

ACNE VULGARIS (AV)

AV according to Western Medicine

AV is a disorder of the hair follicle and sebaceous glands that is generally self-limited and primarily affects teenagers and young adults. It affects more than 85% of people at some time during their lives. It is more common in males than in females during adolescence. However it is more common in women than in men during adulthood. AV affects the areas of skin with the greatest proportion of sebaceous follicles; these areas include the face, the upper part of the chest, and the back. (Harper & Fulton, 2007)

Acne occurs when hair follicles and/or the sebaceous glands that empty into them become obstructed with plugs of sebum and desquamated keratinocytes. This occurs as a result of excessive sebum production together with epidermal hyperproliferation. The blocked follicle and glands – the pilosebaceous unit – then becomes colonized and sometimes infected with *Propionibacterium acnes*, which is a normal inhabitant of the skin surface. This bacterium breaks down the sebum into free fatty acids, which causes inflammation within the cyst, and results in rupture of the cyst wall. An inflammatory foreign-body reaction develops as a result of extrusion of oily and keratinous debris from the cyst. The clinical manifestations differ depending on whether or not *P. acnes* causes inflammation within the pilosebaceous unit and also whether or not it causes infection. Thus AV can be non-inflammatory, inflammatory or infective. The essential clinical feature of AV is the comedone, which may be closed ('whitehead') or open ('blackhead'). Closed comedones appear as small white papules, which are the precursors of the inflammatory lesions of AV. The contents of closed comedones are not easily expressed. Open comedones, which rarely result in inflammatory lesions, have a large dilated follicular orifice and are filled with easily expressible oxidized, darkened, oily debris. Comedones are usually accompanied by inflammatory lesions: papules, pustules, or nodules. While in most cases AV remains mild and does not lead to scarring, a small number of patients develop large inflammatory cysts and nodules, which may eventually result in significant scarring. The primary trigger for AV is related to the surges in androgen production that occur at puberty, which stimulate sebum production and hyperproliferation of keratinocytes. In addition, AV may be brought on or aggravated by such factors as friction and trauma, application of various topical agents (e.g. cosmetics or hair preparations), or chronic topical exposure to certain industrial compounds. Glucocorticoids, topical or systemic, may also elicit AV. Other systemic medications such as oral contraceptive pills, lithium, isoniazid, androgenic steroids, halogens, phenytoin, and phenobarbital may produce acneiform eruptions or aggravate preexisting acne. Genetic factors and polycystic ovary disease may also play a role. (Harper & Fulton, 2007; McCall & Lawley, 2007; McKoy, 2005)

Conventional texts generally either fail to mention or discount the influence of diet and nutritional factors in the pathogenesis of AV, e.g. 'associations between acne exacerbation and diet (e.g. chocolate), inadequate face washing, masturbation, and sex are unfounded'. (McKoy, 2005). In addition, a recently published protocol for the diagnosis and treatment of AV also echoes these opinions. (Strauss et al, 2007)

However, in recent years there has been a growing awareness of dietary and lifestyle factors in the pathogenesis and hence the treatment of AV. There is mounting evidence that the following are of importance: a low glycemic load diet (Smith, N. et al, 2007), zinc (Michaelsson et al, 1977; Amer et al, 1982; Dreno et al, 2005; Meynadier, 2000), selenium (Michaelsson, 1990; Michaelsson and Edqvist, 1984), nicotinamide (Niren and Torok, 2006), and chromium (McCarty, 1984).

A summary of the current Western Medical theories on the causes of Acne Vulgaris appears in Appendix 1.

Clinical features of AV

While cystic acne can be painful, the other types are not, although they can be a source of significant emotional distress. Lesion types frequently coexist at different stages. Comedones appear as whiteheads or blackheads. Whiteheads (closed comedones) are flesh-colored or whitish palpable lesions 1-3 mm in diameter; blackheads (open comedones) are similar in appearance but with a dark center. Papules and pustules are red lesions 2-5 mm in diameter. In both, the follicular epithelium becomes damaged with accumulation of neutrophils and then lymphocytes. When the epithelium ruptures, the comedone contents elicit an intense inflammatory reaction in the dermis. Relatively deep inflammation produces papules. Pustules are more superficial. Nodules are larger, deeper, and more solid than papules. Cysts are suppurative nodules. Occasionally, cysts become infected and form abscesses. Long-term cystic acne can cause scarring that manifests as tiny, deep pits, larger pits, shallow depressions, or areas of hypertrophic scar. (McCall & Lawley, 2007; McKoy, 2005)

Clinical diagnosis is made by examination. Differential diagnosis includes rosacea (in which no comedones are seen), corticosteroid-induced acne (which lack comedones and in which pustules are usually in the same stage of development), perioral dermatitis, and acneiform drug eruptions. Acne severity is graded mild, moderate, or severe based on the number and type of lesions:

- Mild acne: less than 20 comedones, or less than 15 inflammatory lesions, or less than 30 total lesions.
- Moderate acne: 20 to 100 comedones, or 15 to 50 inflammatory lesions, or 30 to 125 total lesions.
- Severe acne: More than 5 cysts, or total comedo count greater than 100, or total inflammatory count greater than 50, or greater than 125 total lesions.

