Various symptoms of ichthyosis are present. Both the extensor surfaces and flexures of the extremities are affected (Fig. 15.38).

Pathogenesis
Patients have the primary diseases listed below. The symptoms of ichthyosis appear thereafter.
(i) malignant tumor (e.g., malignant lymphoma (Hodgkin’s disease in particular), leukemia, carcinoma, Kaposi’s sarcoma).
(ii) systemic disease (e.g., sarcoidosis, hypothyroidism, Hansen’s disease, tuberculosis, systemic lupus erythematosus)
(iii) drug eruption (e.g., from nicotinic acid)

Pathology
The pathology of acquired ichthyosis is similar to that of ichthyosis vulgaris.

Laboratory findings, Diagnosis
Acquired ichthyosis cannot be distinguished from ichthyosis vulgaris only by cutaneous symptoms and histopathology. The clinical course and detection of a malignant tumor are important for diagnosis.

b. Noninflammatory keratoses

1. Clavus

Clinical features, Pathogenesis
Clavus, commonly called a “corn,” is localized thickening of the horny cell layer, usually caused by mechanical stimulation (Fig. 15.39). It tends to occur in the feet from the friction of shoes. The center of the thickened horny cell layer sinks deep into the dermis (core), resembling the eye of a chicken or fish. Tenderness is present (Fig. 15.40).

Differential diagnosis
Clavus is distinguished from plantar warts, which are caused by human papilloma virus and tend to occur multiply. Plantar warts also occur in areas that are not subjected to friction, and minor bleeding may be seen; differentiation between planter warts and clavus is easy by scraping the horny cell layer with a razor blade. In clavus, pressure causes pain (tenderness). In plantar wart, pinching causes pain.

Treatment
Friction should be avoided. Cushioned footpads are helpful. The horny cell layer is removed, and salicylic acid is applied.
2. Callus

**Synonym:** Tylosis

**Clinical features, Pathogenesis**

Callus (tylosis) is also caused by friction. Sites that are repeatedly subjected to mechanical stimulation, including pressure and friction, and bony sites are involved. The most common site in Japan is between the second and third distal phalanges (from pen-holding) and the dorsal region of the ankles (from sitting on the floor). The horny cell layer is even in thickness, and there is almost no tenderness (Figs. 15.40 and 15.41).

**Treatment**

The treatments are the same as those for clavus.

3. Lichen pilaris

**Synonym:** Keratosis pilaris

**Clinical features, Pathogenesis, Pathology**

Multiple follicular keratotic papules of 1 mm to 3 mm in diameter and normal or light pink in color occur on the extensor surfaces of the upper arms and thighs (Fig. 15.42). Lichen pilaris occurs most commonly in adolescent females. In most cases, the onset is in early childhood, and the clinical features become distinct in adolescence. The papules have a coarse surface and no tendency to coalesce or enlarge. The condition is usually asymptomatic. Pathologically, the hair follicles are dilated and filled with keratin plugs and there is pili torti. Lichen pilaris tends to be hereditary and is assumed to be autosomal dominantly inherited. There are cases associated with ichthyosis vulgaris.

**Treatment, Prognosis**

Lichen pilaris occurs with high frequency; however, it heals naturally after adolescence. The symptomatic therapy is topical application of moisturizer or keratolytic agents such as salicylic acid petrolatum.

4. Erythromelanosis follicularis faciei (Kita-mura)

Erythematous plaques occur symmetrically on the preauricular region and cheeks. Follicular keratotic papules form on the erythematous plaques (Fig. 15.43). Lichen pilaris often occurs on other sites as a complication. It is frequently seen in young men and women. It is thought to be a facial type of lichen pilaris. Moisturizer is applied topically.
5. Lichen spinulosus

In this type of lichen pilaris, follicular papules with prickle-like projections aggregate. The disorder is mostly seen in infants, on the neck.

6. Acanthosis nigricans (AN)

**Outline**
- Plaques with coarse dark-brown surface occur on the neck and axillary fossae.
- It is divided into three types: malignant AN, accompanying a malignant tumor (stomach cancer in particular); benign AN, accompanying endocrinopathy; and pseudo-AN, accompanying obesity.
- The pathological findings are papillomatosis, thickening of the horny cell layer, and pigmentation. Thickening of the epidermis (acanthosis) does not usually occur.

**Clinical features**

Dark brown papillary elevations with a coarse surface occur on the neck, axillary fossae, umbilical fossa and groin. They have a velvety or rough-textured appearance (Fig. 15.44). Malignant AN tends to have severe symptoms, and often itching is present. In pseudo-AN, pigmentation and coarse surface are found in intertriginous areas.

**Pathogenesis**

The cause is unknown. Some cases are induced by a malignant tumor.

**Pathology**

The main symptoms are papillomatosis, hyperkeratosis and hyper-pigmentation. Despite the name, thickening of the epidermis is not present in most cases.

**Diagnosis**

Diagnosis of acanthosis nigricans can be confirmed by the clinical features. An eruption precedes or coincides with an internal organ cancer, stomach cancer in particular, in more than 70% of cases of malignant acanthosis nigricans; diagnosis of acanthosis nigricans may lead to early discovery of a cancer.

**Treatment**

In malignant acanthosis nigricans, the malignant tumors are detected and treated. Eruptions subside with treatment. In benign AN, endocrine abnormality is investigated and treated. Weight loss is advisable for patients with pseudo-AN.
15 Disorders of Abnormal Keratinization

Grayish pigmented macules and keratotic papules occur on the trunk (intermammary region and upper abdomen, in particular), and coalesce to form a network of plaques (Fig. 15.45). The disorder occurs most frequently in men and women from adolescence to adulthood. It progresses slowly and is asymptomatic. Differentiation from pityriasis versicolor is important. Treatment is application of topical keratolytic agents, such as salicylic acid petrolatum, and oral administration of mimocycline and retinoids.

8. Bazex syndrome

Several months after psoriatic erythematous keratotic lesions appear symmetrically on the extremities, nasal apex and auricle, a malignant tumor becomes apparent. The syndrome occurs most commonly in men over age 40. The main malignant tumors caused by Bazex syndrome are squamous cell carcinomas in the upper gastrointestinal tract, upper respiratory tract and liver. The keratotic lesions aggravate according to the progression of the malignant tumor.

9. Keratosis follicularis squamosa (Dohi)

Small black follicular keratotic spots occur symmetrically on the trunk, particularly the hips, abdomen, and buttocks. Round or lamellar, grayish-white scales varying in size from 3 mm to 1 cm attach mainly to follicular comedo-like black spots (Fig. 15.46).

10. Pityriasis circinata (Toyama)

This is an acquired dyskeratosis in which round, sharply circumscribed lesions occur on the hips, abdomen and buttocks. Scaling, crêpe-surfaced, brown to grayish-white plaques form.

11. Hyperkeratosis lenticularis perstans

Synonym: Flegel's disease

It occurs in middle-aged men and women, most frequently on the extremities, especially on the dorsal surfaces of feet and hands. Prickle-like, flatly elevated papules with red to dark brown keratotic scales of 1 mm to 5 mm in diameter are attached. They appear symmetrically.