DANAI NURSES

Dermatology Skin Guide

THE STRUCTURE AND FUNCTION OF THE SKIN

Introduction:

This pdf can be used by any nurse wishing to develop their knowledge of common skin conditions. It has been specifically written for nurse practitioners and specialist nurses who undertake structured histories using advanced decision-making skills.

It will aid in diagnosis, formulating prescriptions and assisting in identifying referral pathways if necessary.

Section 1 -

The structure and function of the skin

It is essential to have some background knowledge on the normal structure and function of any organ before you can consider any abnormalities.

1. The skin is referred to as the largest body organ.
2. It serves as the main protective barrier against damage to internal tissues from trauma, ultraviolet light, temperature, toxins and bacteria.
3. The skin is also responsible for sensory perception, temperature regulation, production of vitamin D and excretion of waste products.
4. It prevents harmful substances from entering the body.
5. It controls the loss of vital substances from the body.
6. It is therefore important that the skin remains intact to allow the body to perform these essential functions.

The structure and function of the skin

The thickness of the skin varies depending on the area of the body.

The skin is supported by a layer of fatty tissue, sometimes known as the hypodermis which acts as a cushion to protect the body and is important for insulation.

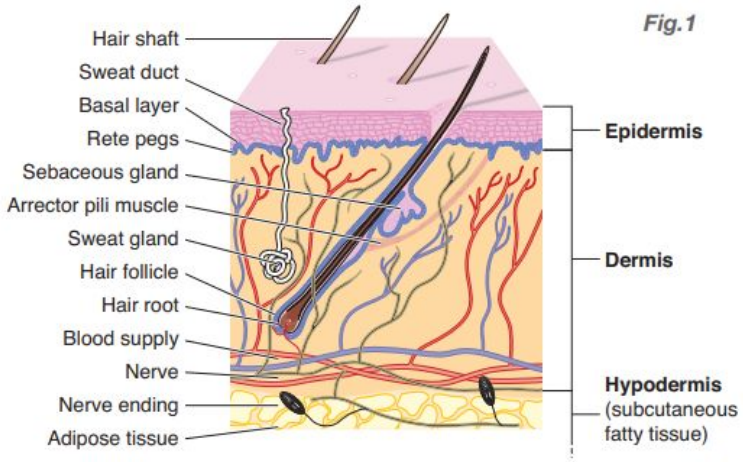
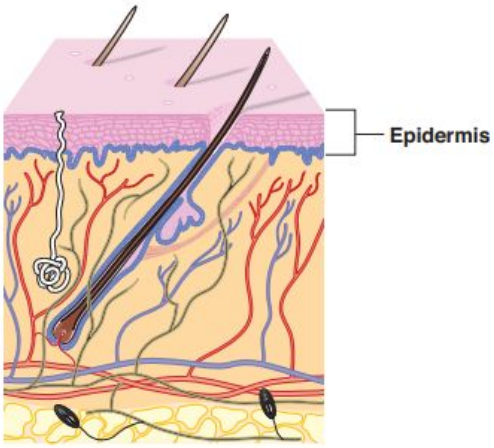


Fig.1

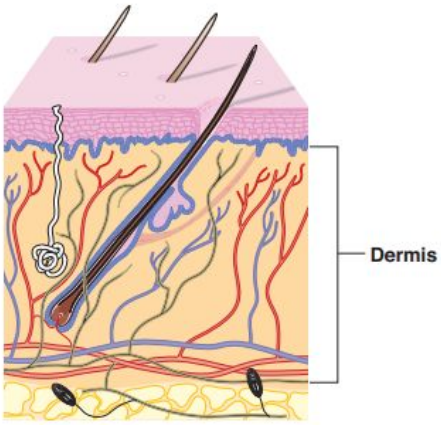


The structure and function of the skin EPIDERMIS

The epidermis (outer layer) contains no blood vessels and is divided into five layers. Cells move from the base of the epidermis up to the surface, changing shape and structure as they go. The epidermis is made up of stratified squamous epithelium or hardened cells which play a role in the skin's protective function often referred to as the stratum corneum.

Epidermal cells line the hair follicles, sebaceous glands and sweat glands. Melanocytes are cells found in the deepest layer of the epidermis. They produce melanin, which helps protect the body from the sun's harmful rays.

The structure and function of the skin
DERMIS

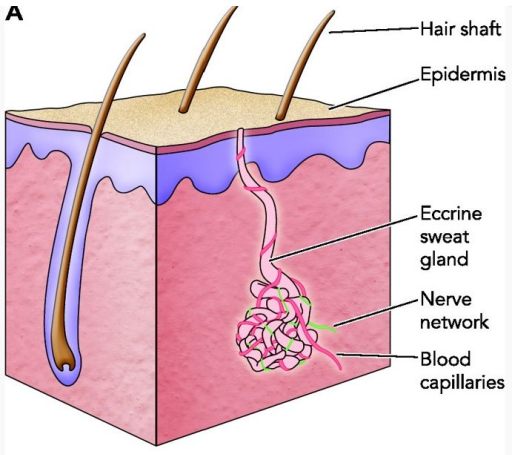


The main function of the dermis is to provide physical support and nutrients to the epidermis.