(McKoy, 2005)

AV according to TCM

AV is discussed in TCM literature under the headings of *fēn cì* (pink/white thorns) *fèi fēng fēn cì* (lung wind thorns) and *jīu cì* (wine thorns). There exists a notable lack of uniformity in discussions of the various causes and clinical presentations of AV in the contemporary English language literature (see Appendix 2). In terms of underlying causes and pathogenesis, most sources agree on Lung Heat, some form of Heat (e.g. Damp-Heat) in the Stomach, and Blood Heat; also that in severe or advanced cases the Blood stasis and Phlegm-Heat (or Phlegm-Fire) arise due to further development of the localised pathogens. Furthermore, AV that is exacerbated premenstrually is explained as lack of regulation of the Chong and Ren channels, usually together with Liver constraint due to emotional factors. (Bantik, 2007; Zhang, 2005; Zhao & Li, 1991, pp. 167-170; Xu, 2004, pp.259-264; Shen, Wu & Wang, 1995, pp. 253-259; Liang, 1988, pp. 122-124; Flaws & Sionneau, 2001, pp.39-46) Some authorities fail to describe the female specific type of acne. (Zhao & Li, 1991, pp. 167-170; Shen, Wu & Wang, 1995, pp. 253-259) Flaws, typically in my opinion, includes several additional syndromes/patterns (such as Kidney Yin deficiency with deficiency Heat¹) and places great emphasis on the Liver. (Flaws & Sionneau, 2001, pp.39-46)

I would like to propose that one of the flaws in the above modern interpretations of traditional theories pertains to the inclusion of the internal organs (notably the Lung, Stomach and Intestines) in the pathology of AV. Clinically, patients with acne rarely show any signs of Lung pathology (i.e. cough, breathlessness, dyspnea etc.). In addition, the clinical manifestations of AV in the syndrome of Lung Heat (or Lung Wind-Heat, etc.) are no different from those with Heat in the Stomach/Yang Ming (Xu, 2004, pp.260-261). Flaws comments that the 'pure form' of Lung Channel Wind-Heat is rarely seen as patients generally present with a combination of several disease mechanisms. The same is also true of the Yang Ming pattern (i.e. Stomach and Intestines Damp Heat). (Flaws & Sionneau, 2001, pp.40-41) Similarly, the Yang Ming pattern generally does not present with typical clinical features (high fever, profuse sweating, thirst, full and/or surging pulse); nor do patients with AV present with typical features of Damp-Heat in the Stomach and Intestines (i.e. dysentery) - in fact the opposite symptom is often encountered, i.e. some degree of constipation.

In considering AV (and most other skin diseases for that matter) we need to move away from the restriction of Zang-fu syndromes and acknowledge that AV is actually a disorder of that other major bodily organ: the skin². The skin is

¹ Flaws & Sionneau recommend the formula Zhi Bai Di Huang Wan for this pattern/syndrome. According to my Chinese mentor this formula acts on the lower Jiao, not the middle Jiao or upper Jiao. Furthermore, Kidney Yin deficiency is not a major underlying cause of acne. It may be associated with the condition in elderly patients, and may even exacerbate it; but it is not a primary factor in the pathogenesis of AV.

² I would like to suggest that we revise the traditional theory that sees the skin as a tissue, which is no more than an 'extension' of the Lung. In my opinion the only superficial tissue that is really

influenced by the functioning of all the internal organs – just as the Zang-fu influence and are influenced by one other. A fresh approach, which would have the potential to offer greater ease of clinical application, involves the delineation of diagnostic categories based upon the predominant pathogen/s present in the skin, directly associated with the clinical manifestations. This would facilitate clinical prescribing and would leave it up to individual practitioners to follow up their cases with treatment regimens directed to any underlying Zang-fu imbalances so as to reinforce the clinical results and prevent recurrence. Thus AV may be categorized into the following:

1. Heat Toxin lesions
2. Damp-Heat lesions
3. Blood Heat lesions
4. Blood stasis and Phlegm lesions

A careful examination of the skin lesions in AV reveals:

- Red lesions = Heat
- Swollen lesions = Damp
- Chronic, persistent condition = Damp
- Pus formation = Damp-Heat and Heat Toxin ➡ Phlegm-Heat (or Phlegm-Fire)
- Scarring = Blood stasis
- Lesions come and go and change locations = Wind
- Severe itching = Wind

The location of the lesions may give an indication of the involvement of specific Channels and possibly also some degree of zang-fu involvement.

- Face/ upper chest = Stomach, Lung and Colon
- Lower chest, back flanks = Liver, Gallbladder

THERAPEUTICS OF ACNE VULGARIS

The Western Medical Approach

Treatment of AV is directed toward elimination of comedones by normalization of follicular keratinization, decreasing sebaceous gland activity, decreasing the population of *P. acnes*, and decreasing inflammation. In mild cases the use of topical agents such as retinoic acid, benzoyl peroxide, or salicylic acid may alter the pattern of epidermal desquamation, preventing the formation of comedones

an extension of the Lung is the respiratory epithelium inside the nose, lining the nasal cavity. The skin as a whole should be given equal status to the Large Intestine, i.e. the skin (as an organ in its own right – possibly an 'extraordinary' organ) has a Yin-Yang relationship with the Lung in much the same way as the Large Intestine. Thus the skin can have its own pathologies, which, of course, may be related to disorders of either the Lung, the Large Intestine or of both organs; not only that, skin pathologies may also be directly related to disorders of the Stomach, Spleen or Liver (e.g. Damp-Heat). However, in this scheme the skin would receive priority in treatment (as evidenced by clinical practice where both topical applications as well as ingested herbal formulations are generally used in acute as well as chronic conditions), while the Lung, etc. would also be taken into consideration but treated appropriately as a secondary priority.

and aiding in the resolution of preexisting cysts. Topical antibacterial agents such as azelaic acid, topical erythromycin (with or without zinc), or clindamycin are also used as adjuncts.

