Vaginal Conditions (Dryness, Atrophy, Infections)

Pamela W. Smith, MD, MPH, MS
Copyright 2015
Vaginal Dryness

- Relevant financial relationships in the past twelve months by presenter or spouse/partner:
  - Employment: None
  - Grant/Research Support: None
  - Consultant: CustomVite
  - Speakers Bureau: PCCA, Genova/Metametrix, Spectracell
  - Stock Shareholder: None
  - Other: None
  - Status of FDA devices used for the material being presented
    NA/Non-Clinical
  - Status of off-label use of devices, drugs or other materials that constitute
    the subject of this presentation
    NA/Non-Clinical

Disclosure
This continuing education activity is managed and accredited by Professional Education Services Group. Neither PESG nor any accrediting organization supports or endorses any product or service mentioned in this activity.
Educational Grant Support

This continuing education activity is supported by an educational grant from PCCA.

Learning Objectives

• At the conclusion of this activity, the participant will be able to:
  – Discuss risk factors and treatments associated with Cervical Dysplasia, including conventional, combination, metabolic, nutritional, and botanical.
  – Discuss importance of nitric oxide production for vaginal lubrication.
  – Discuss risk factors and treatments associated with vaginal dryness and atrophy.

References

Vaginal Dryness

• Vaginal dryness is the reduction in lubrication of the luminal surface of the vagina.
• Can occur at any age
• May occur due to low estrogen levels
  – Peri-menopause or menopause
  – Due to BCP
• Occurs in 14 to 31% of the population of all women

Vaginal Dryness (cont’d)

• Occurs in 50% of postmenopausal women
• 63% of women with breast cancer have vaginal dryness

Vaginal Dryness (cont’d)

• Two types
  – Simple
    • Vagina and neurovasculature are healthy and working
    • Resolution of dryness resolves the symptoms
Vaginal Dryness (cont’d)

- Two types
  - Complex
    - Multifactorial
      - Diabetes
      - HTN
      - Vaginal atrophy
      - High-tone pelvic floor dysfunction
  - Resolution of the dryness may not resolved the symptoms
  * Ibid., Wilhite.

Vaginal Atrophy

- Also called atrophic vaginitis
- Is an inflammatory condition of the vagina and outer urinary tract
- Associated with thinning and shrinkage of the tissue
- Also associated with decreased lubrication
- Occurs in 43% of postmenopausal women in the U.S. but the rate varies in other countries

Vaginal Dryness and Atrophy (cont’d)

- Diagnosis
  - Sx described by patient
  - Physical findings
    - Thinning of vaginal tissue
    - Disappearance of vaginal rugae so that the vaginal canal appears smooth and pale
    - Petechial hemorrhages may be present
Vaginal Dryness and Atrophy (cont’d)

• Diagnosis (cont’d)
  – Sx described by patient
  – Physical findings
    • Blood-tinged vaginal discharge
    • Vaginal pH (which is 4.5 in the reproductive years) increases to 6.0 to 7.5 at menopause if the patient is not hormonally sound. This may increase her risk of vaginal infection.
      * Ibid., Flint.

Vaginal Dryness and Atrophy (cont’d)

• Differential diagnosis
  – Other causes of vaginal bleeding, irritation, and itching
    • Sexually transmitted diseases
    • Hormonal imbalances
    • Malignancy
    • Sjogren's syndrome
    • Diabetes
      * Ibid., Flint.

Vaginal Lubrication

• Vaginal lubrication is made up of ultra filtered blood so it relies on a healthy blood flow to the area.
• There are no glands in the vagina
• Blood pressure pushes fluid from the capillaries through intracellular junctions between vaginal epithelial cells. The resultant vaginal transudate is composed of water and very small proteins that combine at the vaginal surface along with dead epithelial cells.
  * Ibid., Wilhite.
  * Ibid., Nappi.
Vaginal Lubrication (cont’d)

• Sufficient pelvic blood flow is a matter of the bioavailability of nitric oxide (NO).
• Nitric oxide causes vasodilation through a cyclic guanosine monophosphate cascade.

Vaginal Lubrication (cont’d)

• Therefore vaginal lubrication is very dependent on the availability of NO.
• The enzymatic activity of NO synthase is increased by estrogen and other sex hormones.


Vaginal Lubrication (cont’d)

• NO by itself is not enough for its effect. There are many mechanisms that can suppress the production of NO.
• It is important the NO levels be normal. Too high of levels are not good either.
• Elevated levels of NO produces inflammation which can lead to free radical production.

Vaginal Lubrication (cont’d)

- Low inflammation supports the bioavailability of NO in aiding lubrication.
  * Ibid., Wilhite.

Manipulation of Nitric Oxide Production

- Production of nitric oxide
  - Sufficient L-arginine from the diet (Mediterranean)
    - Nuts (peanuts, almonds, walnuts, hazelnuts)
    - Fruits (berries)
    - Chocolate
    - Fish or chicken
    - Seeds (sunflower, flaxseed)
  - Enough calcium in the diet
    * Ibid., Wilhite.

Manipulation of Nitric Oxide Production (cont’d)

- Facilitation of the activity of nitric oxide synthase
  - Hormones
    - Estrogen
    - Soy phytoestrogens
    - Testosterone
Manipulation of Nitric Oxide Production (cont’d)

• Facilitation of the activity of nitric oxide synthase (cont’d)
  – Medications and supplements
    • Niacin
      – Recouples nitric oxide synthase
    • Angiotensin converting-enzyme inhibitors
    • Angiotensin II receptor blockers
    • Ginseng

Manipulation of Nitric Oxide Production (cont’d)

• Facilitation of the activity of nitric oxide synthase
  – Other
    • Presence of high-density lipoprotein
    • Reduction of hyperglycemia
      * Ibid., Wilhite.

Manipulation of Nitric Oxide Production (cont’d)

• Prolonged activity of nitric oxide and cyclic guanosine monophosphate
  – Phosphodiesterase-5 inhibitors (sildenafil, tadalafil, vardenafil)
Manipulation of Nitric Oxide Production (cont’d)

- Bioactivity of nitric oxide
  - ASA
  - Vitamin D
    - Decreases inducible nitric oxide synthase
  - Ginkgo
    - Decreases inducible nitric oxide synthase and NO scavenger
  - Red wine, plant polyphenols and flavanoids

Other
- Moderate exercise on a regular basis
  * Ibid., Wilhite.

