Vulvar Itching: Why and what to do about it

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Salt Lake City, Utah
Degrees of Pain

- Pain
- Stinging
- Burning
- Itching
- Dryness

more severe disease
What is Sensitive Skin?

- Hyper reactivity to environmental factors
- Typically no visible signs of irritation
- Symptoms of itching, burning, stinging
- Intolerance of common ingredients in topical creams or cosmetics

Berardesca, Fluhr, Maibach. Sensitive Skin Syndrome
Taylor and Francis 2006 p.1
Sensitive Skin Syndrome

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<th>sensitive</th>
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# Sensitive Skin Syndrome

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- **Face**: Sensitive
- **Back of the Hands**
- **Vulvovaginal area**
Sensitive Skin Syndrome

Face
Backs of the hands
Vulvovaginal area

Sensitive

Itching, Burning,
(vulvodynia, vestibulitis)

Tough

Thin > 0.5 mm
High friction coefficient
High transepidermal water loss
Environmental damage
Dermatitis
Superinfection

Thick 5 mm
Low friction coefficient
Low transepidermal water loss
Favorable environment
No dermatitis
No infection

Palms of the hands,
soles of the feet
40% of adults believe they have sensitive skin generally (hands, face) and 50% of these have no visible signs of irritation

Simion FA, Rau AH. Sensitive Skin  Cosmetic Toiletries  1994;109:43
Relative Sensitivity of Vulvar Skin

• Transepidermal water loss is higher on the vulva than elsewhere Elsner, Maibach. *Acta Derm Venereol* 1990;70:141-4

• Vulvar friction coefficient is greater, making the vulva more susceptible to *unavoidable* mechanical damage Elsner, Maibach. *Dermatologica* 1990;181:88-91

• Hydration, occlusion, and tissue permeability heighten vulvar susceptibility to topical irritants Ferage. *Arch Gynecol Obstet* 2005;272:167-72

• Palms of the hands and soles of the feet are the only tissues designed to tolerate abrasion and irritant exposure
Normal skin only allows entry of chemicals with a molecular weight less than 500, but dermatitis allows much larger chemicals to penetrate and irritate the skin.

Bos JD, Meinardi MM. The 500 Dalton rule for the skin penetration of chemical compounds and drugs. Exp Dermatol 2000;9(3):165
Harmful Ingredients in Topical agents *(high rate of irritation)*

- Benzocaine for vulvitis, cinchocaine for hemorrhoids (lidocaine is actually OK)
- Lanolin
- Propylene glycol (higher concentrations in creams than ointments)
- Fragrance in creams, toilet paper, etc (higher sensitization rate in the anal area than the vulva)

Topical agents to avoid in sensitive skin syndrome

- Yeast creams
- Vagisil
- Commercial creams
- Shaving / Brazilian wax, etc
Causes for Pain in Vulvar Sensitive Skin Syndrome

• Skin flaking compromises the skin barrier and exposes nerve fibers
• Increase in superficial nerve fibers
• Intradermal inflammation
Topics for Today

1. Dermatopathology
2. Spongiotic dermatitis
3. Nerve growth factor
4. Menopausal changes
## Causes for Vulvar Discomfort

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<tr>
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How is Vulvar Disease Diagnosed?

Clinical Impression and

A Biopsy submitted to a dermatopathologist
“Vulvodynia” and “Vestibulitis” show Dermatopathology in 2/3 of Cases

"nonspecific inflammation"

UNIVERSITY OF UTAH SCHOOL OF MEDICINE
DERMATOPATHOLOGY REPORT
Department of Dermatology, University of Utah Health Sciences Center
Laboratory Director: John J. Zone, M.D.

Date of Service: 05-21-2007
Submitting Service/Physician: OB/GYN, Paul Summers, MD

Patient: W. J.
Sex: F
DOB: 04-09-80
MRN: 123456

Clinical: Chronic vulvar “burning”. History of “hay fever”.

Gross: Received from Intermountain Central Laboratory, Murray, UT, at the request of Dr. Summers, are two H&E stained slides, labeled C-1-3, A-1 and B-1, representing a biopsy from the left breast (A) and from the vulva (B), performed on 12-1-2005.