Patients with moderate to severe AV with a prominent inflammatory component are treated with antibiotic, such as tetracycline, doxycycline, or minocycline. Such antibiotics appear to have an anti-inflammatory effect independent of their antibacterial effect. Female patients who do not respond to oral antibiotics may benefit from hormonal therapy. Women placed on oral contraceptives containing ethinyl estradiol and norgestimate have demonstrated improvement in their acne when compared to a placebo control. (Arowojolu et al., 2007)

Patients with severe nodulocystic acne unresponsive to the therapies discussed above are treated with the synthetic retinoid, isotretinoin. However, there is the potential for severe adverse events, primarily teratogenicity. Additionally, patients receiving this medication develop extremely dry skin, cheilitis, and must be followed for development of hypertriglyceridemia. Recently there have also been concerns that it is associated with severe depression in some patients. (McCall & Lawley, 2007; Harper & Fulton, 2007; Strauss et al, 2007)

The TCM Approach to treatment

Published recommendations for acne treatment are based on the appropriate syndrome/pattern identification and include acupuncture and herbal prescriptions. Commonly used acupuncture points include:

Du 10, Du 12, Du 14, BI 2, BI 13, BI 17, BI 20, BI 23, St 36, St 340, LI 4, LI 11, LI 20, Sp 5, Sp 6, Sp10, Ki 3.

Tai-yang (EX-HN-5); SI 18, Yin-tang (EX-HN-3)

Ear: Lung, Shenmen, Sympathetic nerve, Endocrine, Subcortex

Herbal formulations include variants on:

Pei Pa Qing Fei Yin, Tiao Wei Cheng Qi Tang, Tao Hong Si Wu Tang, Liang Xue Wu Hua Tan, Liang Xue Qing Fei Yin, Hai Zao Yu Hu Tang, Jia Wei Xiao Yao San and Wu Wei Xiao Du Yin

Topical treatments: recommendations for various formulations to be applied topically include:

Dian Dao San Xi Ji, San Huang Xi Ji, Dian Dao San, Qu Ban Gao, Cuo Chuang Xi Ji, Hei Bu Yao Gao, Du Jiao Lian Gao, Si Huang Gao.

(REF's as above)³.

Professor Yu Jin provides details of two herbal formulations, the efficacy of which is backed up by two small scale trials. One formula followed the 'traditional' approach of clearing Heat from the Lung and Stomach (together with modifications). The second formula, a simple three herb combination, appears to follow a combined TCM and Western approach in that the TCM actions are to

³ Zhao & Li, 1991, pp. 167-170; Xu, 2004, pp. 259-264; Shen, Wu & Wang, 1995, pp. 253-259; Liang, 1988, pp. 122-124; Flaws & Sionneau, 2001, pp.39-46

tonify the Kidney, Lung and Spleen, while the physiological actions include increasing serum E2 levels, decreasing T levels, increasing blood HDL cholesterol and reducing blood triglycerides. Both formulas worked equally well in males and females. It is to be noted that she makes the basic differentiation into excess and deficiency presentations of AV. (Yu, 1998)

CLINICAL OUTCOMES

There is a lack of good quality evidence for any of the currently used Western treatments for AV.

1. Antibiotics

a) Minocycline, Doxycycline, Tetracycline, Erythromycin, Azithromycin. Results with antibiotics are in the region of 77 – 85% reduction of lesions within the first four weeks of treatment (Fernandez-Obrregon, 2000). However, it has been noted that in general the standard of trials on treatments for acne were poor. (Garner et al., 2003)

b) Trimethoprim, alone or in combination with sulfamethoxazole. (Bhambri et al., 2007)

Although all types of antibiotics are significantly more effective than placebo in the systemic treatment of inflammatory acne, they are best combined with BPO to prevent resistance. (Ochsendorf, 2006) Antibiotic resistance is a significant problem with all forms of antibiotics when used as monotherapy. (Leyden et al., 2007; Ozolins et al., 2004)

2. Topical applications

a) Benzoyl peroxide (BPO) is an highly effective treatment for AV and avoids the problems of microbial resistance that are encountered with topical antibiotics. (Leyden et al., 2007; Ozolins et al., 2004) Ozolins et al., have shown that the use of topical BPO either alone or in combination with topical erythromycin gave as good if not better results than oral oxytetracycline or minocycline. (Ozolins et al., 2004)

b) Triethyl citrate and ethyl linoleate lotion has been shown to be an effective treatment for mild to moderate acne, with an effect on both inflammatory and noninflammatory acne lesions. The new lotion worked quickly and was generally well tolerated. In addition, it reduced sebum production by 53%. (Charakida et al., 2007)

