

# Diagnostik af hudsygdomme med ChatGPT4o

## 1. Baggrund

Medicinske Tidsskrifter, herunder Dermatologisk Tidsskrift, ønskede at skrive en journalistisk artikel, hvor vi sammenlignede ChatGPT 4o's evne til diagnostik af hudlidelser via billeder med dermatologers tilsvarende evne.

På baggrund af 10 billeder, som blev vurderet af henholdsvis ChatGPT4o og tre dermatologer fra Københavns Universitet, har vi sammenlignet resultaterne.

## 2. Sådan gjorde vi

Trin 1:

Indsamling af 10 billeder fra private kilder. Billederne har ikke været offentliggjort på nettet. De gemmes under anonyme og ikke personhenførbare navne (IMAGE 1, IMAGE 2 osv.).

Trin 2:

Vi beder ChatGPT4o om hjælp til at lave en prompt til vurdering af billederne (se pkt. 2a. og 2b.).

Trin 3

Vi bruger prompten foreslået af ChatGPT4o til hvert enkelt billede, som uploades til chatbotten, som derpå giver sit svar. For hver ny diagnose begyndes en ny chat.

### a. Første input til ChatGPT

Via en prompt beder vi ChatGPT lave en prompt, der er velegnet til vores forehavende:

"Jeg skal lave et eksperiment, hvor jeg får ChatGPT 4o til at diagnosticere hudsygdomme ud fra billeder. Efterfølgende skal dine diagnoser sammenlignes med diagnoserne fra en gruppe dermatologer. Jeg vil gerne bruge samme prompt til alle de 10 billeder, jeg har. Lav en prompt, der vil fungere godt til dette formål og få ChatGPT til at performe så godt som muligt i forhold til at lave billeddiagnostik."

### b. Prompt fra ChatGPT

Nedenfor vises dem prompt, vi har brugt til alle billederne. Det er ChatGPT's eget "valg" at slå over i engelsk, hvilket vi ikke beder den korrigere for.

"Diagnose the skin condition depicted in the following image. Provide a detailed diagnosis, including the name of the condition, potential causes, common symptoms, and possible treatments. If there are any uncertainties or differential diagnoses that should be considered, please mention

them. Use clinical terminology and consider the image in the context of a dermatological assessment. Here is the image for reference: [Insert Image Here]"

(Følgende tekst er udeladt: "Here is the image for reference: [Insert Image Here]").

### 3. Konkrete diagnoser fra ChatGPT og dermatologer

Nedenfor præsenteres diagnoserne fra ChatGPT. Teksten er kopieret direkte ind uden nogen form for redigering eller formatering.

Under hver diagnose er desuden indsat vurderingen fra de tre dermatologer fra Københavns Universitet. Den samlede vurdering lyder, at når svarene sammenholdes med ChatGPT's, er sprogmodellen god til de hudsygdomme lægerne indbyrdes også er enige i. Der, hvor lægerne er uenige, rammer ChatGPT også ved siden af, men i disse tilfælde havde lægerne ligeledes enten svært ved at vurdere det eller var ikke enige.

#### IMAGE 1

Based on the image provided, the skin lesion appears to be a small, raised, pinkish bump on the arm. Given the limited information and the need for an in-person clinical evaluation to confirm, here are some potential diagnoses:

#### **Potential Diagnosis: Molluscum Contagiosum**

##### **Description:**

- Molluscum contagiosum is a common viral infection of the skin caused by a poxvirus (molluscum contagiosum virus).
- The lesions are usually small, flesh-colored or pink, dome-shaped, and have a central indentation (umbilication).

##### **Causes:**

- Caused by direct skin-to-skin contact or contact with contaminated objects (fomites).
- More common in children, sexually active adults, and immunocompromised individuals.

##### **Common Symptoms:**

- Painless, pearly papules with a central dimple.
- Lesions can occur anywhere on the body but are commonly found on the face, trunk, and limbs.