Risk Factors for Vaginal Dryness

- Decreased estrogen
  - Postpartum status, breast-feeding
  - Menopause
  - Premature ovarian failure
  - Oophorectomy
  - Pelvic radiotherapy
  * Ibid., Wilhite.
Risk Factors for Vaginal Dryness (cont’d)

• Other medical conditions
  – Untreated hypertension
  – Diabetes
    • Type I
    • Type II
  – Metabolic syndrome
  – Pituitary disorders
  – Neuropathies (particularly autonomic neuropathy)
  – Dermatoses
    • Psoriasis
    • Lichen sclerosis
    • Sjogren syndrome
  * Ibid., Wilhite.

Risk Factors for Vaginal Dryness (cont’d)

• Prescription medications
  – Antihistamines and decongestants
  – Antidepressants
    • SSRIs
    • Atypical
    • TCAs
  – Anti-estrogen therapy for chemotherapy
  – Anti-estrogen therapy for endometriosis or fibroids
  – Chemotherapy
  – Diuretics
  – Progesterone predominant oral contraceptives
  * Ibid., Wilhite.

Risk Factors for Vaginal Dryness (cont’d)

• Unwise behaviors
  – Dehydration including the use of ETOH
  – Use of douches, very hot baths, or strong detergents and dehydrating soaps
  – Use of highly absorptive tampons
  – Use of male condoms with not enough external lubricant
  – Lack of sufficient arousal before intercourse
  – Smoking
  * Ibid., Wilhite.
Metabolic Therapies for Vaginal Dryness

- Topical vaginal lubricants
  - Water-based lubricants
    • Increase moisture but if they have a high pH then they can also dehydrate so have the patient choose a vaginal lubricant that hydrates and glides but does not have a high pH. The following lubricants have a high pH.
      * Ibid., Wilhite.

Metabolic Therapies for Vaginal Dryness (cont’d)

- Topical vaginal lubricants (cont’d)
  - Polymer-based lubricants
    • Silicone-based
    • Oil-based
      - Both seal in moisture
      - But may be hard to remove from the skin

- Topical vaginal lubricants (cont’d)
  - Polymer-based lubricants
    • Oil-based
      - The type of oil makes a difference
        » Petroleum-based oils are strong solvents and may dissolve latex
        » Oils that contain fatty acids (olive, avocado, coconut) are weaker solvents and do not degrade latex
          • Olive oil can become rancid
          • Avocado may stain the sheets green
          • Coconut is hard to clear the vaginal lumen with long-term use
            * Ibid., Wilhite
Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Liquid silk lubricant
    • Has both water-based (moisturizing) and moisture sealing (dimethicone)
    • Made with propylene glycol and parabens which can cause skin irritation

Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Liquid silk lubricant
    • Dose: Massage into vulva and vagina PRN up to TID
    • Very useful for lichen sclerosis and psoriasis
      * Ibid., Wilhite.

Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Pink silicone lubricant
    • More useful as a moisture sealer than moisturizer
    • More useful than water-based lubricants to reduce friction during intercourse
Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Pink silicone lubricant
    • Contains aloe which may cause a dermatitis in some patients
    • pH is more acidic and some patients get irritation
    * Ibid., Wilhite.

Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Organic silk lubricant
    • Water-base with silicone
    • Preserved with phenoxyethanol

Metabolic Therapies for Vaginal Dryness (cont’d)

• Topical vaginal lubricants (cont’d)
  – Organic silk lubricant
    • pH is a little high which works well for some women and others it may be irritating
    • Massage into the vulva and vagina PRN up to TID
    • Contains aloe which may be irritating to some women
    * Ibid., Wilhite.
Metabolic Therapies for Vaginal Dryness (cont’d)

• Vaginal renewal program
  – Helps patients recondition the health and flexibility of the skin of the vulva and vagina by increasing blood flow through dilation
  – Reduces friction tearing of the skin
  – Increases blood flow to the vulva and vaginal canal

Metabolic Therapies for Vaginal Dryness (cont’d)

• Vaginal renewal program (cont’d)
  – Suggested for the following type of women
    • Just starting the effects of low hormonal function
    • Who have had pelvic radiation therapy
    • Vaginal atrophy who have skin tearing and pain with intercourse
* Ibid., Wihite.

Metabolic Therapies for Vaginal Dryness (cont’d)

• Vaginal renewal program (cont’d)
  – Can use with topical estrogen which may be more effective than estrogen or the vaginal renewal program alone
  – If the pelvic floor muscles are not flexible then send patient to physical therapist that specializes in pelvic floor conditioning.
  – Vaginal renewal program is C/I for patients with vaginismus
* Ibid., Wihite.
Metabolic Therapies for Vaginal Dryness (cont’d)

- Smoking
  - Smoking can cause changes in the endothelial health that enhance oxidative stresses.

- Encourage the patient to stop smoking
  * Ibid., Wilhite.

Metabolic Therapies for Vaginal Dryness (cont’d)

- Smoking (cont’d)
  - Smoking is a risk factor for vaginal dryness
  - Encourage the patient to stop smoking
  * Ibid., Wilhite.

Metabolic Therapies for Vaginal Dryness (cont’d)

- Exercise program
  - Good method to help decrease the rate of vascular aging.
  - Increases the function of small vessel blood flow and increases perfusion of the vagina
  - Affects nitric oxide positively
Metabolic Therapies for Vaginal Dryness (cont’d)

• Exercise program (cont’d)
  – Improves endothelial and CV health
  – Improves lubrication if the patient exercises before intercourse


References


Metabolic Therapies for Vaginal Dryness (cont’d)

• Diet
  – Eating a Mediterranean diet is ideal for patients with vaginal dryness since it decreases inflammation.

• Nutrients
  – Vitamin D
  – EPA/DHA
  – Calcium citrate
  – Niacin
  – L-arginine
Metabolic Therapies for Vaginal Dryness (cont’d)

• Botanicals
  – Ginkgo
  – Ginseng
  – L-arginine

• Medications
  – Estriol
  – Phosphodiesterase-5 inhibitors

Nutrients

• Vitamin D
  – Has an important role is assisting dietary calcium
  – Manipulates calcium at neural membranes
  – Helps the formation of the calmodulin cofactor needed for NO production
  – Is also a free radical scavenger

Nutrients (cont’d)

• Vitamin D
  – Elevates the bioavailability of NO after production
  – Dose: according to lab levels
  – Do not give large doses to patients with
    • Active cancer
    • Granulomatous diseases like sarcoid, TB, etc.
    • Hyperparathyroidism
  * Ibid., Wilhite.
Nutrients (cont’d)

- EPA/DHA
  - Helps to absorb vitamin D
  - Acts as a lipid-based antioxidant
  - Decreases inflammation
  - Helps neural function
  - Dose: 2,000-4,000 mg

Nutrients (cont’d)

- EPA/DHA
  - Side effect
  - Is a blood thinner so do not go above 3,000 mg if the patient is on
    - Blood thinners that are prescription
    - Vitamin E
    - Ginkgo
  - High dose garlic
  - SSRIs
  - ASA
  * Ibid., Wilhite.