3. Hormonal treatments

Zouboulis conducted an evidence based review of anti-androgen treatments in 2003 and found that while effective, ‘...antiandrogen treatment should be limited to female patients with additional signs of peripheral hyperandrogenism or hyperandrogenemia. In addition, women with late-onset or recalcitrant acne who also desire contraception can be treated with antiandrogens as can those being treated with systemic isotretinoin. Antiandrogen treatment is not appropriate primary monotherapy for noninflammatory and mild inflammatory acne.’ (Zouboulis, 2003)

4. Isotretinoin

This seems to be the most effective treatment for AV (Zouboulis, 2004; Akman et al., 2007; Oprica et al., 2007). It acts by markedly reducing sebum production (Nelson et al., 2006; Zouboulis, 2004) as well as having a role in reducing hyperkeratinization and perifollicular inflammation (Papakonstantinou., Aletras, Glass, Tsogas, Dionyssopoulos & Adjaye, 2005). However, the side effect profile generally limits its use to severe recalcitrant cases⁴.

5. Laser treatment for scarring

A review conducted by Jordan et al., found that there was a 'lack of good quality evidence does not enable any conclusions to be drawn about the effectiveness of lasers for treating atrophic or ice-pick acne scars.' (Jordan et al., 2000)

6. Acupuncture

There are some indications that acupuncture may be superior to antibiotics in the treatment of AV. (Song, 2007; Lihong, 2006)⁵ In a review of some of the Chinese studies, Rosted comments: 'The various studies generally testify to many cases of total recovery, and for the remaining patients a considerable degree of improvement. However, most of the reports were uncontrolled, retrospective, without follow-up studies, and often without assessment of the condition by means of standard validated techniques.' (Rosted, 1995)

7. Chinese herbal medicine (CHM)

Several novel approaches to herb selection have been developed in recent years. Ju et al. found that baicalin⁶ exerted an anti-androgenic action on human sebocytes at a level comparable to Isotretinoin; thus finding a mechanism of action for huang qin, a herb commonly used in acne formulations. (Ju, Yin, Shi, Kang, Xin, Xia, 2007)

Nam et al. found that *Angelica dahurica*⁷ markedly suppressed neutrophil chemotaxis, comparable to the effect of erythromycin (0.01%), whereas a strong antilipogenic effect was obtained with rhizoma coptidis (*Coptis chinensis*)⁸ extract (0.01%), leading to a higher efficacy than that of retinoic acid (0.01%).

*Glycyrrhiza glabra*⁹ showed a remarkable antibacterial activity against *P. acnes*, resulting in negligible induction of resistance, in comparison with a marked

⁴ Side effects of Isotretinoin include: teratogeny (therefore contraindicated in pregnancy and for one month after treatment); hyperlipidemia; pseudotumor cerebri; vision impairment; headaches; myalgias; arthralgias; and depression. In addition, dry skin and cheilitis are nearly universal adverse effects, which is to be expected based on the actions of the drug.

⁵ Unfortunately there are many Chinese studies for which no abstract (or full text) is available in English. (e.g. Xu, 1990. Treatment of facial skin diseases with acupuncture--a report of 129 cases. *J Tradit Chin Med.* 10(1):22-5.)

⁶ From *Huang qin*

⁷ *Bai zhi*

⁸ *Huang lian*

⁹ *Gan cao*

development of resistance in the bacteria treated with erythromycin. Therefore formulations containing these herbs could be helpful for the prevention and treatment of acne lesions. (Nam et al., 2007)

There are many studies that have demonstrated a high degree of efficacy of CHM both topically and internally. (Biyun, 2004; Pan, 2005; Ma et al., 2004; Liu et al., 2003; Yang, 2001)

Japanese researchers have shown several classical CHM formulas to inhibit P. acnes. (Higaki et al., 2000; Higaki et al., 1997; Higaki et al., 1996; Higaki et al., 1995).

Thus we have several demonstrated mechanisms of action whereby CHM can alleviate AV, as well as some degree of evidence of efficacy of CHM formulations, both topical and oral.

CONCLUSION

There is a general lack of high quality evidence for any of the treatments described above. The best that can be said is that each form of therapy, correctly applied, is capable of producing satisfactory clinical results in a significant number of cases. However, owing to the high frequency of this disorder and the incomplete understanding of it (both in Western and Chinese medicine) there will always be cases which do not respond to a particular form of therapy (or in the case of Isotretinoin, the side effect profile precludes treatment). Therefore there will always be a significant number of patients who seek complementary therapies for AV. Through discussions with my TCM colleagues it appears that the perception of underlying causes, presenting syndromes/patterns and approaches to treatment vary considerably. Moreover, treatments are sometimes effective and sometimes not. Therefore it is in the interests of the profession that more research and sharing of clinical experiences be conducted.

APPENDIX 1

Harper and Fulton have summarized the current orthodox Western medical theories on causes and triggers of AV:

1. Follicular epidermal hyperproliferation

- Androgen hormones (AV begins to appear around adrenarche; the degree of comedonal acne in prepubertal girls correlates with circulating levels of the adrenal androgen dehydroepiandrosterone sulfate (DHEA-S); androgen hormone receptors are present in the portion of the follicle where the comedone forms; individuals with malfunctioning androgen receptors do not develop acne.)
- Changes in lipid composition (persons with acne frequently have excess sebum production and oily skin; this excess sebum may dilute the normal epidermal lipids and result in a change in the relative concentrations of the various lipids; diminished concentrations of linoleic acid have been demonstrated in individuals with acne and these levels normalize after successful treatment with isotretinoin.)
- Inflammation (interleukin (IL)-1-alpha is a proinflammatory cytokine, which has been used in a tissue model to induce follicular epidermal hyperproliferation and comedone formation.)

