Vaginitis and HPV
Overlooked pathogens and places

Dr. Marianne Marchese
www.drmarchese.com
Vaginitis

Symptoms

- Discharge, odor, itching, pain, irritation
  - Adherence to vaginal walls
- Dyspareunia
- Dysuria
- Vaginal versus urinary
- STI presenting as vaginitis
Vaginitis
Why isn’t the treatment working?

• Root cause not addressed
• Organism not correctly identified
• Wrong treatment applied
• Hard to treat strains
• Co-infections
• Biofilms
Vaginitis

How did she get this?

- Tampons
- Sexual activity - Ph, sperm, condoms, lubricant, spermicides, transmission from partner
- Flora disruption
- Douching
- Estrogen - deficiency or excess
- Chemical irritants
- Medications - steroid, anti-fungal, anti-biotic, OCP
- DM, HIV
Vaginal canal

- Normal pH: 3.8-4.5
- Normal flora: lactobacilli species
- Staph epidermidis, diphtheroids, streptococci, Gardnerella, E coli and anaerobic bacteria normally present
- Low estrogen levels- few lactobacilli; thin vaginal mucosa; minimal glycogen production; alkaline pH.
- Higher estrogen levels-thickening of vaginal epithelium; increase in glycogen; more lactobacilli; acidic pH

Copyright Dr. Marchese
Vaginitis

Identify the organism and strain

- Candida species- *C. albicans*, *C. tropicalis*, *C. parapsilosis*, *C. dubliniensis*, *C. glabrata*, and *C. krusei*).
- Trichomanas
- Gardnerella (bacterial vaginitis, BV. Anaerobe)
- Lactobacillus species- *L. crispatus* and *L. jensenii*
- Staph aureus, Group B Strep
- E.Coli (aerobic vaginitis, AV)
- Other Anaerobes; Atopobium vaginae, Mobiluncus mulieris, Prevotella bivia, Fusobacterium nucleatum, and Peptoniphilus species and Mycoplasma, Ureaplasma
The most common organism in vaginitis?

- 163 patients tested via microscopy, amine testing, Gram staining and culture
- The most common infection was bacterial vaginosis (BV), followed by Ureaplasma, aerobic vaginitis (AV) and candidiasis.
- The most common BV-associated organism was Gardnerella.
- The most common AV-associated organism was Escherichia coli.
- The presentation was similar among different age groups.

The most common organism in vaginitis? Co-infection?

**Most common organism**
- AV found in 51% of the examinees, Candida albicans in 17%, BV in 15%, Trichomonas vaginalis in 13%.

**CO-INFECTIONS**
- AV was diagnosed with other organisms 30% of the time
  - AV and Candida albicans have been found together in 43% of patients
  - AV and Trichomonas vaginalis in 30%
  - AV and BV in 26%


Copyright Dr. Marchese
Co-infections and other strains

**Mycoplasma and ureaplasma species**

- Causes inflammatory sx$s$ and increase in vaginal cytokines
- Both increase in number during BV infection
- Hormones have an influence on colonization, multiplication and persistence - estrogen/testosterone
- Plays a role in preterm birth and pregnancy complication
- Affects men too (urethritis, infertility)

- Andrology. 2015 Sep;3(5):809-16

Copyright Dr. Marchese
Co-infections and other strains

Yeast

• Non-Candida albicans Candida (NCAC) species
  – Candida glabrate, Saccharomyces cerevisiae
  – C. tropicalis, C. parapsilosis, C. dubliniensis, and C. krusei
  – Risk factors; pregnancy, HRT, OCP, uncontrolled diabetes, immunosuppression, antibiotics, glucocorticoid use and genetic predispositions.
  – Behavioral risk factors include; IUD, spermicides and condoms and some habits of hygiene, clothing and sexual practices.