Nutrients (cont’d)

- Calcium citrate
  - Need extracellular calcium for NO production
  - Dose: 250 mg PO
Nutrients (cont’d)

• Niacin
  - Helps reverse endothelial dysfunction
  - Dose: 1,000 mg BID to TID

Nutrients (cont’d)

• Niacin
  - May cause niacin flush: start with 100 mg and move slowly upward
  - At first, it may exacerbate vulvar dermatoses due to recoupling of NO production which causes a temporary increase in inflammation.

Nutrients (cont’d)

• L-arginine
  - Acts as the protein substrate for NO production
  - Dose: 500-1,000 mg qd
  - Possible side effects
    • Hyperglycemia
    • Hypotension
    • Nausea
Nutrients (cont’d)

- L-arginine
  - Try and use foods high in arginine first before supplementing
  - Too high levels can inhibit NO production
  - C/I
    - Kidney disease
      - *Ibid., Wilhite.

Botanicals for Vaginal Dryness and Atrophy

- Support tissue integrity, epithelial thickness, moisture, and tone
  - Phytoestrogen, estrogen-like effects
    - Dioscorea villosa (Wild yam)
    - Glycine max (Soy)
    - Humulus lupulus (Hops)
    - Linum usitatissimum (Flax seeds)
    - Medicago sativa (Alfalfa)
    - Panax ginseng (Ginseng)
    - Trifolium pratense (Red clover)
    - Turnera diffusa (Damiana)
      - *Ibid., Flint.

Botanicals for Vaginal Dryness and Atrophy (cont’d)

- Soothe, moisten, and heal tissue
  - Vulnerary
    - Calendula officinalis (Calendula)
    - Hypericum perforatum (St. John’s wort)
    - Lavandula officinalis (Lavender)
    - Symphytum officinale (Comfrey)
Botanicals for Vaginal Dryness and Atrophy (cont’d)

- Soothe, moisten, and heal tissue
  - Emollient
    - Calendula officinalis (Calendula)
    - Hypericum perforatum (St. John's wort)
    - Lavandula officinalis (Lavender)
    - Symphytum officinale (Comfrey)
  * Ibid., Flint.

Botanicals (cont’d)

- Ginkgo (Ginkgo biloba)
  - Acts on nitric oxide vasodilation
  - Modulates NO second messenger action
  - Scavenges excess NO
  - Inhibits NO production under inflammatory conditions
  - Inhibits platelet activation

Ginkgo (Ginkgo biloba)
  - Dose: 60 mg BID of extract 50:1(can increase to 120 mg BID)
  - C/I:
    - Is a blood thinner so do not use with prescription blood thinners
    - Have caution if used with ASA, NSAIDs, high dose garlic
  * Ibid., Wilhite.
Botanicals (cont’d)

• Ginseng (Panax ginseng)
  – Facilitates endothelial NO release
  – Is an antioxidant
  – Dose: 1 to 2 grams root tea infusion TID

Botanicals (cont’d)

• Ginseng (Panax ginseng)
  – Possible side effects
    • May cause agitation
    • Can cause insomnia
    • May be a phytoestrogen


Botanicals (cont’d)

• Alfalfa
  – Is a phytoestrogen
  – Contains
    • Genistein
    • Biochanin A
    • Daidzein
Botanicals (cont’d)

• Alfalfa
  – May have a beneficial effect on estrogen
  – Has been suggested for vaginal dryness

Botanicals (cont’d)

• Calendula
  – As a cream applied BID
    • Soothes vaginal tissue
    • Heals minor abrasions
    • Helps to prevent infection
      – Antibacterial
      – Antiviral
  – Suggested by ESCOP and the German Commission for skin and mucosal injuries and abrasions

References

Botanicals (cont’d)

• Hops
  – Has estrogenic effects since it contains 8-prenylnaringenin

Botanicals (cont’d)

• Hops (cont’d)
  – Has strong estrogen receptor-binding bioactivity
    * Ibid., Liu.

Botanicals (cont’d)

• Hops (cont’d)
  – Helps with vaginal dryness
  – May also help with hot flashes and night sweats
  – May decrease insomnia (has a sedating effect)
    * Ibid., Liu.
Botanicals (cont’d)

• Hops (cont’d)
  – May interfere with barbiturates
  – May cause exacerbate depression
    * Ibid., Flint.

• Red clover
  – Contains phytoestrogens
    • Formononetin
    • Biochanin A
    • Daidzein
    • Genistein
  – May help with vaginal dryness
  – May help with other menopause symptoms
    * Ibid., Flint.
    * Ibid., Oerter.
    * Ibid., Overk.

• Ginseng (Panax ginseng) (cont’d)
  – Case report showed that ginseng orally was effective for vaginal dryness.
  – Case report revealed that ginseng transdermally was also effective for vaginal dryness.
    * Ibid., Low Dog.
Botanicals (cont’d)

• Comfrey
  – Moistens, heals, and soothes irritated and inflamed tissue
  – Some of its components have anti-inflammatory activity and tissue healing.
    • Allantoin
    • Rosmarinic acid
      * Wichl.

• Comfrey
  – Used as a vaginal salve comfrey oil has been shown to increase epithelial cell growth and tissue integrity.