2. Excess sebum

The surge in androgen at puberty is common to all adolescents, including those that do not develop AV, therefore hyperresponsiveness of the sebaceous glands to androgen hormones in those with AV has been postulated.

3. The activity of *P. acnes*

This organism is present in many acne lesions. However, it has not been shown to be present in the earliest small lesions of AV (the microcomedone). *P. acnes* stimulates inflammation by producing proinflammatory mediators that diffuse through the follicle wall. *P. acnes* activates the toll-like receptor 2 on monocytes and neutrophils, which then leads to the production of multiple proinflammatory cytokines, including IL-12, IL-8, and tumor necrosis factor. Thus, hypersensitivity to *P. acnes* may be the reason why some individuals develop inflammatory lesions and others do not.

4. Inflammation

Most of the evidence to date suggests a secondary inflammatory response to *P. acnes* as mentioned above. However, a primary inflammatory response is suggested by the expression of IL-1-alpha in the microcomedone, and it may play a role in the development of acne.

(Harper & Fulton, 2007; Zouboulis, 2004)

APPENDIX 2

Summary of the various causes and presenting syndromes/patterns of AV in TCM

According to Bantik the etiology is fourfold:

1. Lung heat: Lung heat with Wind-Heat obstructing the Lung, rising to the face and manifesting as Toxic Heat
2. Yang ming heat: Constitutional predisposition or inappropriate diet causing blockage by damp and heat and development of Fire Toxin, rising along the course of these channels to the face
3. Ren and chong not regulated: This is female adolescent acne; due to constitutional pre-disposition, emotional factors, or the effects of contraceptive pill. This leads to Blood stasis and Blood Heat that flares up on the skin of the face around the time of menstruation.
4. Fire Toxin, Phlegm Heat and Blood stasis: These may arise as a pathological sequel to the above pathodynamic factors.

The common clinical syndromes are:

- Lung heat with fire toxin
 - Yang ming damp heat with fire toxin
 - Ren & chong not regulated (blood heat with stasis)
 - Fire-toxin, stagnation of phlegm with blood stasis
- (Bantik, 2007)

Zhang delineates four different pathological scenarios in AV:

1. Accumulation of Heat in the Lungs and Stomach
2. Spleen Qi deficiency and Dampness accumulation
3. Blood stasis and Phlegm combination
4. Liver Qi stagnation and Chong and Ren irregularity

(Zhang, 2005)

According to Zhao & Li, AV may be due to the following:

1. Heat in the Blood and the Lung channel, which affects the face
2. Heat accumulated in the Spleen and Stomach due to dietary irregularities, together with pathogenic Wind that has invaded the Exterior and caused stagnation of the Qi, Blood and Body Fluids

The common clinical syndromes are:

- Damp-Heat in the Lung and Stomach
- Phlegm stagnancy (i.e. Phlegm with Blood stasis)

(Zhao & Li, 1991, pp. 167-170)

Xu's comprehensive text discusses AV in terms of

1. Heat in the Blood as the major internal cause, with
2. Improper diet together with invasion by exopathogens as the main external causes.

These factors may in turn give rise to Blood stasis binding with Phlegm, which are complications that give rise to more severe forms of the disease. The pathogenesis of Blood Heat may involve one or more of the following factors:

- Exuberance of Yang (giving rise to Heat) during adolescence
- Excessive consumption of Heating foods (e.g. spices, seafoods)
- Poor health with repeated attacks by exogenous Wind-Heat (or washing in cold water), leading to Blood Heat binding with other pathogens in the skin
- Chronic illness (leading to Yin deficiency, with Yang hyperactivity)
- Emotional disturbance leading to Liver constraint and stagnation of Qi.

These factors lead to Heat together with Qi stagnation-Blood stasis.

Prolonged Heat in the Lung and Stomach will generate Damp and Phlegm, the latter binding with Blood stasis in the skin to form severe nodulo-cystic types of AV. Xu discusses the clinical syndromes under the following headings:

- Accumulation of Heat in the Lungs
- Accumulation of Heat in the Stomach
- Blood Heat
- Stagnation of Qi and Blood
- Blood stasis and binding of Phlegm

The author notes that important factors in the successful treatment of AV involve appropriate dietary modification and regulation of menstruation; the former being more important in males and the latter more important in females. (Xu, 2004, pp.259-264)

Shen, Wu, and Wang discuss AV in terms of five etiological categories:

- Lung heat
- Stomach heat
- Blood heat
- Heat toxin
- Damp toxin with Blood stasis

In the Lung heat type, exogenous wind invades the body, causing pre-existing heat in the Lung channel to accumulate in the skin and tissues.

In the Stomach heat type, dietary factors (e.g. high-fat diet, excessive consumption of deep fried or spicy foods) leads to the accumulation of heat in the Spleen/Stomach. In time the heat rises and lodges in the skin and tissues.