Biofilms

• Biofilm was present on 90% of the epithelial surfaces of BV vaginal biopsy specimens
• Biofilms exhibited higher tolerance to hydrogen peroxide and lactic acid
• Gardnerella biofilm formation assisted by co-infections, decreased lactobacillus, hormones, and pH changes
• Staph Aureus and E.coli can produce biofilms

[References]

Copyright Dr. Marchese
Biofilms

• *Candida albicans* is able to adhere to biotic (epithelial cells) and abiotic (e.g. central venous and types of catheters) surfaces to form a biofilm.

• A biofilm is a special phenotype of *C. albicans* that has encased fungal cells which alter susceptibility to antifungal drugs.

• *Candida albicans* biofilms have been considered to be one of the critical factors accounting for fungal resistance to drugs.

• *Cell Physiol Biochem.* 2016;40(3-4):727-742
Vaginitis Testing

- pH litmus paper - in office
- VS Sense swab - in office (amines and pH)
- Trichomonas APTIMA test (Gen-Probe or urine)
- Affirm VPIII Test – gardnerella, candida albicans, trichomonas vaginalis
- Culture - candida, staph aureus, Group B Strep, E. coli (e-swab)
- Gram stain - BV
- PCR - Lactobacillus species, Gardnerella vaginalis, Atopbium vaginae, bacterial vaginosis-associated bacteria-2 (BVAB-2), Megasphaera-1, T. vaginalis, and Candida species
Test Men

• 107 patients, PCR anal swab in MsM found
  – Gardnerella vaginalis 89%, Ureaplasma urealyticum 24.3%,
    Mycoplasma hominis 24.3%, Mycoplasma genitalium 9.3%, and
    Ureaplasma parvum 4.7%
• Urine test and urethra swabs in MsW both ureaplasma and
  mycoplasma found in patients with symptoms of urethritis
• These are sexually transmitted organisms
  • Int J STD AIDS. 2017 Jun;28(7):708-714
  • Int J Urol. 2004 Sep;11(9):750-4.

Copyright Dr. Marchese
Test Men

• Candida- KOH wet mount, culture
• Chronic mucocutaneous candidiasis (C. albicans)
  – *Candida* balanitis - Penile pruritus and whitish patches on the penis
• Candida Sexually transmitted?

• *Int J STD AIDS*. 2017 Jun;28(7):708-714

Copyright Dr. Marchese
WCPL - Red Swab Universal Transport

Vaginal Inflammation Panel
GC/Chlamydia
Group B Strep (GBS) - Non OB Only
HPV Detect/Genotype
Herpes Simplex I & II
Yeast Panel
Ureaplasma/Mycoplasma
Trichomonas Only
Influenza A&B
<table>
<thead>
<tr>
<th>Test</th>
<th>Specimen</th>
<th>Date Collected</th>
<th>Comment</th>
<th>Normal</th>
<th>Results</th>
<th>Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gardnerella vaginalis by Real-Time PCR</td>
<td></td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>132 Verified 12/17/2016 Swab - 1</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atopobium vaginae by Real-Time PCR</td>
<td></td>
<td>12/15/2018</td>
<td></td>
<td></td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>142 Verified 12/18/2016 Swab - 1</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacterial Vaginosis Associated Bacterium 2 (BVAB2) by Real-Time PCR</td>
<td></td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>164 Verified 12/17/2016 Swab - 1</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Megasphaera species (Type 1 and Type 2) by Real-Time PCR</td>
<td></td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td>Negative (Type1, Type2)</td>
<td></td>
</tr>
<tr>
<td>165 Verified 12/17/2016 Swab - 1</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactobacillus (BV &amp; AV Panel) by Real Time PCR</td>
<td></td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>179 Verified 12/18/2016</td>
<td></td>
<td></td>
<td>Vaginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>Specimen</td>
<td>Date Collected</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>† Chlamydia trachomatis by Real-Time PCR (Reflex to Azithromycin Resistance by Prosequencing)</td>
<td>Vagina</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105 Verified 12/23/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>† Trichomonas vaginalis by Real-Time PCR (Reflex to metronidazole resistance)</td>
<td>Vagina</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111 Verified 12/26/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>† Neisseria gonorrhoeae by Real-Time PCR (Reflex to Antibiotic Resistance by Molecular Analysis)</td>
<td>Vagina</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>167 Verified 12/23/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candida albicans by Real-Time PCR</td>
<td>Vaginal</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>551 Verified 12/17/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candida tropicalis by Real-Time PCR</td>
<td>Vaginal</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>567 Verified 12/18/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candida parapsilosis by Real-Time PCR</td>
<td>Vaginal</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>558 Verified 12/18/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candida glabrata by Real-Time PCR</td>
<td>Vaginal</td>
<td>12/15/2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>559 Verified 12/17/2016 Swab - 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*This test was developed and its performance characteristics determined approved by the U.S. Food and Drug Administration. The FDA has determined Specimen ID Notification, Missing Second ID on [Swab - 1] Specimen was received with one patient identifier.*
Trichomonas Vaginalis