• Comfrey
  – German Commission E approves topical use of comfrey only on unbroken tissue
  – Use for only 4-6 weeks
    * Ibid., Flint.
Botanicals (cont’d)

• Not recommended
  – Black cohosh orally has not worked for vaginal dryness

Botanicals (cont’d)

• Not recommended (cont’d)
  – Topical genistein has not worked for vaginal dryness

Botanicals (cont’d)

• Not recommended (cont’d)
  – Damiana (Turnera diffusa)
    • Blocks progesterone receptors without receptor activation
    • May boost estrogen activity
### Medications
- Natural prescription hormone replacement
  - Estrogen transdermally
    - Helps maintain muscle tone of the vagina and urethra which reduces vaginal irritation
    - Prevents drying and thinning of the vaginal tissues and improves symptoms that are already present

### Medications
- Natural prescription hormone replacement
  - Estriol vaginal cream also has been found to be helpful.
  - May use with vaginal renewal program

### Directions for Estriol Vaginal Cream
- 1-2 mg of compounded estriol inserted vaginally as a cream or suppository
- Insert nightly for two weeks, Monday and Thursday for two weeks, then PRN
Medications (cont’d)

- Compounded progesterone PO
  - Helps prevent incontinence
  - Too much can cause incontinence
- Compounded testosterone vaginally
- Compounded DHEA vaginally

Medications (cont’d)

- Phosphodiesterase-5 inhibitors
  - Reduce insulin resistance in endothelial capillaries
  - Prolongs vasodilation which has a good effect on genital perfusion

Medications (cont’d)

- Phosphodiesterase-5 inhibitors (cont’d)
  - Possible side effects
    - Nausea
    - Headache
    - Nasal congestion
    - Renal impairment
    - Hepatic impairment
    - Hypotension
  - Change in vision
    - Ototoxicity
    - C/I
    - With nitrates
    - With alpha1 blockers
  * Ibid., Wilhite.

© 2015. All Rights Reserved
Medications (cont’d)

- Phosphodiesterase-5 inhibitors (cont’d)
  - Oral form is not recommended for vaginal dryness
    * Ibid., Wilhite.

Cervical Dysplasia and Infections

Reference

Cervical Dysplasia

- Cervical dysplasia is a precancerous lesion with risk factors that are common to cervical cancer.
- 250,000 to 1 million women each year in the U.S. are diagnosed with cervical dysplasia.
- Can occur at any age, mean age is 25-35

* Ibid., Romm.

Risk Factors for Cervical Dysplasia

- Having multiple sexual partners
- History of genital warts
- Infectious agents (chlamydia, herpes)
- Oral contraceptive use (long-term)
- Pregnancy
- Sexual intercourse at an early age
- Sexually transmitted diseases (HIV, HPV)
- Smoking
- Nutritional deficiencies

References

* Ibid., Kumar.
* Ibid., Romm.
Smoking

• A risk factor for both cervical dysplasia and cancer is smoking.
• Smokers have a threefold increased risk compared to people who do not smoke.
• One study showed an increased risk of up to seventeenfold in women that were 20-29 years of age if they smoked.


References


Smoking (cont’d)

• Smoking may increase the risk of developing cervical dysplasia and/or cancer due to:
  – Depression of immune system
  – Smoking causes vitamin C deficiency
  – Cervical cells may concentrate nicotine
Smoking (cont’d)

- Smoking may increase the risk of developing cervical dysplasia and/or cancer due to:
  - There may be an unrecognized association between smoking and sexual behavior
  - Ibid., Hudson.
  - Ibid., Lyon.
  - Ibid., Clarke.

BCP (Oral Contraceptives)

- Some studies have shown an association between cervical dysplasia and oral contraceptives and some studies have not.

BCP (Oral Contraceptives) (cont’d)

- Medical trials have shown an increased risk between BCP that were used long-term and adenocarcinoma of the cervix which is rare.
  - Ibid., Brinton.
BCP (Oral Contraceptives) (cont’d)

• Oral contraceptive use is associated with nutritional deficiencies
  – Vitamin C
  – Vitamin B6
  – Vitamin B12
  – Folic acid
  – Riboflavin
  – Zinc


Specific Risk Factors in Cervical Dysplasia/Cancer

• Multiple sexual partners (2-5) increases the risk 3.46 fold
• First intercourse before age 18 increases the risk 2.76 fold
• Deficient dietary B-carotene (<5,000 IU/day) increases the risk 2.813 fold
• Deficient dietary vitamin C (<30 mg/day) increases the risk 6.716 fold

* Ibid., Hudson. Based on summarization of the medical literature.

References

* Ibid., Kumar.
Cervical Dysplasia

- Most cervical cancer is associated with persistent HPV infection which is usually sexually transmitted.
- It may be a few weeks or years between time of exposure and when the patient develops an abnormal pap smear or lesion.

HPV

- In the last 30 years, the rate of visits to a health care practitioner for HPV have gone up more than 500%.
  * Ibid., Hudson.
- Some studies suggest that up to 80% of people that are adults may be infected.
  * Ibid., Hudson.
- Not all individuals that are infected with HPV get cervical dysplasia. This finding suggests that if the patient has a strong immune system then it helps the body defend against the development of actual disease.

HPV (cont’d)

- Some HPV infections are short lived and may result in only minor manifestations such as abnormal pap smears with atypical cells of undetermined significance (ASCUS).
- In other women, where their immune system is not as strong, they may develop flat, or raised genital warts, cervical, vaginal, vulvar, or perianal dysplasias, or progression to invasive cancers.
The beginning of the process in the development of dysplasias or cancers is entry of the virus.

The following determine the course of the disease:

- Host immunity
- Viral load
- Viral type
- Host susceptibility

HPV has been shown to be the etiology of cervical cancer in 99.8% of the 320,000 cases of cervical cancer that occur worldwide annually.

HPV has been found in 50% to 80% of vaginal, 50% of vulvar, and nearly all penile and anal cancers.

There are 120 HPV types.

About 30 HPV types have been shown to primarily infect the squamous epithelium of the lower anogenital tracts in males and females.

* Ibid., Hudson.

HPV types 6, 11, 42, 43, or 44 are the most common types that cause warts with a cauliflower appearance or may also appear as a flat lesion.

HPV types 16, 18, 31, 33, 35, 45, 51, 52, 56 are high risk types since they have been linked to cancer of the genital area. They are also seen in intraepithelial lesions.

Lesions that are low or high risk HPV varieties can regress to normal without treatment but there is no way of predicting which ones will progress and which ones will not.

* Ibid., Hudson.
HPV (cont’d)

• About 80% of cervical cancers are associated with HPV types 16, 18, 31, and 45.
• 15% of cervical cancers are associated with HPV types 31, 33, 35, 51, and 52.
• Low-grade squamous intraepithelial lesions (LGSILs) can be caused by either low or high risk HPV types.
• High risk HPV types have been found in 75% to 85% of low-grade lesions and mixed low and high risk types in about 15% and low-risk types in only 2% to 25%.

* Ibid., Hudson.