##### **Possible Treatments:**

- Often self-limiting and may resolve on their own within 6-12 months.

- Physical removal methods such as cryotherapy, curettage, or laser therapy.
- Topical treatments like imiquimod, tretinoin, or cantharidin.

### Differential Diagnoses:

#### 1. Cherry Angioma:

- Small, benign, bright red or purple growths composed of blood vessels.
- Common in older adults.
- Generally harmless and do not require treatment unless for cosmetic reasons.

#### 2. Keratosis Pilaris:

- Small, rough bumps that are usually white or red and appear on the arms, thighs, cheeks, or buttocks.
- Caused by a buildup of keratin in hair follicles.
- Treated with moisturizers, exfoliants, and topical retinoids.

#### 3. Basal Cell Carcinoma (BCC):

- A type of skin cancer that appears as a pearly or waxy bump, often with visible blood vessels.
- More common in sun-exposed areas.
- Requires biopsy and potential surgical removal.

### Recommendations:

- **Consultation with a Dermatologist:** A definitive diagnosis often requires a clinical examination and sometimes a biopsy.
- **Observation:** If the lesion changes in size, color, or shape, or if additional symptoms develop, seek medical attention promptly.
- **Preventive Measures:** Maintain good skin hygiene, avoid direct contact with infected individuals, and use protective measures in public areas.

If you have any additional symptoms or if the lesion changes in any way, it would be advisable to seek a professional medical evaluation for a more accurate diagnosis and appropriate treatment plan.

### Lægernes vurdering:

Korrekt diagnose

### IMAGE 2

Based on the image provided, the skin condition depicted appears to be consistent with **seborrheic dermatitis**. Here is a detailed diagnosis, including the potential causes, common symptoms, possible treatments, and differential diagnoses to consider:

## Diagnosis: Seborrheic Dermatitis

### *Potential Causes:*

- **Malassezia Yeast:** Overgrowth of a yeast called *Malassezia* on the skin can contribute to seborrheic dermatitis.
- **Genetics:** Family history may play a role.
- **Environmental Factors:** Cold, dry weather can exacerbate the condition.
- **Immune Response:** An abnormal immune response might be a contributing factor.
- **Hormonal Changes:** Hormonal fluctuations can influence the severity.

### *Common Symptoms:*

- **Redness and Inflammation:** The forehead and areas around the nose, eyebrows, and other oily areas of the face show redness.
- **Flaky Skin:** The skin appears scaly and may have white or yellowish flakes.
- **Itching:** The affected areas can be itchy, leading to scratching and further irritation.
- **Greasy Patches:** The affected skin may have a greasy appearance.

### *Possible Treatments:*

1. **Topical Antifungals:** Medications like ketoconazole or ciclopirox can reduce yeast overgrowth.
2. **Topical Corticosteroids:** Low potency steroids (e.g., hydrocortisone) can reduce inflammation and redness.
3. **Calcineurin Inhibitors:** Tacrolimus and pimecrolimus can be used as steroid-sparing agents.
4. **Medicated Shampoos:** Shampoos containing selenium sulfide, zinc pyrithione, or coal tar can be used on the scalp and face.
5. **Moisturizers:** Non-comedogenic moisturizers can help maintain skin hydration.
6. **Avoid Triggers:** Reducing stress, avoiding harsh skincare products, and managing weather exposure can help control flare-ups.

### *Differential Diagnoses:*

- **Psoriasis:** Psoriasis also causes red, scaly patches, but it typically involves more extensive scaling and well-defined plaques.
- **Rosacea:** Characterized by redness and visible blood vessels, often affecting the central face, without the greasy scales.
- **Contact Dermatitis:** Irritation from contact allergens or irritants, leading to red, itchy skin, often more localized.
- **Tinea Versicolor:** A fungal infection causing hypopigmented or hyperpigmented patches, generally less inflamed.

