**Introduction** (0:00-0:16)

Welcome to our video on contact dermatitis! I’m Rav, here with Tess, Madison, Hana, and Sharon. Today, we’ll explore this common skin condition and unravel the mystery surrounding Theo, a makeup artist whose skin issues brought about unexpected discoveries regarding his craft.

[Creation Credit and Display of CCL]

**What is Contact Dermatitis?** (0:17-1:02)

Let’s start with the basics. Contact dermatitis, or CD, is an inflammatory skin condition that occurs when the skin comes into direct contact with substances that irritate it or trigger an allergic reaction (Li & Li, 2021). There are two main types we’ll focus on today: Allergic Contact Dermatitis, or ACD, and irritant contact dermatitis, or ICD (Li & Li, 2021).

ACD is an immune-mediated hypersensitivity IV reaction, which means it involves the immune system responding to allergens (Brites et al, 2020). In contrast, ICD occurs due to direct damage to the skin, often without any immune involvement (Patel & Nixon, 2022).

**Theo’s Introduction** (1:03-1:34)

Now, let’s meet Theo. He’s a 28-year-old makeup artist based in the UK known for his innovative techniques and vibrant look’s in the world of modeling. Recently, he developed an unexpected rash after working with a new line of cosmetics.

Initially, Theo thought it was just irritation from the products he used, but as the symptoms worsened, he realized it might be more than just a simple reaction. His journey through diagnosis and treatment illustrates the complexities of contact dermatitis.

**Risk Factors of Contact Dermatitis** (1:35-2:50)

Risk factors for CD can be both acquired and inherent. Inherent risk factors involve a genetic predisposition resulting in a higher susceptibility to CD (Peiser et al., 2012). For example, a genetic history of atopic eczema can make individuals more susceptible as it can reduce the skin barrier function and facilitate the penetration of toxins and allergens (Peiser et al., 2012)..

Interestingly, ACD accounts for about 10% of all occupational diseases (Cahill & Williams, 2020). Theo, as a makeup artist is at risk due to frequent exposure to various materials like pigments, adhesives, and fragrance’s found in many cosmetic products (Cahill & Williams, 2020).

Age and sex also play roles; ACD is more prevalent in women. In Theo’s case, his fair skin may have further increased his risk, as having a lighter skin type can increase your risk of contact dermatitis, along with having red hair (Litchman et al., 2023). ICD often time’s comes before ACD and a common risk factor for this is handwashing, rubber gloves, and wet work - something Theo does quite often (Cahill & Williams, 2020).

**Pathophysiology of ACD** (2:51-3:59)

Let’s delve into the pathophysiology of ACD, using Theo’s case as an example. When a hapten, which is a small molecule that can elicit an immune response, binds to skin proteins, it forms complexes recognized by dendritic cells—these act as antigen-presenting cells(Litchman et al, 2023).

In Theo’s case, after using a new brand of foundation containing nickel, his immune system recognized the hapten and began the sensitization process (Litchman et al, 2023). During the first exposure, Theo’s antigen-presenting cells migrated to his lymph nodes, presenting the hapten-protein antigen to naïve T cells, activating T-helper cells and memory cells (Litchman et al, 2023). This occurs due to the previous sensitization stage(Litchman et al, 2023).

Fast forward to his next makeup session. Upon re-exposure to the foundation, Theo’s memory T cells recognized the allergen, activating a cascade of immune responses (Litchman et al, 2023). Those memory T cells release pro-inflammatory cytokines, such as Interferon Gamma and Tumor Necrosis Factor alpha, leading to inflammation and tissue damage of Theo’s inflamed skin (Litchman et al, 2023).

**Signs and Symptoms of Allergic Contact Dermatitis** (4:00-4:33)

After two days of working with this new foundation. Theo noticed symptoms like erythema (red and inflamed skin), along with vesiculation (fluid-filled blisters) and pruritus (intense itching) (Li & Li, 2021). He also experienced swelling and papules (small raised bumps) , which are common in ACD. Theo’s condition illustrates how quickly a sensitization reaction can escalate into visible symptoms (Li & Li, 2021).

Common allergens for ACD include substances like nickel, fragrances, preservatives, and, as in Theo's case, certain components in the cosmetic products he uses (Brites et al, 2020).