HPV (cont’d)

• 95% of cervical dysplasias and cancers start in the squamocolumnar junction of the cervical os.

* Ibid., Hudson.
  * Ibid., Kumar.

HPV (cont’d)

• There are three things that can occur following HPV infection
  – The infection stays permanently latent or produces only transient cytologic changes.
  – Patient develops HPV-associated cytologic changes diagnostic of HPV
    • Infections in about 60% of women with atypia or LGSIL spontaneously regress
    • 20% to 30% persist
### HPV (cont’d)

- There are three things that can occur following HPV infection (cont’d)
  - Develop high-grade squamous intraepithelial lesions (HGSIL)
    - 10% of patients
      * Ibid., Hudson.

### HPV (cont’d)

- PCR testing (polymerase chain reaction) has shown that in 70% of women the virus clears within 12 months.
- Progression to high-grade lesions peaks between the ages of 25 and 29 which is usually 4-7 years after peak incidence of mild cervical dysplasia.
- For most low-grade lesions, even though many are due to high-risk HPV, they do not progress to invasive cancer even if they are not treated.
  * Ibid., Hudson.

### HPV (cont’d)

- Women with HPV type 16 which is the type detected in more than 60% of cervical cancers, tend to regress spontaneously over time in many patients.
- In the U.S. the incidence of invasive cervical cancer reaches a plateau approximately 15 years after the peak incidence of CIN III in white women. This is usually between the ages of 40-45.
  * Ibid., Hudson.
Sexual Transmission

- Sexually transmitted disease has long been recognized as a major risk factor for cervical dysplasias and/or cancer.
- Exposure to HPV can also occur via examination tables, doorknobs, tanning beds, and other objects. This is hard to document.

Sexual Transmission (cont’d)

- Comorbid infections may also occur with
  - Herpes simplex
  - Chlamydia
  - HIV
    * Ibid., Hudson.
    * Ibid., Romm.

Sexual Transmission (cont’d)

- Comorbid infections
  - May alter cervical immunity
  - Increase inflammation
  - Facilitate entry of HPV in the host cell nucleus
  - Coexist with HPV infection
    * Ibid., Hudson.
    * Ibid., Romm.
  - Since HPV is a sexually transmitted disease, it is important to also treat the sexual partner.
**Staging of Cervical Dysplasia**

- Bethesda System was developed by the CDC and NIH. System does change so always check the latest available guidelines.
  - ASCUS (atypical squamous cells of undetermined significance)
  - LGSIL (low-grade squamous intraepithelial lesions): mild dysplasia and cellular changes associated with HPV
  - HGSIL (high-grade squamous intraepithelial lesions): moderate to severe dysplasia, precancerous lesions, and carcinoma in situ (preinvasive cancer that involves only the epithelium)

* Ibid., Romm.

**Conventional Treatment**

- The treatment depends on how severe the lesions are.
- For preinvasive cervical disease
  - Laser therapy
  - Cryotherapy
  - Loop electrical excision procedure (LEEP)
  - Conization Bx

**Conventional Treatment**

- 5-year reoccurrence rate with conventional therapy is up to 75%.

* Ibid., Romm.

- Conventional therapy does not address preventable causes nor reasons why the patient has an increased risk.
Metabolic Therapies

- Metabolic therapies try and address the cause of the problem along with prevention.
  - Dietary Factors
  - Combination therapy
  - Nutritional therapies
  - Botanical therapies
  - Stress management

Metabolic Therapies

- Metabolic therapies build the immune system, are anti-inflammatory, hormone-regulating, and antiviral.


Dietary Factors and Cervical Dysplasia/Cervical Cancer

- 67% of patients with cervical cancer have been found to have multiple nutritional deficiencies or abnormal anthropometric measurements.
- Abnormalities have also been seen in:
  - Height-to-weight ratio
  - Triceps skin fold thickness
  - Midarm muscle circumference
  - Serum albumin levels total
  - TIBC
  - HgB
  - Creatinine height index
  - PT
  - Lymphocyte count
Reference

Dietary Factors and Cervical Dysplasia/Cervical Cancer (cont’d)
- Measurement of vitamin status by the following methods showed that there was at least one abnormal vitamin level in 67% of the patients with untreated cervical cancers. 38% had more than one abnormal level.

Dietary Factors and Cervical Dysplasia/Cervical Cancer (cont’d)
- Plasma and RBC folate
- Serum beta-carotene
- Vitamins A, B12, and C
- Erythrocyte transketolase for thiamine determination
- Erythrocyte glutathione reductase for riboflavin determination
- Erythrocyte aspartate transaminase for pyridoxine determination
  * Ibid., Orr.
• High fat intake has been found to be associated with an increase in cervical cancer.
• A diet containing a lot of fruits and vegetables may help protect against carcinogenesis.


Dietary Factors and Cervical Dysplasia/Cervical Cancer (cont’d)

• A study done in Brazil showed that increasing concentrations of serum lycopene were negatively associated with CIN1, CIN3, and cervical cancer.

Dietary Factors and Cervical Dysplasia/Cervical Cancer (cont’d)

• Also increasing concentrations of serum alpha and gamma tocopherols and higher dietary intakes of dark green and deep yellow vegetables/fruits were associated with almost a 50% reduction in the risk of CIN3.

In another study that was case-controlled, women with squamous cell carcinoma of the cervix showed that significant reductions in the risk of cervical cancer of almost 40% to 60% were seen for women that were in the highest levels of intake of dietary fiber, vitamin C, vitamin E, vitamin A, alpha-carotene, beta-carotene, lutein, and folate. 


**Combination Therapy:**

Smith/Swidan Protocol

- Have made by a compounding pharmacy
- Insert vaginally as a cream, suppository, or via cervical cap

- Use qhs for 6 months
  - Licoic root powder 1%
  - Lipoic acid 0.5%
  - Zinc gluconate 10 mg
  - Riboflavin 10 mg
  - Thiamine 10 mg
  - Vitamin B6 10 mg
  - Vitamin B12 10 mg
  - Betaglucan 10 mg/ml
  - Dissolve in glycerine in emollient cream. Use vaginally BID for 6 months.
  - Can also add vitamin A, EGCG, DIM
**Therapeutic Therapies**

- Treatment of cervical dysplasia requires monitoring and coordination of care between the physician doing the colposcopy and Bx and the health care practitioner doing the metabolic therapies.