DIAGNOSIS:
1. LEFT BREAST: PIGMENTED SEBORRHEIC KERATOSIS.
2. VULVA: SPONGIOTIC DERMATITIS WITH EOSINPHILS.

Specimen #1 is a bisected shave of non-sun-damaged skin that demonstrates broad reticulated and hyperpigmented cords of bland keratinocytes around pseudo-horn cysts.

Specimen #2 demonstrates an acanthotic epithelium with overlying parakeratosis and mild spongiosis. The submucosa demonstrates interstitial and perivascular infiltrates of lymphocytes, neutrophils and occasional eosinophils.

ANNELI R. BOWEN, MD
Dermatopathologist
"nonspecific inflammation"

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Date of Service: 05-21-2007
Submitting Service/Physician: OB/GYN Paul Summers, MD
Accession #: E 07-9

Patient: T, T
Sex: F
DOB: 10/28/31
MRN: 

Clinical: Long history of dyspareunia.

Gross: Received from Associates of Pathology, Lakeview Hospital, Bountiful, UT, at the request of Dr. Summers, are four H&E stained slides, labeled LDCS_07-5, 1A-1,1A-2, 2A-1 and 2A-2, representing biopsies from the vulva performed on 04-07-07.

DIAGNOSIS:
1. VULVAR LESION, WHITE: LICHENIFIED SPONGIOTIC DERMATITIS.
2. VULVAR CYST: HIDRADENOMA PAPILLIFERUM AND LICHENIFIED SPONGIOTIC DERMATITIS.

Specimen #1 is a small punch of mucosa that demonstrates epidermal acanthosis and mild spongiosis. There is hypergranulosis and compact orthohyperkeratosis. The submucosa demonstrates a mild perivascular interstitial lymphocytic infiltrate.

Specimen #2 demonstrates similar epidermal features as specimen #1, but has more interstitial neutrophils. Beneath this is a well-circumscribed collection of rounded and slit-like cystic spaces lined by columnar epithelium. There are no atypical features.

Comment: These slides were reviewed with Dr. Scott Florell, who concurs with the above interpretations.

ANNELI R. BOWEN, MD
Dermatopathologist
## Causes for Vulvar Discomfort

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Lichen Sclerosus

- Mild lichen sclerosus is relatively common (minimal visible skin change)
- Often hour glass-shaped rash
- Any age group
- Associated with recurrent yeast infection if allergic dermatitis is superimposed (mixed vulvar dystrophy)
- Occasionally, normal flora can invade
Lichen Sclerosus

Complications:
1. Irritant reaction
2. Allergy, yeast infection
3. Cancer
Paget’s Disease of the Vulva

Disease is also present in adjacent normal-appearing skin
Hailey-Hailey Disorder

Painful, fragile axilla and occasionally vulva

Painful papules
Autoimmune Vulvovaginitis

• Lichen Planus

• Zoon’s disorder

• Aphthous ulcer disease
Recurrent Genital Ulcer Disease

- Infectious vs autoimmune
- Painful superficial ulcers, typically burn when urine contacts the lesion
- Aphthous major vs aphthous minor
- Behcet’s Disease
- Vulvar Crohn’s disease

Also biopsy for immune staining
Aphthous Major vs Minor

• Distinction is greater or less than 1 cm

• Recurrent with no definitive pathology

• No systemic symptoms or findings if simply an isolated vulvar disorder
Aphthous Minor vs Aphthous Major

A spectrum of one disease?

1. Aphthous ulcer
2. Crohn’s Disease
3. Behcet’s Disease
Vulvar Crohn’s Disease

- Recurrent painful genital aphthous major
- Associated areas of large bowel ulceration (may be asymptomatic!)