## Clinical Assessment:

A thorough clinical assessment would involve:

- **History:** Gathering detailed patient history, including family history, lifestyle factors, and any known triggers.
- **Physical Examination:** Evaluating the distribution and characteristics of the lesions.
- **Laboratory Tests:** If necessary, skin scrapings for fungal cultures or biopsies for histopathological examination.

If symptoms persist or there is uncertainty in diagnosis, referral to a dermatologist for further evaluation and management is advisable.

## Lægernes vurdering

Forkert, men lægerne havde også svært ved at vurdere det.

## IMAGE 3

Based on the provided image, the skin condition appears to present with the following characteristics:

- Erythema (redness) localized to the cheeks and chin area.
- Presence of small papules or pustules.
- Perioral involvement (around the mouth).
- Mild scaling.

Considering these clinical features, the most likely diagnosis is **Perioral Dermatitis**.

## Perioral Dermatitis

**Definition:** Perioral dermatitis is a facial rash that tends to occur around the mouth, although it can also involve the skin around the eyes or nose.

### Etiology (Causes):

- Overuse of topical corticosteroids.
- Skin care products, especially those that are heavy or occlusive.
- Hormonal changes, often related to menstrual cycles in women.
- Use of fluoridated toothpaste.
- Microbial factors (such as bacteria or yeasts).

### Common Symptoms:

- Red, inflamed papules or pustules around the mouth.
- Itching or burning sensation.
- Absence of comedones (distinguishes it from acne).
- Erythema and scaling.

### Differential Diagnoses:

1. **Rosacea:** Can present similarly but usually involves the central face, nose, and can have a background of chronic redness and telangiectasia.
2. **Acne Vulgaris:** Typically has comedones and is more widespread across the face.
3. **Seborrheic Dermatitis:** Characterized by greasy scaling and more generalized distribution, often involving the scalp and nasolabial folds.
4. **Allergic Contact Dermatitis:** Typically presents with more widespread involvement and history of exposure to an allergen.

### Treatment:

1. **Discontinuation of Topical Steroids:** Gradually weaning off if they have been used is crucial.
2. **Topical Treatments:**
  - **Metronidazole Gel/Cream:** Commonly used for its anti-inflammatory properties.
  - **Clindamycin Gel:** Another option for topical antibiotic therapy.
  - **Pimecrolimus Cream:** An alternative non-steroidal anti-inflammatory.
3. **Oral Antibiotics:** For moderate to severe cases:
  - **Tetracyclines (Doxycycline or Minocycline):** Often prescribed for their anti-inflammatory properties.
  - **Erythromycin:** An alternative if tetracyclines are contraindicated.
4. **Skin Care Adjustments:**
  - Avoid heavy or occlusive skin care products.
  - Use gentle cleansers and non-comedogenic moisturizers.
  - Avoid fluoride-containing toothpaste if suspected as a trigger.

### Monitoring and Follow-up:

- Improvement typically starts within a few weeks of initiating treatment.
- Full resolution can take several months.
- Follow-up with a dermatologist is recommended to monitor response to treatment and adjust as necessary.

### Patient Education:

- Educate about the potential triggers and importance of adhering to prescribed treatments.
- Discuss the importance of avoiding topical steroids unless absolutely necessary and prescribed by a healthcare provider.

If symptoms persist or worsen, further evaluation by a dermatologist is advised to rule out other underlying conditions or to modify the treatment plan.

## Lægernes vurdering

Korrekt diagnose

## IMAGE 4

Based on the image provided, the condition appears to be a subungual hematoma. This is a collection of blood (hematoma) beneath a toenail or fingernail, typically caused by trauma or injury. Here is a detailed analysis:

### Diagnosis: Subungual Hematoma

#### *Description:*

A subungual hematoma occurs when blood pools under the nail due to trauma, resulting in a dark discoloration. The affected area can appear black, blue, or purple, depending on the amount and age of the blood collected.