• Frothy, gray or yellow-green discharge and pruritus, but many are asymptomatic.
• The presence of cervical petechiae
• Chronic infection may be associated with minimal symptoms.
• Treatment- metronidazole 2 g orally in a single dose
  – or metronidazole 500 mg orally twice daily for 7 days
  – or Clotrimazole single 500mg tablet or cream used once PV at night
• Test and treat the male partner too
  • http://www.medscape.com/viewarticle/719240_8
Yeast treatments options

- Fluconazole 150 mg PO 1-10 days
- Clotrimazole 500mg single dose or as cream used once PV
- Miconazole 200mg suppository QD for 3 days
- Nystatin oral and/or vaginal
- Boric acid 600mg PV bid for 10 days
- Probiotics- oral and vaginal
- Oral Garlic, berberus/Oregon grape, caprylic acid, grapefruit seed extract

Copyright Dr. Marchese
Yeast treatment

• **C. Albicans**- drugs such as nystatin, low dose fluconazole, or clotrimazole is successful in more than 80% of cases

• **C. Glabrata**- vaginal suppositories of boric acid (600 mg, 1-2 times daily for 14 days) or flucytosine.

• **Candida krusei** is resistant to the triazoles, fluconazole and itraconazole
  
  • [Mycoses. 2015 Mar;58 Suppl 1:1-15](#)

Copyright Dr. Marchese
Yeast Anti-biofilm treatments

• Amphotericin B and Caspofungin- (IV/IM and many SE)
• Saponins- able to inhibit *C. albicans* biofilm formation
• Quercetin shown to be antifungal against *C. albicans* biofilm
  — Quercetin can sensitize the susceptibility of Fluconazole-resistant *C. albicans* isolates to fluconazole
  — Quercetin Assists Fluconazole to Inhibit Biofilm Formations of Fluconazole-Resistant *Candida albicans* in *In Vitro* and *In Vivo*

• *Cell Physiol Biochem.* 2016;40(3-4):727-742
Bacterial Vaginitis treatment

• Test for UTI too
• Vaginal and oral probiotic
• Treat the inflammation
• Support the immune system
• Menopause vaginal atrophy
• E.coli, Group A strep, Staph Aureus, Group B strep
  – Found on culture
• Antibiotics- based on culture and sensitivity
Bacterial vaginitis


- Elevated pH
- Discharge adheres to vaginal walls
- Found on Affirm VP III, culture, PCR tests
BV general treatment options

- Metronidazole 500 mg orally twice daily for 7 days
- Metronidazole gel 0.75% intravaginally QD for 5 days
- Clindamycin cream 2% intravaginally QD for 7 days
- Herbal suppositories (EBH)
- Essential oil plus suppositories (EBH)
- Lactobacillus suppositories (EBH)

Ureaplasma and Mycoplasma

- Mycoplasma hominis is related to miscarriages especially in the presence of abnormal vaginal flora.
- Mycoplasma genitalium is now recognized as an STI—linked to cervicitis, PID in non-pregnant, and preterm birth and miscarriages in pregnant women.
- Linked to male and female infertility

- Iran Red Crescent Med J. 2015 Dec 26;17(12):
- *Andrology*. 2015 Sep;3(5):809-16

Copyright Dr. Marchese
Ureaplasma and Mycoplasma

- Azithromycin 1g single dose or 250mg dose pack
- Clarithromycin 500mg BID X 10 days
- Tetracycline??