**Diagnostic Evaluation for Allergic Contact Dermatitis (4:34-5:14)**

To diagnose Theo’s condition, a dermatologist performed patch testing, which is the standard for diagnosing Allergic Contact Dermatitis, a condition commonly linked to occupational exposure  (Tramontana et al., 2023). During the patch test, Theo exhibited a strong reaction to nickel and certain preservatives often found in makeup products. The dermatologist explained that ACD is characterized by raised, palpable erythema with unclear boundaries which can expand and spread along lymphatic vessels, often accompanied by itching (Li & Li, 2021). The rash can persist for more than 4 days due to changes in allergen concentration over time (Li & Li, 2021).

Additionally, Theo’s health history was taken into account . The dermatologist noted that professionals like him, who work with cosmetic products, are at higher risk for ACD (Tramontana et al., 2023).

**Pathophysiology of Irritant Contact Dermatitis (5:15-6:40)**

Now let’s shift gears and discuss irritant contact dermatitis, which can also affect artists like Theo. In comparison to ACD, ICD involves no immune memory, and no previous sensitization is required (Litchman et al., 2023).

ICD is a non-immune-mediated reaction that occurs from direct damage to the skin barrier (Litchman et al., 2023). Common irritants include solvents, soaps, and prolonged exposure to water or moisture, all which are frequently encountered during the application of makeup (Litchman et al., 2023).

When we look at Theo, he has been using strong alcohol based cleansers for removing makeup which contributed to skin irritation(Litchman et al., 2023). These irritants disrupt the stratum corneum (outermost layer of the epidermis), leading to trans-epidermal water loss.and the penetration of substances. Irritants cause damage to keratinocytes, which are the primary cells in the epidermis (Litchman et al., 2023). Damaged keratinocytes release pro-inflammatory cytokines: Interleukin 1 alpha (IL-1a), Tumor Necrosis Factor alpha (TNF-a) and interleukin 6 (IL-6) (Litchman et al., 2023). Release of these cytokines recruit neutrophils and macrophages to the site of damage which results in inflammation (Litchman et al., 2023).

For Theo, signs of ICD included dry, cracked skin and burning sensations, especially on his hands after extended periods of work(Patel & Nixon, 2022).

**Signs and Symptoms of Irritant Contact Dermatitis (6:41-7:13)**

Signs of ICD can appear immediately or within a few hours of exposure(Patel & Nixon, 2022). In Theo’s case, his symptoms included erythema, dry cracked skin, burning, edema, and painful fissures and blisters (Patel & Nixon, 2022).

Blisters can occur, but they are typically less severe than those seen in ACD (Patel & Nixon, 2022). Theo found that the irritation often subsided when he took breaks from using irritants, but it persisted with continued exposure (Li & Li, 2021).

**Diagnostic Evaluation for Irritant Contact Dermatitis (7:14-7:49)**

Diagnostic evaluation for ICD differs from ACD; patch testing isn’t commonly used. Instead, removal of the irritant often leads to symptom improvement (Li & Li, 2021).

For Theo, identifying the products causing irritation and excessive hand washing was crucial in managing his symptoms.

He learned that a positive result for ICD includes clear boundaries of erythema that don’t spread along lymphatic vessels (Li & Li, 2021). Theo’s lesions typically lasted less than four days, further confirming this diagnosis (Li & Li, 2021).

**Treatment of Contact Dermatitis (7:50-8:39)**

Theo’s treatment began with avoiding the specific foundations and cleansers that were causing his reactions (Li & Li, 2021). Repairing the skin barrier was essential, so he started using emollients and antihistamines for relief (Patel et al., 2018).

Corticosteroids were prescribed to reduce inflammation (Patel et al., 2018). Theo also learned to be cautious with his materials and was encouraged to explore alternative, hypoallergenic cosmetic products that he could use  (Li & Li, 2021). Methotrexate is an immunosuppressant that is an effective and generally well-tolerated treatment for ACD in cases where topical steroids are not adequate (Patel et al., 2018).

However, a recent study highlighted sargassum, a macroalgae with anti-inflammatory properties, which could provide homeopathic symptom control for Theo without modifying his artistic approach or committing him to lifelong steroid or immunosuppressant use (Chan & Chiang, 2024).

**Conclusion (8:40-9:12)**

Theo’s case illustrates the importance of understanding contact dermatitis, especially in professions with high exposure to potential allergens and irritants. By recognizing symptoms early and making informed choices about products, makeup artists like Theo can continue their passion while managing their skin health effectively.

Thank you for joining us on this exploration of contact dermatitis. We hope this discussion has been enlightening. Don’t forget to subscribe for more insights into skin health!

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