**Nutritional Therapies**

- Vitamin A and beta-carotene
- Vitamin C
- Folic acid
- Pyridoxine
- Selenium
- Copper-zinc ratio and retinol
- I-3-C/DIM

**Nutritional Therapies (cont’d)**

- Numerous nutritional and botanical agents will be discussed that have been shown to be effective treatments for cervical dysplasia.
- A combination of products works best for most patients.
- A medical trial showed multiple vitamins and mineral formulas were associated with a lower viral load and a decreased risk of developing cervical cancer.

Vitamin A and Beta-Carotene

- Patients who intake beta-carotene have a decreased risk in development of cervical dysplasia or cancer.
- A mild association has been shown between low dietary retinoids and the development of cervical cancer or dysplasia.


References


Vitamin A and Beta-Carotene (cont’d)

- Study showed that 6% of patients with untreated cervical cancer had below-normal serum vitamin A levels.
- 38% of patients had stage-related abnormal levels of beta-carotene.
  * Ibid., Orr.
- Another study showed a low serum beta-carotene level is associated with a threefold greater risk for severe dysplasia.
  * Ibid., Wylie-Rosett.
Vitamin A and Beta-Carotene (cont’d)

- Two other studies showed that lower serum vitamin A and beta-carotene levels were found in patients with cervical dysplasia than in control groups.

Vitamin A and Beta-Carotene (cont’d)

- When patients are treated with vitamin A and/or beta-carotene the response rates have varied.
- In one double-blind randomized placebo-controlled trial with the patients taking placebo or using 30 mg a day of beta-carotene, cervical Bxs were done, some had regression of the disease, some had persistent disease, and some had progression of their disease process. The final analysis was that beta-carotene did not increase the regression of high-grade CIN particularly in HPV+ patients.

Reference

Vitamin A and Beta-Carotene (cont’d)

• Other studies were also mixed

Reference


Vitamin A and Beta-Carotene (cont’d)

• Supplementation with beta-carotene was found to be more advantageous than with retinoids due to beta-carotene’s stronger anti-oxidant properties.
  * Ibid., Mackerras.
Vitamin A and Beta-Carotene (cont’d)

- Topical vitamin A was used in a study of over 300 women who used either four consecutive 24-hour applications (using a collagen sponge in a cervical cap) of retinoid or placebo. Then two more applications at three and six months.
- The study found that retinoic acid increased the complete regression rate of moderate dysplasia for 43% in the treatment group vs. 27% in the placebo group.
- Women with severe cervical dysplasia did not improve.

Reference


Vitamin A and Beta-Carotene (cont’d)

- In another medical trial, vitamin A was used via cervical cap to treat 20 women.
- In ⅔ of the women, the cervical dysplasia resolved. Five of these women had mild dysplasia and five had moderate dysplasia.

© 2015. All Rights Reserved
Vitamin A and Beta-Carotene (cont’d)

- Vitamin A suppositories have also been used along with oral folic acid, vitamin C, and carotenes and herbal vitamin suppositories.
- In this study, some of the worst patients were treated with escharotic treatment.
- This study included patients with atypia, mild, moderate, and severe dysplasia and carcinoma in situ. There were 43 women.
- 38 women returned to a disease-free state. 3 had partial improvements, 2 stayed the same, and none progressed during the treatment.

References


Vitamin C

- Patients with cervical dysplasia tend to have decreased vitamin C intake and also plasma levels of vitamin C that are low.
- Inadequate vitamin C intake has been found to be an independent risk factor for the development of premalignant cervical disease and CIS.

Vitamin C (cont’d)

- Vitamin C has been shown to do the following:
  - Act as an antioxidant
  - Strengthen and maintain normal epithelial integrity
  - Improve wound healing
  - Enhance immune function
  - Inhibit carcinogen formation


Folic Acid

- Low folic acid levels have been shown to be linked to cervical dysplasia.
- This link is less common now that more patients eat foods fortified with folic acid.
- When cervical cells do not have enough folic acid they become macrocytic like RBCs.
- It is possible that some of the abnormal pap smears in the past represented folate deficiency and not true dysplasia.

References


Folic Acid (cont’d)

- Even though foods are now fortified with folic acid, some cases of cervical dysplasia are still related to folic acid deficiency.
- This is especially true in patients on BCP.
- BCP may induce a localized interference with folate metabolism. Serum levels may be increased but tissue levels at end organ targets like the cervix may still be deficient.


Reference


Folic Acid (cont’d)

- BCP induce the synthesis of a macromolecule that may inhibit folate uptake by cells.
- In a controlled trial, women with cervical dysplasia taking BCP and folate 10 mg qd improved or normalized Pap smears.

* Ibid., Whitehead.
Reference


Folic Acid (cont’d)

• Tissue status as measured by erythrocyte folate is commonly low in patients with cervical dysplasia, where as serum levels may be normal or even elevated.


Folic Acid (cont’d)

• Low folic acid levels have been shown to also increase the effect of other risk factors for cervical dysplasia.
• For example, low RBC folate levels are a major risk factor for HPV infection of the cervix.
Folic Acid (cont’d)

• Higher circulating levels of folate have been shown to be independently associated with a lower likelihood of becoming positive for high-risk HPV and of having persistent high-risk HPV infection and greater risk of HSIL.
• B12 supplementation should also be given with folate to decrease the possibility that a B12 deficiency would be masked by treatment with folate.

Folic Acid (cont’d)

• Furthermore, a study showed that women with higher levels of serum folate who also had an optimal level of serum B12 had a 70% lower odds of getting cervical dysplasia.

Vitamin B6 (Pyridoxine)

• Pyridoxine levels as measured by erythrocyte transaminase were found to be low in 1/3 of patients with cervical cancer.
• Low B6 levels have an effect on the metabolism of estrogens and tryptophan and may also decrease the immune response.
  * Ibid., Hudson.
Selenium

• Low selenium intake in the diet and low blood levels of selenium have been shown to be even lower in patients with cervical dysplasia.
• One study revealed that lower selenium and zinc levels were found in both HSIL and cervical cancer patients compared with controls.
• Also the activity of glutathione peroxidase, which is a selenium containing antioxidant, was decreased in patients with HSIL or cancer more than in a control group.

Selenium (cont’d)

• Furthermore, total antioxidant ability was decreased from the control group to those with CIN to those with cancer.


Copper: Zinc Ratio, Zinc, and Retinol

• If the copper: zinc ratio is increased it is a nonspecific indicator of a reaction to inflammation or malignancy.
• A ratio above 1.95 indicates malignancy in 90% of the patients studied that had cancer.