In the Blood heat type, emotional disturbance leads to stagnation of the Qi, which if unresolved accumulates and transforms into heat that enters the Blood level, and then lodges in the skin and interstices.

In the heat toxin type, a combination of Lung heat and/or Stomach heat with external toxin to form heat toxin that rises upwards and then lodges in the skin and interstices.

In the Damp toxin with Blood stasis type, pre-existing dampness accumulates in the skin and tissues following an attack by external toxin, which then congeals with dampness to form damp toxin. Blockage of the channels and collaterals ensues, giving rise to disharmony between the qi and blood.

(Shen, Wu & Wang, 1995, pp. 253-259)

Flaws regards the primary causes of AV as follows:

1. Natural endowment repletion or insufficiency
2. Stirring of ministerial Fire due to maturation
3. The cyclic waxing and waning of Yin and Yang in women
4. Emotional stress and frustration

The pathomechanisms underlying the lesions in AV are described as follows:

Damp-Heat and Phlegm pathogens accumulate in the space between the skin and the muscles in areas of the upper body such as the face. These pathogens arise due to various pathodynamics and rise upwards due to the involvement of Heat of one kind or another. The Heat may arise or be aggravated by:

- Stirring and hyperactivity of the Life gate Fire at puberty
- Liver constraint leading to Qi stagnation, developing into Heat or Fire
- Excessive indulgence in sexual activity, recreational drugs or alcohol
- Yin deficiency (generally developed from a constitutional tendency) giving rise to Yang hyperactivity

Damp and Phlegm are generated due to dietary factors; and somehow the Heat lodges in the Lung, Stomach and Liver (mechanism not explained). Premenstrual acne is explained in terms of aggravation of Liver constraint due to Blood deficiency, developing into Heat or Fire.

Clinical syndromes consist of:

- Lung channel Wind-Heat
- Intestines and Stomach Damp-Heat
- Blood stasis
- Heat Toxins
- Spleen deficiency with Phlegm-Damp
- Yin deficiency, Yang hyperactivity causing Fire

Flaws comments that in real life clinical practice the main pathodynamics seen are Liver constraint developing into Heat or Fire, together with retained Phlegm-Damp. (Flaws & Sionneau, 2001, pp.39-46)

Maciocia describes six different pathodynamics in AV:

- Lung Heat: papular blackheads and whiteheads on the forehead, nose, upper back and chest.
- Stomach Heat: papular blackheads and whiteheads around the mouth and on the chest and back.
- Blood Heat: red papules around the nose, mouth and eyebrows. It is often worse before and during menstruation.
- Toxic Heat: pustules which may be painful; inflamed cysts; often on the upper back and chest.
- Damp-Heat with Toxic Heat and Blood stasis: deep painful and inflamed nodules and pus filled cysts, which tend to pitting and scarring.
- Lung and Spleen Qi deficiency: underlying condition, combined with Damp; papular lesions; generally long term

(Maciocia, 2004)

Professor Yu Jin describes the causes of AV as heat (due to the Kidney flourishing) rising up to the Lung and Stomach, giving rise to 'heat in both of these Organs'. She gives two treatment protocols, one for excess type AV and one for a deficiency type:

1. Remove excessive heat from the Lungs and Stomach
2. Replenish the Kidneys, Spleen and Lungs

REFERENCES

- Akman, A., Durusoy, C., Senturk, M., Koc, C., Soyuturk, D., Alpsoy, E. (2007). Treatment of acne with intermittent and conventional isotretinoin: a randomized, controlled multicenter study. *Arch Dermatol Res*. 2007 Aug 21 [Epub ahead of print]
- Amer, M., Bahgat, M., Tosson, Z., Mowla M., and Amer, K. (1982). Serum zinc in acne vulgaris, *Int J Dermatol* 21, pp. 481–484.
- Arowojolu, A., Gallo, M., Lopez, L., Grimes, D., Garner, S. (2007). Combined oral contraceptive pills for treatment of acne. *Cochrane Database Syst Rev*. 2007 Jan 24;(1):CD004425.
- Bantic, G.(2007) Online lecture notes, UWS e-Learning, Web CT: *Acne*. Retrieved August 19, 2007 from <http://elearning.uws.edu.au/webct/urw/lc5116001.tp0/cobaltMainFrame.dowebct>
- Bhambri, S., Del Rosso, J., Desai, A. (2007). Oral trimethoprim/sulfamethoxazole in the treatment of acne vulgaris. *Cutis*. 79(6):430-4.
- Biyun, C. (2004). The clinical observation of treating acne vulgaris with "xiao cuo fang". *Zhong Yao Cai*. 27(4):308-10.
- Charakida, A, Charakida, M, Chu, A. (2007). Double-blind, randomized, placebo-controlled study of a lotion containing triethyl citrate and ethyl linoleate in the treatment of acne vulgaris. *Br J Dermatol*. 157(3):569-74.
- Cohen, J., Adams, S., Patten, S. (2007). No association found between patients receiving isotretinoin for acne and the development of depression in a Canadian prospective cohort. *Can J Clin Pharmacol*. 14(2):e227-33.
- Dreno, B., Foulc, P., Reynaud, A., Moyse, D., Habert, H. and Richet, H. (2005). Effect of zinc gluconate on propionibacterium acnes resistance to erythromycin in patients with inflammatory acne: in vitro and in vivo study. *Eur J Dermatol* 15, pp. 152–155.
- Eady, E., Gloor, M., Leyden, J. (2003). Propionibacterium acnes resistance: a worldwide problem. *Dermatology*. 206(1):54-6, 2003.
- Fernandez-Obrregon, A. (2000). Azithromycin for the treatment of acne. *Int J Dermatol*. 39 (1):45-50
- Flaws, B. & Sionneau, P. (2001). *The Treatment of Modern Western Diseases With Chinese Medicine: A Textbook & Clinical Manual*. Boulder, CO: Blue Poppy Press
- Garner, S., Eady, E., Popescu, C., Newton, J., Li Wan Po, A. (2003). Minocycline for acne vulgaris: efficacy and safety. *Cochrane Database of Systematic Reviews* 2003, Issue 1. Art. No.: CD002086. DOI: 10.1002/14651858.CD002086.
- Harper, J., Fulton, J., (2007). Acne Vulgaris. eMedicine Articles. Retrieved August 19 from <http://www.emedicine.com/derm/topic2.htm>
- Higaki, S., Hasegawa, Y., Morohashi, M., Takayoshi, Y. (1995). The correlation of Kampo formulations and their ingredients on anti-bacterial activities against Propionibacterium acnes. *J Dermatol*. 22(1):4-9.