#### *Potential Causes:*

- **Trauma or Injury:** Direct impact or crushing injury to the toe or finger, such as stubbing the toe, dropping a heavy object on it, or repetitive minor trauma (e.g., from running or ill-fitting shoes).
- **Tight Footwear:** Shoes that are too tight can repeatedly press against the toenail, causing small injuries that lead to hematomas.
- **Other Medical Conditions:** Less commonly, subungual hematomas can be associated with certain medical conditions affecting blood clotting or nail health.

#### *Common Symptoms:*

- **Discoloration:** The nail will show a dark spot, typically black or deep purple, which can cover a small or large portion of the nail.
- **Pain:** Throbbing pain is common due to pressure from the pooled blood.
- **Swelling:** The toe or finger may be swollen and tender to touch.

#### *Differential Diagnoses:*

- **Melanoma:** A malignant melanoma under the nail can sometimes mimic a subungual hematoma. It is important to consider this, especially if there is no history of trauma, or if the discoloration does not grow out with the nail over time.
- **Fungal Infections:** Nail fungal infections can cause discoloration, though they typically also cause nail thickening and deformity.
- **Onychomycosis:** A fungal infection that can cause the nail to become discolored, thickened, and brittle.

#### *Possible Treatments:*

- **Conservative Management:** For small, asymptomatic hematomas, conservative management (watchful waiting) is often sufficient. The blood will be reabsorbed over time, and the nail will grow out.
- **Pain Relief:** Over-the-counter pain medications (e.g., ibuprofen or acetaminophen) can help manage pain.

- **Nail Trephination:** If there is significant pain, a healthcare provider may perform nail trephination, a procedure to relieve pressure by creating a small hole in the nail to drain the blood. This can be done using a heated needle or a laser.
- **Follow-up:** Monitoring for signs of infection or changes in the nail bed is essential. If the nail bed appears damaged, further medical evaluation may be necessary.

#### *When to Seek Medical Attention:*

- Persistent or severe pain.
- Signs of infection (redness, warmth, pus).
- If there is no known cause of trauma or if the discoloration spreads beyond the nail.
- If there is concern about melanoma or other nail pathologies.

Given the visual appearance of the nail in the provided image, the most likely diagnosis is a subungual hematoma, particularly if there is a history of trauma. However, if there is uncertainty or the condition does not improve, a consultation with a healthcare provider or dermatologist is recommended to rule out other potential causes.

## Lægernes vurdering

Korrekt diagnose

## IMAGE 5

Based on the provided image, the skin condition appears to show signs consistent with folliculitis. Here is a detailed assessment:

### Diagnosis: Folliculitis

#### *Description:*

Folliculitis is an inflammation of the hair follicles, typically characterized by small, raised, red bumps or pustules around hair follicles, which can sometimes be itchy or painful.

#### *Potential Causes:*

- **Bacterial infection:** Most commonly caused by *Staphylococcus aureus*.
- **Fungal infection:** Can be caused by fungi, especially in hot, humid climates.
- **Viral infections:** Herpes simplex virus can cause folliculitis.
- **Mechanical irritation:** From shaving, waxing, or friction from clothing.
- **Occlusion:** Use of heavy lotions or oils can clog hair follicles.
- **Immunosuppression:** Individuals with weakened immune systems are more prone to infections.

#### *Common Symptoms:*

- Red bumps or white-headed pimples around hair follicles.
- Itching or tenderness in the affected area.



- Pus-filled blisters that break open and crust over.
- In severe cases, large swollen bumps (furuncles).

#### *Possible Treatments:*

1. **Topical Antibiotics:** Mupirocin or clindamycin can be applied to affected areas.
2. **Oral Antibiotics:** For more extensive infections, oral antibiotics such as dicloxacillin or cephalexin may be necessary.
3. **Antifungal Treatments:** If a fungal infection is suspected, antifungal creams or oral medications like fluconazole may be used.
4. **Antiviral Medications:** For viral-induced folliculitis, antiviral treatments like acyclovir may be prescribed.
5. **Topical Antiseptics:** Using antiseptic washes like chlorhexidine can help reduce bacterial load.
6. **Proper Hygiene:** Keeping the affected area clean and dry.
7. **Avoiding Irritation:** Discontinue any mechanical irritation or use of occlusive products.