Copper: Zinc Ratio, Zinc, and Retinol (cont’d)

• Elevated ratios are also found in these other conditions so the copper: zinc ratio should not be used to predict malignancy in patients with these situations/conditions.
  – BCP
  – Pregnancy
  – Acute and chronic infections
  – Chronic liver disease
  – Inflammatory conditions

* Ibid., Hudson.

Copper: Zinc Ratio, Zinc, and Retinol (cont’d)

• A low available zinc level may explain why retinol-binding protein was either absent or undetectable in 80% of dysplastic tissue samples as compared with 23.5% in normal tissue.

• A study of 206 women found an inverse correlation between serum levels of both retinol and zinc and the incidence of cervical dysplasia.


Indole-3-Carbinol/DIM

• Indol-3-carbinol (I-3-C) is a phytochemical found in cruciferous vegetables.

• The following are food sources of I-3-C
  – Broccoli
  – Brussels sprouts
  – Cabbage
  – Cauliflower
  – Kale
  – Turnips
Indole-3-Carbinol/DIM

• Indol-3-carbinol (I-3-C) is a phytochemical found in cruciferous vegetables.

• The following are food sources of I-3-C
  – Broccoli
  – Brussels sprouts
  – Cabbage
  – Cauliflower
  – Kale
  – Turnips
  – Spinach

Indole-3-Carbinol/DIM (cont’d)

• I-3-C is converted in the stomach to several compounds including diindolymethane (DIM).
• I-3-C and DIM are antioxidants and strong stimulators of natural detoxifying enzymes in the body.
• Studies have shown that eating more cruciferous vegetables or taking I-3-C or DIM increased the conversion of estrogen from cancer-production products to non-toxic breakdown products.

References

<table>
<thead>
<tr>
<th>Indole-3-Carbinol/DIM (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Women that have HSIL have been shown to commonly have altered estrogen metabolism with higher levels of 16-alpha OH-estrone and lower levels of 2-OH estrone.</td>
</tr>
<tr>
<td>* Ibid., Newfield.</td>
</tr>
<tr>
<td>• Since 1-3-C and/or DIM has both anti-HPV and has the ability to improve estrogen metabolism, they should be considered good therapies for patients with cervical dysplasia.</td>
</tr>
<tr>
<td>* Ibid., Hudson.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indol-3-Carbinol/DIM (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In a small medical study in women with HSIL, (biopsy showed CIN 2 or 3).</td>
</tr>
<tr>
<td>• Patients were given 200 or 400 mg of 1-3-C or placebo for three months.</td>
</tr>
<tr>
<td>• ½ of the patients who took 200 mg of 1-3-C and almost ½ of the patients that took 400 mg of 1-3-C had complete regression of their severe dysplasia compared to placebo.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indol-3-Carbinol/DIM (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In this randomized medical trial, DIM was used in patients with HSIL, (biopsy showed CIN 2 or 3).</td>
</tr>
<tr>
<td>• Patients took placebo or DIM 2 mg/kg/day for 3 months.</td>
</tr>
<tr>
<td>• There was no significant improvement in outcome between the placebo and DIM group, but the DIM group had improved Pap smears in almost half of them.</td>
</tr>
<tr>
<td>• Colposcopy also improved in 25 of 64 patients.</td>
</tr>
</tbody>
</table>
Reference

Summary of Botanical Therapies for Cervical Dysplasia
• Reduce viral infection
  — Antiviral
  — Calendula officinalis (Calendula)
• Prevent neoplasia
  — Antimicrobial
    • Commiphora mol mol (Myrrh)
    * Ibid., Romm.

Summary of Botanical Therapies for Cervical Dysplasia (cont’d)
• Reduce cervical inflammation and heal tissue
  — Antitumorigenic
    • Echinacea spp. (Echinacea)
    • Ganoderma lucidum (Reishi)
    • Hydrastis canadensis (Goldenseal)
    • Lavandula officinalis (Lavender)
Summary of Botanical Therapies for Cervical Dysplasia (cont’d)

• Reduce cervical inflammation and heal tissue (cont’d)
  – Antitumorigenic
    • Lomatium dissectum (Lomatium)
    • Origanum vulgare (Oregano)
    • Melaleuca alternifolia (Tea tree)
    • Sanguinaria canadensis (Blood root)

• Reduce viral infection
  – Dumulcent
    • Althea officinalis (Marshmallow)

• Prevent neoplasia
  – Vulneray
    • Ananas comosus (Pineapple/Bromelain)
Summary of Botanical Therapies for Cervical Dysplasia (cont’d)

- Reduce cervical inflammation and heal tissue
  - Anti-inflammatory
    - Calendula officinalis (Calendula)
  - Proteolytic
    - Hydrastis canadensis (Goldenseal)
    * Ibid., Romm.

Green Tea

- Components of green tea, polyphenol E and epigallocatechin-3-gallate (EGCG), have been shown to effective against HPV–infected cervical cells and lesions both in vitro and in vivo.
- Green tea is believed to have these actions
  - Induce apoptosis of HPV-infected cervical cells
  - Arrest cell cycles
  - Modify gene expression
  - Inhibit tumor formation

Green Tea (cont’d)

- In these studies the following forms of green tea were used.
  - Topical application via a green tea polyphenol ointment, and/or oral ingestion of a green tea polyphenol capsule, and/or oral intake of EGCG via a capsule
- The study found that all treatment groups improved more than the placebo group.
Green Tea (cont’d)

• Patients using the topical treatment improved the most.
• Dose:
  – Green tea extract (>90% total polyphenol content): 150-300 mg/day for 3-12 months.

References

* Ibid., Hudson.

Bromelain

• Bromelain decreases exudation by inhibiting the generation of bradykinin at the inflammatory site which weakens the plasma kallikrein system.
• Bromelain may also inhibit the arachidonic acid pathway
• Bromelain is an important proteolytic agent in the treatment of cervical dysplasia
• Patient should not use if they are allergic to pineapple since bromelain is derived from pineapple stems and fruit
References

* Ibid., Romm.

Canendula

• Used topically for minor inflammation and wound healing
• Hydroalcoholic extracts have been shown to have the following actions
  – Antibacterial
  – Antifungal
  – Virucidal

* Ibid., Romm.

Canendula (cont’d)

• Canendula extracts have been shown to be active against HSV, HIV, and Trichomonas.

