat. Non-pathogenic coagulase-negative staphylococci colonize the skin and the pathogenic coagulase-positive *Staphylococcus aureus* the anterior nares, ears and perineum. Other Gram-negative organisms not infrequently found are regarded by most as temporary residents and may be isolated in many elderly patients. The enteric bacteria found are *Pseudomonas aeruginosa*, *Escherichia coli*, and *Proteus mirabilis*. The yeast *Candida albicans* is frequently isolated but rarely causes symptoms on healthy skin though is a common pathogen on macerated skin. The dermatophyte fungi are less common than in the young adult.

The skin acts as a dry mechanical barrier and its continual desquamation prevents bacterial colonization. It also exhibits bactericidal properties attributed to the unsaturated fatty acids, in particular oleic acid, produced by bacterial action on skin sebum. Normal commensals may cause bacterial inhibition by the production of antibiotics which limit the growth of potential pathogens. An increase in skin hydration and decrease in skin surface lipid occur in elderly skin, and these may facilitate bacterial colonization. Factors such as obesity, immobility, reduced personal hygiene, malnutrition and a depressed immune response all create favourable circumstances for colonization and a breach of the host’s defences.

**STREPTOCOCCAL INFECTIONS OF THE SKIN**

Haemolytic streptococci are isolated most frequently from the elderly, and not surprisingly are responsible for much skin and subcutaneous infection. The beta-haemolytic group A streptococcus, *S. pyogenes*, is usually found in the pharynx and nose and may be carried for several weeks after an infection. Asymptomatic carriers, especially among medical staff, are a potential source of infection and may be the cause of outbreaks of infection in hospitalized patients. Haemolytic streptococci may also be found colonizing macerated or inflamed skin associated with many dermatoses. *S. pyogenes* is responsible for erysipelas, cellulitis, necrotizing fasciitis and some forms of intertrigo. Repeated local infections may occur as a consequence of impaired lymphatic drainage.

The group A streptococci produce erythrogenic and pyrogenic toxins. The latter are involved in the production of exotoxic shock, myocardial and hepatic damage and can affect reticuloendothelial function and lymphocyte responsiveness. *S. pyogenes* is typed according to its T and M proteins and new strains continue to emerge. Skin disease is principally associated with M types 31, 49, 55–57, 60 and 63.

**Erysipelas**

Erysipelas is a superficial infection of the skin and lymphatics by *S. pyogenes*