#### *Differential Diagnoses:*

- **Acne:** Similar appearance but typically more chronic and located on the face, chest, and back.
- **Pseudofolliculitis barbae:** Common in individuals who shave, particularly around the beard area, caused by ingrown hairs.
- **Keratosis Pilaris:** Characterized by small, rough bumps, usually on the upper arms, thighs, and cheeks.
- **Dermatitis:** Can cause similar red, inflamed skin but often has a more diffuse pattern and may be associated with other symptoms like scaling or crusting.

#### **Conclusion:**

The image suggests folliculitis as the most likely diagnosis, given the presence of small, raised, red bumps centered around hair follicles. Treatment involves addressing the underlying cause, whether bacterial, fungal, or viral, and managing symptoms through topical or oral medications and proper skin care practices. If the condition persists or worsens, a consultation with a dermatologist is recommended for further evaluation and treatment.

#### **Lægernes vurdering**

Korrekt diagnose

#### **IMAGE 6**

Based on the provided image, the skin condition appears to be **plaque psoriasis**. Here is a detailed diagnosis:

## Diagnosis: Plaque Psoriasis

### *Description:*

Plaque psoriasis is a chronic autoimmune condition characterized by the rapid growth of skin cells. This causes cells to build up rapidly on the surface of the skin, forming scales and red patches that are often itchy and sometimes painful.

### *Key Features:*

1. **Red Patches:** Clearly demarcated erythematous (red) patches or plaques.
2. **Silvery Scales:** Presence of silvery-white scales on the surface of the plaques.
3. **Location:** Commonly found on the scalp, elbows, knees, and lower back.
4. **Symmetry:** Often symmetrical in distribution.

### *Potential Causes:*

- **Genetic Factors:** A family history of psoriasis increases the likelihood of developing the condition.
- **Immune System Dysfunction:** Psoriasis is an autoimmune disorder where the immune system attacks healthy skin cells.
- **Triggers:** Infections, skin injuries, stress, smoking, heavy alcohol consumption, and certain medications can trigger or exacerbate psoriasis.

### *Common Symptoms:*

- Red patches of skin covered with thick, silvery scales.
- Dry, cracked skin that may bleed.
- Itching, burning, or soreness.
- Thickened or ridged nails.
- Swollen and stiff joints (in cases of psoriatic arthritis).

### *Possible Treatments:*

1. **Topical Treatments:**
  - Corticosteroids: Reduce inflammation and slow cell turnover.
  - Vitamin D analogs: Calcipotriene helps to slow skin cell growth.
  - Topical Retinoids: Tazarotene helps normalize DNA activity in skin cells.
  - Moisturizers: Help reduce dryness and scaling.
2. **Phototherapy:**
  - UVB Phototherapy: Exposing the skin to ultraviolet B light under medical supervision.
  - PUVA: Combination of psoralen (a light-sensitizing medication) and UVA light therapy.
3. **Systemic Medications:**
  - Methotrexate: Reduces the production of skin cells.
  - Cyclosporine: Suppresses the immune system.
  - Biologics: Target specific parts of the immune system (e.g., TNF-alpha inhibitors, IL-12/23 inhibitors).

#### 4. Lifestyle and Home Remedies:

- Stress management techniques.
- Avoiding known triggers such as smoking and heavy alcohol use.
- Regular use of moisturizers to reduce dryness and scaling.

#### *Differential Diagnoses:*

- **Seborrheic Dermatitis:** Can appear similar but typically has greasier scales and affects areas rich in sebaceous glands like the scalp, face, and chest.
- **Eczema (Atopic Dermatitis):** Generally more pruritic and less well-demarcated, with a more variable distribution.
- **Tinea Corporis (Ringworm):** A fungal infection with ring-shaped, scaly patches, often with a clearer center.