Higaki, S., Kitagawa, T., Kagoura, M., Morohashi, M., Yamagishi, T. (2000). Relationship between Propionibacterium acnes biotypes and Jumi-haidoku-to. *J Dermatol.* 27(10):635-8

Higaki, S., Morimatsu, S., Morohashi, M., Yamagishi, T., Hasegawa, Y. (1997). Susceptibility of Propionibacterium acnes, Staphylococcus aureus and Staphylococcus epidermidis to 10 Kampo formulations. *J Int Med Res.* 25(6):318-24

Higaki, S., Nakamura, M., Morohashi, M., Hasegawa, Y., Yamagishi, T. (1996). Activity of eleven kampo formulations and eight kampo crude drugs against Propionibacterium acnes isolated from acne patients: retrospective evaluation in 1990 and 1995. *J Dermatol.* 23(12):871-5

John S. Strauss, Daniel P. Krowchuk, James J. Leyden, Anne W. Lucky, Alan R. Shalita, Elaine C. Siegfried, Diane M. Thiboutot, Abby S. Van Voorhees, Karl A. Beutner, Carol K. Sieck, *et al.*

Jordan, R., Cummins, C., Burls, A., Seukeran, D. (2000). Laser resurfacing for facial acne scars. *Cochrane Database of Systematic Reviews 2000*, Issue 3. Art. No.: CD001866. DOI: 10.1002/14651858.CD001866.

Ju, Q., Yin, X., Shi, J., Kang, X., Xin, Y., Xia, L. (2007). Effects of baicalin and other Chinese herbal monomer on androgen receptor mRNA expression in SZ95 sebocytes. *Zhongguo Yi Xue Ke Xue Yuan Xue Bao.* 29(2):167-70

Leyden, J., Del Rosso, J., Webster, G. (2007). Clinical considerations in the treatment of acne vulgaris and other inflammatory skin disorders: focus on antibiotic resistance. *Cutis.* 79(6 Suppl):9-25.

Liang, J. (1988). *A Handbook of Traditional Chinese Dermatology*. Boulder, Co: Blue Poppy Press

Lihong, S. (2006). He-Ne laser auricular irradiation plus body acupuncture for treatment of acne vulgaris in 36 cases. *J Tradit Chin Med.* 26(3):193-4.

Liu, W., Shen, D., Song, P., Xu, X. (2003). Clinical observation in 86 cases of acne vulgaris treated with Compound Oldenlandis Mixture. *J Tradit Chin Med.* 23(4):255-6.

Ma, X., Zhu, S., Zhou, G. (2004). Clinical observation on treatment of female delayed acne vulgaris with qingre cuochuang tablet. *Zhongguo Zhong Xi Yi Jie He Za Zhi.* 4(2):115-7.

Maciocia, G. (2004). *Diagnosis in Chinese Medicine: A Comprehensive Guide*. Edinburgh: Churchill Livingstone

McCall, C., Lawley, T. (2007): Eczema, Psoriasis, Cutaneous Infections, Acne, and Other Common Skin Disorders. In Kasper, D., Braunwald, E., Fauci, A., Hauser, S., Longo, D., Jameson, J.L. and Isselbacher, K. (Eds.) *Harrison's Principles of Internal Medicine (17th edition)*, Chapter 53. McGraw-Hill. Retrieved August 19, 2007 from: <http://www.accessmedicine.com.ezproxy.uws.edu.au/content.aspx?alD=2864389&searchStr=acne+vulgaris#2864389>

McCarty, M. (1984). High-chromium yeast for acne? *Med Hypotheses* 14, pp. 307-310.

