

REVISION CORNER

PHYSIOLOGICAL DISORDERS OF THE SKIN

By

T. K. MEHTA*

PHYSIOLOGY

To understand physiological disorders it is necessary to know something about normal functions of the skin. Only brief reference will be made to them. Skin is primarily a barrier between individual and his environment.

Its main functions are: (1) Protection (2) Sensory (3) Secretory and heat regulation (4) Pigmentary and cosmetic and (5) Immunologic.

DISORDERS

As the largest organ of the body its functions, concerned with water, nitrogen, glycogen and vitamin metabolism and with inflammatory and immunologic activities are significant.

I. SENSORY DISORDERS

1. *Hyperaesthesia*: Occurs in the following disorders (i) those of nervous system (ii) glomushemangioma (iii) leiomyoma (iv) periarteritis nodosa.
2. Anesthesia (also hyposthesia) is found in (i) neuritis and hysteria (ii) leprosy.
3. Paresthesia: eg. Pruritus etc.

PRURITUS

Simply defined the term refers to that uncomfortable sensation called itching which excites uncontrollable desire to scratch for its relief. Itching is an exclusive dermatologic symptom. Often it occurs in crises and all itching is worse at night. It may be local or general. Often it is the major or only reason for consultation. Some itching is normal and then it is to certain extent pleasurable too. Pleasure becomes pain when itching becomes pathologic. It is now proved conclusively that the sensation of itching is mediated through painfibres, the end organs of which are lying in epidermis. The itchnoxae acting on epidermis produce enzymes called proteinases which excite the sensation of pruritus through pain fibres in spinothalamic tract and hypothalamus. Pruritus is classified into (1) Primary or essential i. e. Pruritus where cause cannot be found and (2) Secondary Pruritus where cause can be discovered.

CAUSES OF PATHOLOGIC ITCHING

I. Primary Pruritus.

II. Secondary Pruritus.

(1) Skin diseases:

Except for syphilis and parapsoriasis, majority of skin disorders itch.

(2) Systemic diseases.

*Chief, Skin and V. D. Department, T. N. Medical College and B. Y. L. Nair Charitable Hospital, Bombay 8.

Itching is sometimes the forerunner of some internal disease. This may be diabetes, nephritis, uraemia, diseases of liver and biliary tracts, Hodgkin's disease, leukaemias, intestinal parasites etc.

PRIMARY OR ESSENTIAL PRURITUS

For practical purpose this group will be considered as a psychosomatic disorder. In aged however the etiologic role of arteriosclerosis should be remembered.

In pruritus for sometime there are no signs. Whatever signs are, they are due to (i) scratching e. g. excoriations (ii) effects of treatment viz contact eczema etc. (iii) infection and (iv) sequelae like lichenification and hyper or hypopigmentation.

Prognosis: In essential pruritus there is no effect on longevity but it is poor in old people. Otherwise it depends on cause when it is found.

Treatment: Besides the causal treatment, pruritus per se requires proper treatment. Complications, as cited above, of the Itch-scratch vicious cycle, also require to be tackled. Therapeutic measures are as follows:

(1) Measures acting on peripheral receptor organs. e. g. wet dressings, lotions and creams containing antipruritics like menthol, camphor, phenol etc. Corticosteroids locally have more or less revolutionized and simplified the topical therapy.

(2) Measures which tend to reduce irritability of centripetal nerves and higher centres. They include various types of drugs. e. g. antihistamines, other sedatives e. g. calcium, strontium, tranquilizers. Barbiturates, hypnosis and psychoanalysis may be necessary in some cases. In extreme cases surgical measures like nerve section etc. may have to be employed.

(3) Others which act on some part of cycle of irritability.

(i) ACTH and Corticosteroids internally (ii) Antihistamines (iii) Vitamins and Anticholinergic agents. (iv) U. V. and X-ray therapy and (v) Procaine drip.

Here it must be pointed out that many forms of itching are due to allergic sensitivity and many of the topical and systemic drugs used are themselves notorious sensitizers e. g. tars, mercury, sulfur, local anesthetics, antihistamines, opiates atropine and ephedrine. Therefore first step in the management is to stop all previous medication and start with simplest and blandest measure which are least likely to sensitize

SPECIAL TYPES OF PRURITUS

Anogenital Pruritus. It is a common localized condition. When severe it is very exasperating and drives the victim even to commit suicide. Moreover, it is a very recalcitrant condition to treat. It includes (1) P. ani (2) P. of male genitalia (scrotum and prepuce) (3) P. vulvae. In all these conditions psychologic

factors seem to be causative factors. Additionally the local, genital and hormonal cause of itching in each group should be remembered. Occasionally diabetes is discovered in office practice in cases of pruritus of prepuce. The management is on the same lines as detailed previously under Pruritus. However special attention should be paid to the local, general and psychologic causes. The latter may tax the skill of any dermatologist.

II. SECRETORY (Disorders)

Secretory disorders refer to those of sweat and sebaceous gland apparatus.