- Colonoscopy is important in every case of recurrent painful genital ulcers
Behcet’s Disease

• Common in the Middle East and Far East (a main cause for blindness)
• Recurrent oral aphthous ulcers plus intermittent
  – 1. eye inflammation
  – 2. vasculitis (aortic inflammation)
  – 3. vulvar aphthous ulcers — *may be first sign*
  – 4. arthritis
  – 5. GI symptoms
  – 6. pathergy test

• *Genital aphthous ulcers require an ophthalmology evaluation and observation for eye or other symptoms in the future*
Vulva, Severe Erosive Lichen Planus

Stenosis is more often in upper vagina
Chronic oral ulcer in the same patient
Parabasal cells

Lichen Planus, saline wet prep

White blood cells
Same patient after 3 months of Imuran to block the excessive Th1 (autoimmune) response
Vaginal erosion

Atrophic cervix

Localized Vaginal Lichen Planus
Therapeutic possibilities for mild Lichen Planus

- Topical steroids
- Clindamycin cream
Painful erosions in the vestibule

Zoon’s disorder (vestibulitis)
(Plasma cell vulvitis)
Vulvar Spongiotic Dermatitis
Spongiotic dermatitis

1. Intraepidermal edema
2. Liquifaction of dermal-epidermal interface
3. Langerhans cells—blue arrows
Spongiotic Dermatitis
(eczema, atopic, irritant, allergic dermatitis)

1. Hyperplastic epidermis
2. Areas of spongiosis with spongiotic vesicles
3. Blue arrows identify junction between superficial and basal parts of epidermis
4. Fluid is in the basal part
Irritants and allergens cause intradermal spongiosis leading to flakes of epithelium in the saline wet prep and “reactive change” in the pap smear.

This further compromises the vulvar skin barrier.
“Papular” Vulvovaginal Skin Disorders are Evident in the Saline Wet Prep

Skin flake probably due to spongiosis or lichenification

Vulvovaginal irritant and allergic response causes the skin to flake, as is seen frequently in the saline wet prep.
Skin Flakes in the Wet Prep

- Hyperkeratotic skin flake
- Thin skin flake
- Folded edge of skin flake
- Skin flake melting in KOH
Skin Flakes

- Normal healthy skin exfoliates individual epithelial cells
- Flaking skin is common
- Skin flakes are called “reactive change” when seen in the pap smear
- Skin flakes are found frequently in the saline wet prep
- Unfortunately, flakes are not yet listed as an element to evaluate in the saline wet prep
Skin Flakes in the Pap Smear

• Reactive, Reparative changes are reported occasionally in pap smears

• Characteristic of smears with reactive/reparative changes:
  1. cells tend to form sheets (Alexander Meisels, Carol Morin Cytopathology of the Uterus ASCP Press 1997:128)
  2. spongiosis is a prominent feature if the cervix is biopsied (Yao S. Fu, Pathology of the Uterine Cervix, Vagina and Vulva Saunders 2002:281)
Contact Dermatitis

- Affects 40% of adults continuously
- All adults will have contact dermatitis at some time
- Vulva is at special risk (fragile, increased trans epidermal water loss)
- Irritants burn and have an all or none effect
- Allergy itches and has a graduated effect
- Results in **flaking skin**, even in the vulvovaginal area
- Vulvar skin is predisposed to contact dermatitis
Irritant Dermatitis

- Irritants cause immediate or delayed burning
- Typically, there is no visible skin change
- Erythema is present in severe cases
- Microtrauma is different for each irritant
- Most commercial creams and lotions contain irritants
# Irritants in Commercial Preparations

(Blue squares)

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Sensitivity to one environmental stimulus is not predictive of susceptibility to any other

*Patch testing by a dermatologist can be helpful*

Nickel sensitivity?

Therapy for Irritant Vulvitis

- Make the diagnosis (history of burning)
- Avoid irritants (soap, creams, urine, etc.)
- No panty liners
- Rinse with distilled water, then blot dry instead of using toilet paper (urine contains oxylate, which is irritating)
- Moisturize twice daily with non-irritating oil-based ointment
Allergic Contact Dermatitis

- Itch-scratch cycle perpetuates the disorder
- All of the patient’s skin and mucosa has an atopic tendency
- Vulvar hypertrophic dystrophy or lichen simplex
- The majority also have recurrent sinusitis, asthma, hay fever, or eczema
- Diagnosis is confirmed by hyperkeratosis, spongiosis and eosinophils on biopsy
Severe Allergic Dermatitis

History of asthma, hay fever, eczema, sinusitis
Vulvar contact dermatitis was the principal diagnosis in 54% of 141 patients referred to a dermatologist for chronic vulvovaginitis.