#### *Recommendations:*

- Consult a dermatologist for a definitive diagnosis and tailored treatment plan.
- Consider a skin biopsy if the diagnosis is uncertain.
- Regular follow-up to monitor the condition and adjust treatment as needed.

If you have any specific symptoms or need further clarification, please consult a healthcare professional for a more comprehensive assessment.

## Lægernes vurdering

Forkert diagnose, men lægerne var heller ikke enige og havde svært ved at vurdere det.

## IMAGE 7

Based on the image you provided, the skin condition depicted appears to be characterized by round, reddish patches. Here's a detailed dermatological assessment:

### Diagnosis

The skin condition shown is suggestive of **Tinea Corporis** (commonly known as ringworm), which is a superficial fungal infection of the skin.

### Potential Causes

Tinea corporis is caused by dermatophytes, which are a type of fungi. The common dermatophytes include:

- **Trichophyton species**
- **Microsporum species**
- **Epidermophyton species**

## Common Symptoms

The typical clinical presentation includes:

- Round or oval, reddish, scaly patches with well-defined edges.
- The patches may be itchy.
- The central area of the lesion might become clearer as the lesion enlarges, leading to a ring-like appearance.
- Multiple lesions can coalesce to form larger areas of affected skin.

## Differential Diagnoses

While Tinea corporis is a likely diagnosis, other conditions that can present with similar appearances include:

- **Nummular eczema:** Typically presents with coin-shaped patches of eczema, which can be itchy and may look similar to ringworm.
- **Psoriasis:** Can present with round, scaly patches, though they often have a more silvery scale and a more chronic course.
- **Pityriasis rosea:** Begins with a herald patch followed by smaller lesions, often arranged in a "Christmas tree" pattern on the back.
- **Granuloma annulare:** Presents with ring-like lesions but usually without scaling and itching.

## Possible Treatments

Treatment for Tinea corporis typically involves antifungal medications. Options include:

- **Topical antifungals:**
  - Clotrimazole
  - Miconazole
  - Terbinafine
  - Ketoconazole These are usually applied twice daily for 2-4 weeks.
- **Oral antifungals:**
  - Terbinafine
  - Itraconazole
  - Fluconazole These may be necessary for extensive cases or when topical treatment fails.

## Additional Recommendations

- Keep the affected area clean and dry.
- Avoid sharing personal items like towels and clothing to prevent spreading the infection.
- Consider seeing a dermatologist for confirmation of the diagnosis and to rule out other potential conditions.

If the lesions do not improve with over-the-counter treatments, or if there are signs of a secondary bacterial infection (increased redness, warmth, pus), seek medical advice promptly.

If you need further assistance or have more symptoms to describe, please let me know!

## Lægernes vurdering

Korrekt diagnose

## IMAGE 8

The image depicts a section of skin with noticeable hair growth and some erythema (redness) and possible irritation. Based on the image alone, several dermatological conditions could be considered, but without additional context (such as patient history, duration of the condition, and any accompanying symptoms), a precise diagnosis is challenging. Here are a few possible diagnoses based on the visible characteristics:

### Possible Diagnoses

#### 1. Folliculitis:

- **Description:** Inflammation of hair follicles, often due to bacterial infection.
- **Symptoms:** Redness around hair follicles, possible pustules, and mild tenderness or itchiness.
- **Causes:** Bacterial infection (commonly *Staphylococcus aureus*), friction from clothing, shaving, or sweat.
- **Treatment:** Topical antibiotics (e.g., mupirocin), oral antibiotics for severe cases, proper hygiene, and avoiding friction.

#### 2. Contact Dermatitis:

- **Description:** Skin inflammation caused by direct contact with an irritant or allergen.
- **Symptoms:** Red, itchy rash, sometimes with blisters or dry, scaly skin.
- **Causes:** Irritants (soaps, detergents, chemicals) or allergens (plant oils, metals).
- **Treatment:** Avoidance of the offending substance, topical steroids, moisturizers, and antihistamines for itch relief.