- Test and treat the male partner- considered STI


Copyright Dr. Marchese
Naturopathic Care

• Oral and vaginal probiotics - during and after treatment
• Restore the pH
• Balance hormones
• Remove the cause
HPV

Cervix examination:

- Normal
- Low-grade CIN
- High-grade CIN
- Cancer
High Risk HPV genotypes

- There are more than 118 different types of HPV
- More than 40 HPV types can infect men and women, including the penis, vulva, anus, vagina, cervix, mouth and throat.
- HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68 are considered high risk for the development of cervical cancer and its precursor lesions.
- Types 26, 43, 53, 57, 62, 73, 82, and 83 are considered high risk

- Cancer Med. 2016 Nov;5(11):3346-3352
- https://www.cdc.gov/cancer/hpv/basic_info/index.htm
Genotype testing

• What genotype does she/he have???
• Co-infections by multiple HPV types are likely to occur in more than 30% of HPV patients.
• Certain combinations of these co-infections may be more prone to cause cancer than others.
• 3qGain oncofish test
HPV positive, negative, latent, subclinical, clinical

- **Latent HPV infection** - They probably have HPV in very low numbers (perhaps 1 HPV) per infected cell. Not contagious.
- **Subclinical HPV infection** - changes in the skin cells of the lower genital tract that *cannot* be seen with the "naked" eye. =Dysplasia
- **Clinical HPV** - warts and precancerous changes on the external genitalia-vulvar, perianal, as well as cervical and other lower genital tract cancers usually *can* be seen with the "naked" eye.
HPV methylation

- HPV 16-positive women with lower plasma concentrations of folate were nine times more likely to be diagnosed with CIN II compared to HPV 16-negative women with higher folate.
- Women with lower folate status may have hypomethylated HPV 16, and thus may be unable to keep oncogene expression at level sufficiently low to avoid progression.

HPV methylation

• Higher degree of methylation of HPV 16 is associated with a lower likelihood of being diagnosed with CIN II
• Also showed that low plasma folate and B12 was linked to higher rate of HPV 16 CIN II and III.
• Methyl donor micronutrients play a role in maintaining a high degree of methylation at specific CpG sites in the HPV E6 promoter and enhancer that are associated with the likelihood of being diagnosed with higher grades of CIN.
HPV testing

• Cervical- Pap smear in liquid based cytology, PCR swab
• Anal- Pap smear, PCR swab
• Throat/Mouth- PCR swab, pap smear
• Urine- In 213 men gargles and urine were collected, and cells were preserved in liquid-based cytology then analysis with PCR.
  – HPV detection rates were 18.8% and 22.1% in oral and urine samples

  • BMC Infect Dis. 2014 Jan 27;14:43.
HPV blood test?

- 70 serum samples in patients with HPV 16 or 18 carcinomas, 47 from the cervix, 15 from anal canal and 8 from oro-pharynx.
- Serum or plasma and droplet digital PCR was performed.
- Circulating human papillomavirus DNA was detected in 61/70 (87%) serum samples from patients with carcinoma.
- Circulating viral DNA levels in cervical cancer patients were related to the clinical stage and tumor size.


Copyright Dr. Marchese
Oral/Throat

- Head and neck cancers are caused by tobacco and alcohol
- 70% of cancers of the oropharynx are linked to HPV
- Oropharyngeal cancers (back of the throat, including tongue and tonsils) are the most common among men.
- 70 percent of cases of oropharynx cancer is caused by HPV16
- 3 to 5 percent of adolescents and 5 to 10 percent of adults have an active oral HPV infection.
Oral/Throat

• The odds of HPV-positive throat cancer doubled in individuals who have one-five lifetime oral sexual partner

• The risk increased five-fold in patients with six or more oral sexual partners in their lifetime

• Symptoms include hoarseness, pain or difficulty swallowing, pain while chewing, a lump in the neck, a feeling of a lump in the throat, change in voice, or non-healing sores on the neck

Oral/Throat

HPV and EBV co-infection

• HPV is associated with 70% of tonsil cancers and with 15-20% of head and neck squamous cell carcinomas.
• EBV is present in undifferentiated nasopharyngeal carcinomas and a small percentage of oral squamous carcinomas.
• Study showed significant increase of co-infection of EBV with HPV in tongue and tonsil cancers but not in the soft palate where there is no lymphoid tissue.
• Co-infected cells have much higher tumorigenic potential as compared to normal cells.