The two layers are the papillary layer and the reticular layer. Key substances found in the dermis include elastin, fibrillin and collagen (which helps give support and protection). These all will decrease with age. The dermis also contains nerve endings, sweat glands, sebaceous glands, hair follicles and blood vessels.

The nerve endings sense pain, touch, temperature and pressure and are a vital part of the body's protective mechanisms. There are more nerve endings in certain parts of the body, such as the fingertips and toes.

The structure and function of the skin
SWEAT GLANDS



Sweat glands produce sweat. Sweat contains some body waste products, water and salt.

Sebaceous glands secrete sebum into hair follicles.

Sebum is an oily substance that keeps the skin moist and acts as a barrier against foreign substances.

Hair follicles produce the various hair types that can be found on the body and can affect a person's appearance. Hair is also involved in protecting the body from injury and can improve sensation.

Blood vessels within the dermis are involved in temperature regulation.

The reticular dermis is the lower layer of the dermis, found under the papillary dermis, composed of dense irregular connective tissue featuring densely packed collagen fibers.

The thicker reticular dermis contains dense connective tissue, larger blood vessels, elastic fibres and bundles of collagen arranged in layers.

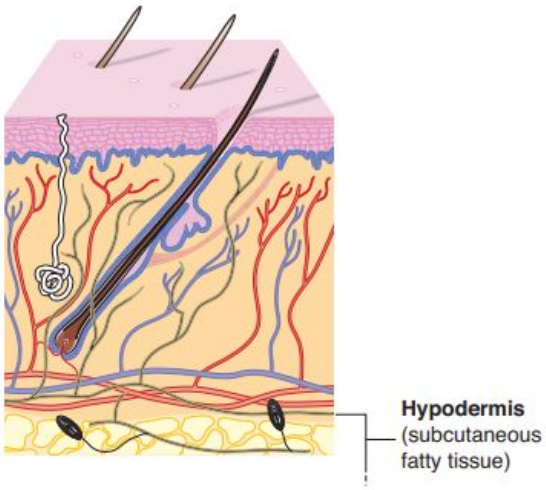
Also within the reticular layer are the following key cell types:

• fibroblasts − a key cell involved in repairing tissue damage
• mast cells − which are involved in fighting infection
• lymphatic vessels – the lymphatic system is a key part of the body's defence against infection
• epidermal appendages or rete pegs – as explained above, the epidermis and dermis are linked in this way to prevent skin damage
• ground substance − a gel-like substance that helps to support the cells within the dermis and provides structure to the area.

The structure and function of the skin
HYPODERMIS

The **hypodermis** is beneath the dermis which is beneath the epidermis. It is used mainly for fat storage.

The hypodermis provides support for the dermis and is made up largely of fatty and connective tissue. It is essential for the protection of internal structures and also provides insulation.



TAKING A PATIENT'S HISTORY

TAKING A HISTORY

The diagnosis of skin disease begins with taking a history. This is followed by careful physical examination. If at this stage a diagnosis has not been made, further examinations should be carried out. The following information is needed to make a correct diagnosis. 3 Past medical history Conditions which may be associated with skin disease include diabetes, cancer, renal/liver disease and immunodeficiency. 3 History of presenting condition How long has the lesion(s) been present? This is the most important question in the history. Acute lesions presenting for less than two weeks need to be distinguished from those that are chronic.

Do the lesions come and go? Do they occur at the same sites or different sites? This is important if a diagnosis of urticaria or herpes simplex is being considered. Was the lesion caused by trauma/insect bite? Is there any associated discharge or odour? Has the patient travelled abroad recently? 3 Relationship to physical agents A past history of living or working in a hot climate may be the clue you need to diagnose skin cancer. Sun exposure is often indicated by a rash on the face or back of the hands. The important question here is the time interval after sun exposure until the rash appears. In solar urticaria, the rash appears within five minutes of sun exposure and is gone within an hour; in polymorphic light eruption, the rash occurs several hours after sun exposure and lasts several days. Ask about irritants on the skin if the patient has hand eczema. Common irritants include detergents, oils and some solutions that are found in the workplace (hairdressers, dental workers). Are the hands in direct contact with irritants? What makes the skin condition better? What makes the skin condition worse? What treatment has been used to date (medical, herbal and over the counter (OTC))? T