#### 3. Eczema (Atopic Dermatitis):

- **Description:** Chronic condition characterized by inflamed, itchy skin.
- **Symptoms:** Red, inflamed, itchy patches, sometimes with crusting or weeping.
- **Causes:** Genetic factors, environmental triggers, immune system dysfunction.
- **Treatment:** Topical corticosteroids, moisturizers, antihistamines, and avoiding triggers.

#### 4. Psoriasis:

- **Description:** Chronic autoimmune condition that speeds up the growth cycle of skin cells.
- **Symptoms:** Red, scaly patches that may be itchy or painful, often with well-defined edges.
- **Causes:** Immune system dysfunction, genetic predisposition, triggers like stress or infection.

- **Treatment:** Topical treatments (corticosteroids, vitamin D analogs), phototherapy, systemic medications for severe cases.

#### 5. Seborrheic Dermatitis:

- **Description:** Chronic form of eczema primarily affecting oily areas of the body.
- **Symptoms:** Red, greasy skin covered with flaky white or yellow scales.
- **Causes:** Overgrowth of *Malassezia* yeast, hormonal changes, stress.
- **Treatment:** Antifungal treatments, medicated shampoos (for scalp involvement), topical corticosteroids.

### Differential Diagnoses

- **Tinea Corporis (Ringworm):** Fungal infection causing ring-shaped, red, scaly patches.
- **Lichen Simplex Chronicus:** Thickened skin due to chronic scratching or rubbing.
- **Scabies:** Intense itching caused by a mite infestation, often with small burrows visible.

### Next Steps

To confirm a diagnosis and proceed with appropriate treatment, a visit to a healthcare professional is necessary. They may perform:

- **Physical Examination:** Detailed inspection of the affected area.
- **Skin Scraping or Biopsy:** To check for fungal infections or other underlying conditions.
- **Allergy Testing:** If contact dermatitis is suspected.
- **Cultures:** To identify bacterial or fungal infections.

### Summary

The image suggests a condition characterized by redness and possible irritation around hair follicles, which could be folliculitis or another inflammatory skin condition. Proper medical evaluation is essential for an accurate diagnosis and treatment plan.

### Lægernes vurdering

Korrekt diagnose

### IMAGE 9

The image depicts a toenail with discoloration and a rough texture, which are common signs of onychomycosis, also known as toenail fungus. Here is a detailed diagnosis and overview:

### Diagnosis

**Condition:** Onychomycosis (Toenail Fungus)

## Potential Causes

Onychomycosis is usually caused by various types of fungi, including dermatophytes, yeasts, and non-dermatophyte molds. The most common causative agents are:

- **Dermatophytes:** *Trichophyton rubrum*, *Trichophyton interdigitale*.
- **Yeasts:** *Candida* species.
- **Non-dermatophyte molds:** *Scopulariopsis*, *Aspergillus*.

## Common Symptoms

- **Discoloration:** The affected toenail appears white, yellow, or brown.
- **Thickening:** The nail becomes thicker than usual.
- **Brittle or crumbly texture:** The nail becomes brittle and may crumble or split.
- **Distorted shape:** The nail may become misshapen.
- **Separation from the nail bed:** In severe cases, the nail may detach from the nail bed (onycholysis).
- **Odor:** A foul smell might be present if there is a secondary bacterial infection.

## Differential Diagnoses

Other conditions that can mimic onychomycosis include:

- **Psoriasis:** Nail psoriasis can cause similar changes, including pitting, discoloration, and thickening.
- **Lichen planus:** This can also cause nail dystrophy.
- **Trauma:** Repeated trauma to the nail can lead to similar symptoms.
- **Eczema:** Can affect the nails and cause changes similar to fungal infection.

## Diagnostic Tests

- **KOH Test (Potassium Hydroxide Test):** A scraping of the nail is examined under a microscope to detect fungi.
- **Fungal Culture:** Nail clippings are cultured to identify the specific type of fungus.
- **PCR (Polymerase Chain Reaction):** Advanced testing to identify fungal DNA.