• 38% of women with chronic vulvitis demonstrate an irritant or allergic response to vaginal creams and medications

Therapy for Vulvar Allergic Dermatitis

- Avoid allergens (and irritants)
- Topical corticosteroid ointment
- Moisturize with oil
- Antihistamine
- Consider the long-term risk of squamous cancer if not treated, or if no response to therapy (normal Th1 response is cancer surveillance as well)
- Oral yeast therapy for superimposed infection
Products to moisturize

- Lipocream (generic base used for compounding)
- Eletone Cream
- Epiceram
- Emulsion SB
- Cetaphil Cream
- Cerave Cream
- Vaseline
- Crisco
- Coconut oil

What helps one patient may irritate another – a highly individual response
Vulvar Contact Dermatitis Risks

- Yeast infection
- Staph or strep infection
- Squamous cancer
Allergic Vulvar Dermatitis with Recurrent Yeast Infection

Deficient hbd2, 3
Yeast organisms in the skin release acid protease that further promotes the Spongiotic change

- Perpetuates the infection
- Contributes to an environment that favors re-infection after anti-yeast therapy
Severe Yeast

Satellite lesions
Candida albicans
Non-albicans Yeast

Blastospores, no hyphae

May be resistant to azole antifungals
1. Chronic itching and burning
2. Spongiotic dermatitis
3. Increased nerve endings
4. Secondary infection with MRSA
5. Likely recurrent yeast infection

Methcillin resistant staph aureus
Vulvar Carcinoma
Nerve Growth Factor
Nerve Growth Factor

- Discovered in 1950’s by Levi-Montalcini and Cohen at Washington University in St. Louis
- Nobel Prize in Medicine / Physiology in 1986
- Present in seminal fluid and stimulates ovulation in some animals
- Main role is to maintain nerves fibers and to regenerate damaged nerves
- May be found to have a therapeutic role in neuro-degenerative disorders
- Induced by prostaglandins
- Unfortunately causes new nerve endings to sprout if inflammation is chronic, such as in endometriosis
- This leads to progressively more sensitive skin in cases of chronic vulvitis
Nerve proliferation with chronic Inflammation

Figure from Misery, Staender. Pruritus. Springer 2010 p. 4
Proliferation of nerve endings causes progressively increased skin sensitivity in spongiotic dermatitis (eczema)

a common vulvar problem

Nerve Proliferation in "Vulvar Vestibulitis"


Menopause and Vulvar Tissue

- Atrophy—loss of normal thickness
- Rise in vulvovaginal skin surface pH
- Decline in metabolism
- Slower healing
- Loss of intercellular lipids
- Decline in immune competence
- Decline in barrier function

- Decline in spongiotic dermatitis unless estrogen is administered
What Persists after Menopause

- High transepidermal water loss, poor barrier function
- High friction coefficient related to high moisture content of the skin
- Constant irritant, allergen, and mechanical abrasion exposure
- Any dermatologic disease like lichen sclerosus
Vulvar Treatment Concepts

• Moisturize and avoid irritants to correct barrier compromise

• Neurontin and analgesics for hypersensitive nerve reception

• Anti-inflammatory steroids for intradermal inflammation
Itching and Burning Summary

• The vulvovaginal area is normally a high risk location

• Secondary infection or a skin disorder further compromises the skin barrier

• Chronicity amplifies the problem through continued release of Nerve Growth Factor
Itching and Burning Summary

• Consider a biopsy to be sent to Dermatopathology

• Consider secondary yeast or bacterial infection

• Irritant avoidance, and compound anti-inflammatory, anti-infectives rather than commercial products
Chronic Vulvovaginitis: Several Levels of Possible Investigation

• 1. Symptoms, Clinical findings
• 2. Wet Prep, Culture for Microbes

**Clinical interest generally stops here**

• 3. Known dermatology (history and exam)
• 4. *Patch testing by a dermatologist*
• 5. Biopsy (*dermatopathology*)
• 6. *Colposcopy, contact microscopy*
• 7. Molecular markers, cytokines, immunology
• 8. Genetic markers, alleles
The Skin Physiology vs. the Microbe