Oral testing- cell collection

• Swab the
  – buccal gutters, bilaterally
  – both cheek mucosas
  – both peritonsillar pillars
  – tonsils and pharynx.

• Place the swab immediately into the ThinPrep fluid, breaking off the handle.

• Watch a video http://www.wcpl.com/oralhpv/
Oral/Throat

HPV natural treatment

- Mighty Flow-lozenges, rinse, spray
- Curcumin
- Green tea
- Resveratrol
- Folic acid
- Anti viral herbs
- Vitamin- C
- Nutrients- vitamin A, vitamin E, iron, β-carotene, and folate intake may be a factor in the improved prognosis in those with HPV-positive HNSCC.

Oral/Throat

HPV natural treatment

• Curcumin- *in vitro* studies in oral cancer cells, curcumin has shown to have a strong anti-HPV effect

• Curcumin is a potent inhibitor for the activity of host nuclear transcription factors AP-1 and NF-kB

• Curcumin suppresses transcription of the HPV16/E6 oncogene during the carcinogenic process in oral cancer cells.

Oral/Throat

HPV natural treatment

- **TriCurin** – curcumin, resveratrol and green tea. Studied in HPV16 induced Head and neck squamous cell carcinoma
- Cell viability, clonogenic survival, and tumorsphere formation were inhibited and significant apoptosis was induced by TriCurin in HPV-positive HNSCC cells
- **Folic acid** supplementation altered the growth rate of HPV16 oral cancer cell lines. Increases survival and modulates high risk HPV-induced phenotypes


Copyright Dr. Marchese
Oral/Throat

HPV natural treatment

- *Trametes versicolor* and *Ganoderma lucidum* (Reishi)
- 472 patients oral swabs for gingivitis.
- 61 were positive for HPV16 or 18.
  - Twenty patients were given control; 5% clearance after 2 months of treatment
  - 41 patients were given *versicolor* and Reishi; 88% clearance after 2 months of treatment.


Copyright Dr. Marchese
Anal

• HPV is responsible for 90% of anal and cervical cancers, 70% of vaginal and vulvar cancers, and 60% of penile cancers.
• Women with a history of CIN3 showed increased risk of HPV-related anal carcinomas and high grade anal intraepithelial neoplasia (AIN)
• This risk remained significantly increased, even after long-term follow-up of up to 20 years

  - J Clin Oncol, 2017 May 25:
Anal

- 54,320 women with a diagnosis of CIN2 or CIN3 were identified between 1985 and 2005
- There were statistically significant increases in anal cancers 5-9 years after CIN diagnosis
  - *Gynecol Oncol.* 2014 Sep;134(3):523-6
- 16/18/31/33/45/52/58 to HPV types
Anal

- AIN affects the peri-anal skin, perineum, or natal cleft too
- Symptoms; itching and soreness or no symptoms
- Recognizable clinical signs of pigmentation, white lesions, fissuring, etc.
- Test for HPV alone with PCR or HPV and cytology with pap
- Diagnostic punch biopsies should be carried out if there are physical signs suggestive of AIN, or persistent ulceration.
ANAL CYTOLOGY AND HPV COLLECTION INSTRUCTIONS:

1. Label the collection vial with the patient’s name and site i.e. “Anal”.
2. Position the patient (a) on their side (b) in the lithotomy position or (c) for a digital rectal exam with anal exposure (always perform the anal pap before a digital rectal exam).
3. Moisten the Floq (Dacron) Swab with water. Insert the moistened swab until it bypasses the internal anal sphincter and abuts the distal wall of the rectum. (Approx. 1-2 inches). If using brush, no moistening necessary.
4. Use the external sphincter as a fulcrum (see image). Rotate swab in a circular fashion, and continue to rotate as it is withdrawn to sample cells from all aspects of the anal canal.
5. Swab should bend slightly with gentle pressure. Count slowly to 20 while collecting.
6. Rinse the swab in the collection vial by rotating in the solution 10 times; swirl the swab vigorously. Discard the swab. Replace the lid and tighten. Complete requisition form and submit.
Anal

• Same cervical/Oral HPV treatment
• HPV and anal warts
  – Phase III trials of sinecatechins 10% ointment (0.1g of green tea extract per gram) have demonstrated high efficacy and lower recurrence rates.
• Anal suppositories
  – Green tea?
  – Curcumin?

Cervical

- Methylfolate
- Methyl B12
- Vitamin C
- Anti-viral herbal tincture- formulate
- Green tea extract
- Indole-3-carbinol
- DIM
- Medicinal mushrooms
- Curcumin
Beta carotene

• Epidemiological studies show retinol intake and serum retinol levels have been found to be 4.5x lower among women with cervical dysplasia who progress to cervical cancer.

• Vitamin A intake and vitamin A blood levels inversely associated with cervical cancer.

  – Marshall K. PMID: 12777161
  – Zhang X et al. PMID: 22005522
Ascorbic acid

• Patients with the highest dietary intakes of vitamin A, beta-carotene, and vitamin C had lower cervical cancer risks than those with the lowest intake of these nutrients.

— Kim J et al. PMID: 20099192
Green Tea

• ECGC in green tea was evaluated on cervical epithelial; cells and cervical cancer cells and HPV.
• Green tea inhibited cancer cell growth, induced apoptosis, decreased gene expression, and cell cycle changes.

• Int J Gynecol Cancer. 2010;20(4):617-624
I3C / DIM

• Estrogen is another well-known factor in the development of CIN.

• I3C and DIM have been shown to alter estrogen metabolism pathways and suppress viral oncogene expression.

  - Sepkovic DW et al. PMID: 21383027
  - Ashrafian Levon et al. PMCID: PMC4685602
Indole-3-carbinol

- 30 patients with CIN II-III
- 17 took I-3-C 400mg for 12 weeks (13 placebo group)
- 8 of the 17 had complete regression
- I-3-C up-regulates tumor suppressor gene PTEN which is MOA for inhibiting development of cervical cancer.

- Gynecol Oncol 2000. Aug 78(2) 123-129

Copyright Dr. Marchese
Cervical

Vaginal suppositories

– Green tea- compounded 150mg
– VP compound-Earth’s Botanical Harvest
– Essential oil plus- EBH
– Herbal- EBH
– Curcumin- compounded 250mg

– Protocols vary by cytology and HPV strain and colposcopy results
Escharotics

• Colposcopy must be satisfactory (transformation zone seen)
• ECC negative
• No glandular or endometrial cells present
Escharotic

- ZnCl solution: 90 grams ZnCl/60 ml sterile water: ½ ounce
- Sanguinaria tincture: 1 ounce
- Bromelian powder: 500 mg caps, 3 caps
- Calendula succus: 2 ounce
- Plastic pipette: 10 of them
- Scopettes: lots
- Green tea suppositories: 12 count
Escharotic treatment

- Insert a well lubricated speculum
- Blot cervix clean with scopette
- “Puff” bromelain powder with pipette onto cervix and inside endocervical canal
- Leave on for 15 minutes with the heat of a lamp
- Remove powder with water and wipe extra pooled solution away

Copyright Dr. Marchese
Con’t

• Mix ZnCl and Sanguinaria together- ¼ tsp ZnCl to ¾ tsp Sanguinaria
• Apply mixture to cervix and endocervical canal. Leave for 1 minute
• Wash cervix and endocervical canal with water
• Wipe extra pooled solution away with scopette and apply calendula succus
• Insert 1 green tea suppository the next night