Canendula (cont’d)

- The anti-inflammatory effects of canendula are due to its polysaccharide fractions.
- Other anti-inflammatory compounds may also be present in Canendula.
- Also used in other topical applications for cervical dysplasia as suppositories to be used post LEEP or Bx to aid healing by decreasing inflammation and increasing granulation.

References


References

Goldenseal
• Used topically for cervical dysplasia
• Has the following actions due to its berberine content
  — Anti-inflammatory
  — Immune enhancing
  — Anti-proliferative

Goldenseal (cont’d)
• No research has been done on Goldenseal for HPV but it has been found to be active against the following organisms along with others.
  — Chlamydia
  — S. Aureus
  — E. coli
  — V. cholera
  — Trichomonas vaginalis
  — Giardia lamblia
  — H. pylori

References
* Ibid., Romm.
Goldenseal (cont’d)

- Also has antifungal effects against Candida albicans
  * Ibid., Basch.
- Anti-inflammatory actions are due to the fact that it inhibits the arachidonic acid pathway and cyclooxygenase generation
  * Ibid., Low Dog.
  * Ibid., Basch.
- Also helps to build the immune system by increasing IgM

Goldenseal (cont’d)

- Even though Goldenseal has not been specifically studied for use in cervical dysplasia, it helps to decrease inflammation and provides a healthy flora in the vagina to aid in making it less likely that HPV would grow.
- Consider using Goldenseal
  * Ibid., Romm.

Licorice

- Used both topically and orally for cervical dysplasia
- Has the following actions
  - Antimicrobial
  - Anti-inflammatory
  - Immunomodulating
Licorice (cont’d)

- Used both topically and orally for cervical dysplasia (cont’d)
- Has the following actions
  - Antitumorogenic
  - Inhibits prostaglandin and leukotriene synthesis
    * Ibid., Romm.

Licorice (cont’d)

- Active component is glycyrrhetinic acid (cont’d)
  - Is antiviral
  - Stimulates NO production
  - Upregulates iNOS through NFκB transactivation in macrophages

Licorice (cont’d)

- Active component is glycyrrhetinic acid (cont’d)
  - Active against HIV
Licorice (cont’d)

- Active component is glycyrrhetinic acid (cont’d)
  - Can be used topically against herpes to reduce the healing time and pain

- Active against hepatitis B and C

- Has been shown to be effective as topical therapy for herpes simplex virus blisters
  * Ibid., Basch.

Lomatium

- Actions
  - Antiviral
  - Antibacterial
  - Antiseptic
    * Ibid., Romm.
- Used for cervical dysplasia
  * Ibid., Romm.
Lomatium (cont’d)

• May be combined with other herbs to build the immune system.
• Has been shown in vitro and in vivo to be effective against HPV and HSV and is being researched for HIV

Marshmallow

• Used to provide a protective, soothing coating to mucosal tissue
• Used for throat, GI tract, and vaginal irritation
• May be helpful for symptoms
  * Ibid., ESCOP.

Myrrh

• Sesquiterpene fraction of myrrh has the following actions
  – Local anesthetic
  – Antibacterial
  – Antifungal
    * Ibid., Witchl.
• Used for oral and pharyngeal mucosa and also in vaginal suppositories
• May have some benefit for cervical dysplasia
  * Ibid., Low Dog.
Oregano and Thyme

- Oregano and thyme essential oils are used for vaginal infections including HPV.
  * Ibid., Romm.
- Also used transdermally against bacteria and fungus.

Oregano and Thyme

- Used undiluted can cause irritation to cervical and vaginal tissues. Always dilute.

Stress Management

- Stress plays a role in both compromising the immune system along with causing hormonal imbalance.
- Therefore, it important that these patients have normal cortisol levels.
  - Measure cortisol levels
  - Treat if abnormal
Summary of Treatments

• It is paramount that patients with cervical dysplasia be monitored traditionally.
• It is also important that metabolic therapies be used in conjunction with conventional therapies and not used alone.

Summary of Treatments (cont’d)

• Diet
  – Increase fruits and vegetables particularly cruciferous vegetables

Summary of Treatments (cont’d)

• Nutritional supplements
  – MVI + folic acid + B12
  – Beta-carotene: 150,000 IU/day for 3 months, then decrease to 25,000 IU qd for one year (cannot use in smokers)
  – Vitamin C: 1-3 grams/qd for 3-12 months
  – Vitamin E: 200 IU/qd for 3-12 months
Summary of Treatments (cont’d)

• Nutritional supplements
  – Selenium: 200-400 micrograms/qd for 3-12 months
  – Zinc: 20-30 mg/qd for 3-12 months along with copper
  2-3 mg/qd for 3-12 months
  – Either I-3-C 200-400 mg/qd or DIM 2.2 mg/kg body
    weight/qd

* Ibid., Hudson.

Sample Protocol for Atypical Cells of Undetermined Significance

• Topical
  – Week 1: insert vitamin A suppository every night for 6
    nights
  – Week 2: insert herbal vaginal suppository every night
    for 6 nights
  – Week 3: repeat vitamin A

Sample Protocol for Atypical Cells of Undetermined Significance

• Topical
  – Week 4: repeat herbal
  – Week 5-12: insert green tea suppository two nights a
    week
• Supplements for a minimum of 3 months

* Ibid., Hudson.
Sample Protocol for Low-Grade Squamous Intraepithelial Lesions

• Topical
  – Week 1: insert vitamin A suppository every night for 6 nights and insert vag pack suppository on night 7
  – Week 2: insert herbal suppository every night for 6 nights and insert vag pack suppository on night 7
  – Week 3: repeat vitamin A and insert vag pack on night 7

• Topical
  – Week 4: repeat herbal suppository and insert vag pack on night 7
  – Week 5-12 insert green tea suppository twice a week

• Supplements for a minimum of 3 months
  * Ibid., Hudson.

Botanical Treatment for Cervical Dysplasia

• Internal formula for immune support: antiviral, anti-inflammatory, and adaptogenic effects
• Reishi mushroom 30 mL
• Echinacea 25 mL
• St. John’s wort 15 mL
Botanical Treatment for Cervical Dysplasia

- Ginseng 15 mL
- Licorice 15 mL
Total 100 mL

- Dose: 4 mL BID for 12 weeks, or as needed for the duration of treatment

* Ibid., Romm.

Obtaining CE/CME Credit

If you would like to receive continuing education credit for this activity, please visit:
http://pcca.cds.pesgce.com