CONDITION

Acanthosis nigricans

Learn how to recognize acanthosis nigricans, what can cause the thickened skin patches, how doctors evaluate it, and which treatments may help.

WHAT IT IS
Thickened darkened velvety skin change

BODY SYSTEM
Skin

MAIN SYMPTOMS
Thickened velvety skin, darker patches, prominent skin markings, mild itching

WHAT CAUSES IT
Usually insulin resistance

HOW IT IS DIAGNOSED
Skin examination, rarely skin biopsy

MAIN TREATMENT
Treatment of the underlying cause

CAN IT BE CURED?
Sometimes, when underlying cause improves

IS IT AN EMERGENCY?
No, unless severe acute symptoms

LONG-TERM OUTLOOK
Usually harmless but may not disappear completely

Overview

Acanthosis nigricans is a skin change that causes areas of skin to become thicker, darker, and sometimes velvety to the touch. It most often develops in body folds, such as the neck, armpits, or groin. It is not contagious and cannot spread from one person to another.

The skin changes themselves are usually harmless. However, acanthosis nigricans can be a visible sign of an underlying health issue. It is often associated with insulin resistance , meaning the body's cells do not respond to insulin as well as they should. Insulin is a hormone that helps move sugar from the blood into cells for energy.

Insulin resistance can occur before prediabetes or type 2 diabetes develops. It can also be related to polycystic ovary syndrome, commonly called PCOS, and other hormonal conditions. Some medicines can cause similar skin changes. Much less often, rapidly developing

acanthosis nigricans may be linked to an internal cancer.

Acanthosis nigricans can affect people of any age or skin tone. The dark color may be more noticeable on some skin tones, while thickening and a velvety texture may be more useful clues on others. A clinician can assess the skin and decide whether testing for an underlying cause would be helpful.

Symptoms

Acanthosis nigricans usually develops gradually. The affected skin may look gray, brown, or darker than the surrounding skin. Color alone is not enough to identify the condition.

Common features include:

The back and sides of the neck are common locations. Other possible areas include the armpits, groin, elbows, knees, knuckles, under the breasts, and around the belly button. Less commonly, changes can affect the face, lips, palms, soles, or other areas.

The patches do not usually hurt. They also do not come off with washing or scrubbing. Vigorous scrubbing may injure the skin and cause irritation without improving the discoloration.

Consider arranging a routine medical appointment if you notice new thickened, velvety skin or if existing patches are changing. More prompt evaluation is appropriate if the changes appear suddenly, spread quickly, involve the mouth, or occur with unexplained weight loss, reduced appetite, abdominal symptoms, or a general decline in health.

- Thickened skin with a soft or velvety surface
- Darker patches in skin folds
- Skin lines or markings that appear more prominent
- Small skin tags in or near the affected area
- Mild itching, odor, or irritation in some people

Causes and risk factors

Acanthosis nigricans develops when skin cells grow and build up more than usual. Several different conditions or exposures can trigger this process.

Insulin resistance is the most common association. When cells do not respond normally to insulin, the body may make more insulin to keep blood sugar within range. High insulin levels

can stimulate growth-related receptors in the skin. Over time, this may contribute to the thickened patches.

Insulin resistance is more likely in people who have overweight or obesity, a family history of type 2 diabetes, prediabetes, type 2 diabetes, or PCOS. It can also occur in people without obesity. Acanthosis nigricans does not prove that someone has diabetes, and its severity does not reliably show what a person's blood sugar level is.

Hormonal and metabolic conditions may also be associated with acanthosis nigricans. Examples include PCOS, an underactive thyroid, Cushing syndrome, and acromegaly. These conditions have different symptoms and are much less common than insulin resistance. Testing is guided by the person's medical history and examination rather than by the skin finding alone.

Some medicines and supplements may contribute. Reported examples include systemic corticosteroids, high-dose niacin, some hormonal medicines, certain HIV treatments, and injected insulin at treatment sites. Do not stop a prescribed medicine because of a skin change. A clinician can review whether the medicine may be involved and whether an alternative is appropriate.

Acanthosis nigricans can sometimes run in families. Rare inherited syndromes may cause it to begin during childhood, often without the same metabolic concerns seen in adults.

Rarely, sudden and extensive acanthosis nigricans is associated with cancer, especially when it begins in an older adult without typical metabolic risk factors. Cancer-associated disease may spread rapidly, itch, or affect the mouth, lips, palms, or soles. Most people with acanthosis nigricans do not have cancer. A clinician uses the pattern of skin changes, age, symptoms, and medical history to decide whether further evaluation is needed.