- McKoy, K. (2005). Acne and Related Disorders. In Robert S. Porter, R., Kaplan, J. (Editors), (2006-2007) *The Merck Manual Online (18th Edition)*. Retrieved August 25, 2007 from:
- Meynadier, J. (2000). Efficacy and safety study of two zinc gluconate regimens in the treatment of inflammatory acne. *Eur J Dermatol* 10, pp. 269–273
- Michaelsson, G. (1990). Decreased concentration of selenium in whole blood and plasma in acne vulgaris. *Acta Derm Venereol* 70, p. 92.
- Michaelsson, G., A. Vahlquist, A., and L. Juhlin, L. (1977). Serum zinc and retinol-binding protein in acne, *Br J Dermatol* 96, pp. 283–286.
- Michaelsson, G., and Edqvist, L. (1984). Erythrocyte glutathione peroxidase activity in acne vulgaris and the effect of selenium and vitamin E treatment, *Acta Derm Venereol* 64 (1984), pp. 9–14.
- Nam, C., Kim, S., Sim, Y., Chang, I. (2003). Anti-acne effects of Oriental herb extracts: a novel screening method to select anti-acne agents. *Skin Pharmacol Appl Skin Physiol.* 16(2):84-90.
- Nelson, A., Gilliland, K., Cong, Z., Thiboutot, D. (2006). 13-cis Retinoic acid induces apoptosis and cell cycle arrest in human SEB-1 sebocytes. *J Invest Dermatol.* 2006 Oct;126(10):2154-6.
- Niren, N., and Torok, H. (2006). The Nicamide Improvement in Clinical Outcomes Study (NICOS): results of an 8-week trial. *Cutis* 77 (Suppl. 1), pp. 17–28.
- Ochsendorf, F. (2006). Systemic antibiotic therapy of acne vulgaris. *J Dtsch Dermatol Ges.* 4(10):828-41.
- Oprica, C., Emtestam, L., Hagströmer, L., Nord, C. (2007). Clinical and microbiological comparisons of isotretinoin vs. tetracycline in acne vulgaris. *Acta Derm Venereol.* 87(3):246-54
- Ozolins, M., Eady, E., Avery, A., Cunliffe, W., Po, A., O'Neill, C., Simpson, N., Walters, C., Carnegie, E., Lewis, J., Dada, J., Haynes, M., Williams, K., Williams, H. (2004). Comparison of five antimicrobial regimens for treatment of mild to moderate inflammatory facial acne vulgaris in the community: randomised controlled trial. *Lancet.* 364(9452):2188-95.
- Pan, H. (2005). Thirty-two cases of acne treated with blood-letting puncture, cupping and Chinese-drug facemask. *J Tradit Chin Med.* 25(4):270-2.
- Papakonstantinou, E., Aletras, A., Glass, E., Tsogas, P., Dionyssopoulos, A., Adjaye, J., Fimmel, S., Gouvousis, P., Herwig, R., Lehrach, H., Zouboulis, C., Karakiulakis, G. (2005). Matrix metalloproteinases of epithelial origin in facial sebum of patients with acne and their regulation by isotretinoin. *J Invest Dermatol.* 125(4):673-84
- Rafiei, R., Yaghoobi, R. (2006). Azithromycin versus tetracycline in the treatment of acne vulgaris. *J Dermatolog Treat.* 17(4):217-21
- Rosted, P. (1995). Treatment of skin diseases with acupuncture - a review. *Journal of Dermatological Treatment* . 6, 241-242
- Shen, D., Wu, X., Wang, N. (1995). *Manual of Dermatology in Chinese Medicine*. Seattle: Eastland Press.
- Smith, N., Mann, N., Braue, A., Makelainen, H., Varigos, G. (2007). The effect of a high-protein, low glycemic-load diet versus a conventional, high

- glycemic-load diet on biochemical parameters associated with acne vulgaris: a randomized, investigator-masked, controlled trial. *J Am Acad Dermatol*. 57(2):247-56.
- Song, S. (2007). Observation on therapeutic effect of ear point blood-letting combined with cupping on Back-shu points for treatment of acne vulgaris. *Zhongguo Zhen Jiu*. 27(8):626-8
- Strauss, J., Krowchuk, D., Leyden, J., Lucky, A., Shalita, A., Siegfried, E., Thiboutot, D., Van Voorhees, A., Beutner, K., Sieck, C., and Bhushan, R. (2007). Guidelines of care for acne vulgaris management. *Journal of the American Academy of Dermatology*, 56:4, pp. 651-663
- Xu, Y., (2004). *Dermatology in Traditional Chinese Medicine*. United Kingdom: Donica Publishing
- Yang, J. (2001). Syndrome differentiation and typing of traditional Chinese medicine and the clinical efficacy in 148 cases of acne vulgaris. *Hunan Yi Ke Da Xue Xue Bao*. 26(3):219-20
- Yu, J. (1998). *Handbook of Obstetrics and Gynecology in Chinese Medicine. An Integrated Approach*. Seattle: Eastland Press.
- Zhang, J. *Acne (Cuo Chuang)*. Online lecture notes, UWS e-Learning, Web CT: *Acne*. Retrieved August 19, 2007 from <http://elearning.uws.edu.au/webct/urw/lc5116001.tp0/cobaltMainFrame.dowebct>
- Zhao, C., Li, L. (Chief Eds.) (1991). *The English-Chinese Encyclopedia of Traditional Chinese Medicine, Vol 16, Dermatology*. Beijing: Higher Education Press.
- Zouboulis, C. (2003). Treatment of acne with antiandrogens--an evidence-based review. *J Dtsch Dermatol Ges*. 1(7):535-46