Sweat Gland: Sweat gland is of critical importance in man's ability to exist and work in heat; for it is mainly through the evaporation mechanism of perspiration (often invisible) that the body temperature is maintained at a constant level. Sweat glands are distributed universally on skin surface. They are of two types Apocrine and Eccrine. They have no visible representation on skin surface as have the hair follicles. Therefore minor failures to form sweat are not recognised. In lower animals the apocrine glands are a sort of scent glands. With fall of hair in man, they are located in certain areas e. g. axillae, anogenital area, nipples pubic region and umbilicus. They are twice the number in females as in males. There are specialized apocrine glands e. g. (i) wax glands in ear (ii) Moll's glands in eyelids and (iii) mammary glands. In man apocrine glands is a vestigial organ and is a source of odour and disease. Its secretory activity is governed by sympathetic nerve supply. It is not stimulated by heat unlike eccrine glands. Their secretion is thick. There is no proof whether they have anything to do with sexual attraction and process. Eccrine sweat glands on the other hand are found all over the body except on glans penis and under surface of prepuce. They are most on palms and soles. They are the chief source for watery sweat secretion.

DISORDERS

(1) Hyperhidrosis and (2) Anhidrosis.

Hyperhidrosis: In this condition there is abnormal increase in sweat secretion which becomes visible. It may be generalized or localized.

GENERALIZED

Causes: (1) Febrile illness (2) Hot humid environment (3) Exertion (4) lesions of hypothalamus (5) drug responses (6) Hormonal causes like hyperthyroidism, diabetes mellitus, hyperpituitarism, pregnancy (due to progesterone) and menopause should be remembered; and (7) Fear and anxiety.

Localized: It is a common condition and often causes social embarrassment and occupational difficulty. Moreover it is difficult of management. The common sites are palms and soles.

Types: are (1) emotional (2) due to neural lesions (3) skin lesions e. g. scleroderma (in surrounding area) (4) compensatory hyperhidrosis e. g. on face in heat intolerance (5) Gustatory.

Emotional hyperhidrosis: It is the commonest of localized hyperhidrosis. The sites involved are palms, soles, forehead, eyebrows, tip of nose, sternal area, anticubital fossa, perineal and genital areas. There may be signs of hyper-sympathotonia e. g. cold clammy hand shake and vasomotor instability. It is often associated with symmetric lividity of soles, granulosus rubra nasi etc.

Etiology: There is familial tendency. More in males. Pain, fear, anxiety, smoking and heat increase it.

Treatment: Usually difficult of management. Psychologically reassurance is necessary.

(i) Systemic treatment: Specific: Anticholinergic drugs like atropine, bantline, probanthine. Tr. belladonna 6m to 10m tds is recommended. Side effects should be remembered. (ii) Sedatives, Barbiturates, benadryl and chlor-promazine and reserpine (0.25 mg. qds may be tried.). (iii) Surgical: Selective sympathectomy may be the only alternative sometime. It is radical but permanently effective though some side effects may result. This is chiefly indicated for palmar and plantar hyperhidrosis.

Local Treatment: The principle of antiperspirant treatment is to block the sweat pores temporarily and thus reduce perspiration. Aluminium salts in 20% to 25% strength are used. Prantal 2% cream may also help. Other astringents like Burrow's sol. pot permanganate (in 2000) sol. Formalin sol. ($\frac{1}{4}$ to $\frac{1}{2}$ strength) may be used especially for palms and soles. Foot powders may be employed.

X-rays: They are effective in 2000 r (filtered) dose. Such high dose produces dermatitis dryness and atrophy. Therefore not justified.

Anhidrosis: In its milder form (hypohidrosis) it is fairly common. Its diagnosis is missed because, unlike hyperhidrosis, there are no objective signs. In this connection it should be remembered that sweating on face is no index of ability to sweat elsewhere. Anhidrosis may be localized or generalized. Normally women sweat less. There is less sweat on legs. Tip of nose, elbow, patellar area and dorsal surfaces of metacarpal joints are normally anhidrotic.

Generalized Anhidrosis: It is important because it means lack of physiological defence against heat stress which results in symptoms of heat intolerance.

Etiology: (1) Neural causes e. g. (a) hypothalamus e. g. heat stroke: tumour etc. (b) hysteria (c) cord lesions e. g. polio (d) sympathectomy (e) neuritis e. g. leprosy etc. (f) drugs: anticholinergic and anesthetics.

(2) Congenital ectodermal defects: found in males only.

(3) Localized congenital absence of sweat glands e. g. in alopecia.

(4) Atrophy of sweat glands e. g. senile skin, scleroderma, and atabrine dermatitis.

(5) Tropical anhidrotic asthenia or sweat retention syndrome in miliaria.

Symptomatology: Apparently the skin may be normal or dray. Symptoms of heat intolerance tachycardia, fever, flushing, weakness and collapse may develop whenever anhidrotic patients are subjected to hot environments. Asthenia, fatigue and malaise in summer may be symptoms of partial anhidrosis which should be remembered.

Differential diagnosis: (1) Atropine poisoning (2) Orthostatic hypotension (3) Leprosy (4) Horner's syndrome (5) Tuberculosis. Recurrent fever may lend a patient in T. B. Sanatoria.

Treatment: (1) Causal. (2) Symptomatic: minimum of exertion, live in cool environment. It is a difficult condition to manage.

(To be continued)

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