Diagnosis

A clinician can often recognize acanthosis nigricans by examining the skin. They may ask when the changes began, how quickly they developed, whether they cause symptoms, and whether close relatives have similar skin findings.

The examination may include the neck, armpits, groin, hands, and other affected areas. The clinician may also check blood pressure and look for signs that could suggest insulin resistance or a hormonal condition.

Blood tests may be recommended to look for an underlying cause. Depending on the person's circumstances, these may include fasting glucose or an A1C test. A1C estimates the average blood sugar level over the previous two to three months. Cholesterol and triglyceride testing

may also be useful because metabolic risk factors often occur together.

Other tests are selected only when the history or examination suggests a need. For example, a clinician may consider thyroid testing or an evaluation for PCOS when there are related symptoms. There is no single test that identifies the cause in every person.

A skin biopsy is rarely necessary. During a biopsy, a clinician removes a small skin sample so it can be examined under a microscope. This may be considered when the appearance is unusual or another skin condition needs to be excluded.

If the changes developed suddenly or have concerning features, the clinician may recommend additional testing based on age, symptoms, examination findings, and routine cancer-screening history. This does not mean cancer is present.

Treatment and management

Treatment focuses first on the underlying cause. The skin patches may fade when that cause improves, although changes can take time and may not disappear completely.

When insulin resistance or excess weight is contributing, a clinician may discuss nutrition, physical activity, sleep, and gradual weight management. Sustainable changes can improve insulin sensitivity and may help the skin over time. The appropriate plan depends on overall health, mobility, food access, culture, and personal goals.

Prediabetes, diabetes, PCOS, thyroid disease, or another condition should be managed according to that condition's treatment plan. Medicines that improve blood sugar or insulin sensitivity may help some people when there is a medical reason to use them. They are not prescribed only on the basis of skin appearance in every case.

If a medicine may be contributing, the prescriber can review its benefits and risks. The medicine should not be stopped, reduced, or replaced without medical advice.

Skin-directed treatment is optional. It may be reasonable if the patches are itchy, irritated, or distressing. A dermatologist may recommend products that soften or thin thickened skin, such as preparations containing urea, lactic acid, salicylic acid, or a prescription retinoid. These products can irritate the skin and are not appropriate for everyone. A clinician can help select a suitable option.

Laser procedures or other cosmetic treatments are sometimes used for persistent thickening or discoloration. Results vary, and the changes may return if the underlying trigger remains.

Gentle skin care can reduce irritation. Use a mild cleanser, avoid forceful scrubbing, and reduce friction when possible. Moisturizer may help if the area feels dry. Bleaching products, harsh

exfoliation, or unregulated lightening creams can cause burns, inflammation, or uneven skin color.

Acanthosis nigricans is not caused by poor hygiene. Support from a clinician may be helpful if the appearance affects confidence, clothing choices, relationships, or emotional well-being.

Complications

Acanthosis nigricans itself usually does not cause serious physical complications. Thickened areas can sometimes become itchy, irritated by friction, or difficult to keep dry. Skin tags may catch on clothing or jewelry.

The main health concern is the condition that may be causing the skin changes. Untreated insulin resistance can progress to prediabetes or type 2 diabetes. Related risks may include high blood pressure, abnormal cholesterol levels, fatty liver disease, and cardiovascular disease. The presence of acanthosis nigricans does not show whether any of these complications are already present.

Visible patches may also cause embarrassment, unwanted comments, or anxiety. These effects are medically important and can be discussed during an appointment.

Follow up

Follow-up depends on the suspected cause and any test results. If testing is normal but metabolic risk factors remain, a clinician may recommend periodic blood sugar, blood pressure, or cholesterol checks. The timing should be individualized rather than based on the skin finding alone.

If treatment is started, ask when improvement might be expected and how irritation should be managed. Skin changes often improve slowly. Photographs taken under similar lighting may make gradual changes easier to track.

Arrange a routine appointment if new patches appear, existing areas become more noticeable, or you develop symptoms such as increased thirst, frequent urination, menstrual changes, or unexplained fatigue.

Seek prompt medical assessment if the skin changes begin suddenly, spread rapidly, involve the mouth, or occur with unexplained weight loss, persistent abdominal symptoms, loss of appetite, or unusual weakness. Acanthosis nigricans itself is almost never an emergency. Emergency care is generally needed only for severe acute symptoms, such as difficulty breathing, fainting, confusion, or another immediate threat to health.

Sources

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