## Treatment Options

- **Topical Antifungal Treatments:**
  - Ciclopirox (Penlac)
  - Efinaconazole (Jublia)
  - Tavaborole (Kerydin)
- **Oral Antifungal Medications:**
  - Terbinafine (Lamisil)
  - Itraconazole (Sporanox)
  - Fluconazole (Diflucan)
- **Laser Treatment:**

- Uses laser light to penetrate the nail and destroy the fungus.
- **Nail Removal:**
  - In severe cases, surgical or chemical removal of the nail may be necessary.

## Preventive Measures

- **Keep feet dry and clean.**
- **Use antifungal powders or sprays.**
- **Avoid sharing nail clippers and shoes.**
- **Wear breathable footwear and moisture-wicking socks.**

If you suspect onychomycosis, it is recommended to consult a dermatologist or a healthcare provider for accurate diagnosis and appropriate treatment.

## Lægernes vurdering

Gode forslag, lægerne var heller ikke enige.

## IMAGE 10

The image shows a close-up view of the skin at the nape of the neck, displaying areas of redness, scaling, and irritation. Based on the appearance, this could be indicative of a dermatological condition known as **seborrheic dermatitis**.

## Diagnosis: Seborrheic Dermatitis

### Potential Causes:

1. **Malassezia yeast:** This yeast is commonly found on the skin and is believed to play a role in the development of seborrheic dermatitis.
2. **Genetic factors:** A predisposition to seborrheic dermatitis can run in families.
3. **Environmental factors:** Weather changes, particularly cold and dry weather, can exacerbate symptoms.
4. **Stress and fatigue:** Emotional stress and lack of sleep may worsen the condition.
5. **Immune response:** An altered immune response to the presence of Malassezia yeast might contribute to inflammation.

### Common Symptoms:

1. **Red, inflamed skin:** Patches of red, inflamed skin, often with a greasy appearance.
2. **Scaling:** Flaky scales that may be white or yellowish.
3. **Itchiness:** The affected areas can be itchy, causing discomfort.
4. **Greasy patches:** Skin might appear greasy, particularly in areas like the scalp, face, and behind the ears.
5. **Lesions:** In more severe cases, lesions might ooze and become crusty.



**Possible Treatments:**

1. **Topical antifungal treatments:** These help reduce the presence of *Malassezia* yeast. Examples include ketoconazole, ciclopirox, and selenium sulfide.
2. **Topical corticosteroids:** These can reduce inflammation and itching. However, they should be used sparingly and under medical supervision to avoid side effects.
3. **Medicated shampoos:** Shampoos containing zinc pyrithione, coal tar, or salicylic acid can be effective for scalp involvement.
4. **Moisturizers:** Emollients and moisturizers can help soothe the skin and reduce scaling.
5. **Calcineurin inhibitors:** Topical calcineurin inhibitors like tacrolimus and pimecrolimus can be used as an alternative to corticosteroids, especially for facial involvement.
6. **Lifestyle changes:** Managing stress, maintaining good skin hygiene, and avoiding harsh soaps and skin products can help manage symptoms.

**Differential Diagnoses to Consider:**

1. **Psoriasis:** This can also cause red, scaly patches, but typically has a thicker scale and might affect different areas, such as elbows and knees.
2. **Atopic dermatitis:** Often associated with intense itching and can affect various parts of the body, not just seborrheic areas.
3. **Tinea capitis:** A fungal infection of the scalp that can cause scaly patches and hair loss.
4. **Contact dermatitis:** An allergic reaction to substances like hair products, causing redness and itching.

Given the location and appearance, seborrheic dermatitis is the most likely diagnosis. However, a thorough clinical examination and history are necessary to confirm the diagnosis and rule out other conditions. If the condition persists or worsens, consulting a dermatologist for a more detailed evaluation and treatment plan is recommended.

**Lægernes vurdering**

Korrekt diagnose