

Case Report

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Acupuncture was used to treat equine insect bite hypersensitivity in a Hucul Pony

Name: Stefanie Hoyme née Schramm

Address: Sigmundsgrün 37
95111 Rehau
Germany

Phone: +49 175 2433954

E-Mail: info@pferdepraxis-schramm.de

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ABSTRACT

An 11-year old Hucul Pony gelding was treated with acupuncture to improve his equine insect bite hypersensitivity, also called Sweet Itch. Four acupuncture treatments were applied almost one month apart from each other. The condition of the skin improved rapidly and until now (June 25) the coat is shiny and the horse shows almost no pruritus, even there is already a high insect occurrence this spring and early summer.

HISTORY

Nezmar, an 11-year old brown Hucul Pony gelding was presented for acupuncture treatment due to his insect bite hypersensitivity, also called Sweet Itch. “This is by far the most common skin hypersensitivity (allergy) of horses. It is widely regarded as a hypersensitivity to the bites of *Culicoides* spp. midges (Wilson et al 2001).”¹ But there is also hypersensitivity against other insects possible as for example horseflies or other mosquitoes. A genetic basis is suggested.¹

Nezmar was diagnosed Sweet Itch four years ago. Normally from March on he shows severe pruritus with rubbing of the mane-base, tail-base and ventral abdomen. Self-inflicted trauma with crusting and alopecia occurs. Nezmar does not tolerate any anti-fly blankets. Some management changes already have been done, like keeping him inside between dawn and mid-morning and mid-afternoon and dusk, but are not done on a regular basis, so its effect was very poor. Oral Prednisolone has been suggested, but the owner refused corticoids.

Nezmar also had two colics in the last 6 months, which could be cured at the stable by the primary care veterinarian. This winter he did not recover adequately from the skin lesions as he did the years before.

CLINICAL SIGNS/DIAGNOSTICS/DIAGNOSIS – CONVENTIONAL (WESTERN)

Nezmar was first presented in January before the *Culicoides* fly season started, so he was without acute signs of Sweet Itch. But there were chronic signs, as thickened skin with rugae along both sides of the neck and the tail base. The hair quality along the mane, the ventral abdomen and the tail was poor; it showed thin, dry hair with big white flaky dandruff. The skin felt dry to the touch. The owner wishes a better life quality for Nezmar during the fly-season with less pruritus and less skin lesions.

No obvious parasites like lice nor mites (under microscope) could be identified.

Bloodwork was done and revealed: G-GT 32.7 U/l (laboratory reference < 25)
Glucose 5, 1 mmol/l (laboratory reference 3.05-4.99)

The liver enzyme G-GT (gamma-glutamyltransferase) and Glucose were slightly elevated. The results of the red blood cells that mean erythrocytes, hematocrit and hemoglobin were at the lower limit.

The anamnesis and the clinical signs in spring and summer are very characteristic and so the diagnosis insect bite hypersensitivity could be made.

The noted changes in the blood analysis are only mild and do not give evidence of a disease in western terms.

CLINICAL SIGNS/DIAGNOSIS – TCM (EASTERN)

Nezmar is a friendly and calm horse. At the beginning he is interested but after a few minutes he is almost too calm, nearly absent.

His posture is well balanced and he is in a good feeding condition. Nezmar is used as a carriage horse. The owner explained that he is well trained, but in my opinion he should have more and better defined muscles then. His muscles seemed to be a bit flabby.

His skin is thickened with rugae at the mane and tail-base, the skin is also dry and shows a lot of big white flakes of dandruff, especially in the mane. The hair is dry and thin at the neck, the ventral abdomen and the tail-base. The overall impression of the coat is dry and dull and especially in the neck the color is slightly reddish. The hooves do not look too bad, but also seem a bit dry and show some small cracks here and there. There was no pruritus present.

Nezmar was sensitive at the Back Shu points BL 17 (Influential point of Blood), BL 21 (Back Shu point for Stomach), at LU 1 the Mu point of Lung, at LIV 13 the Mu point of Spleen and also sensitive at LIV 14 the Mu point of the Liver itself. BL 20 (Back Shu point of Spleen) feels soft and hollow.

The most evident skin and hair changes were found on the Governing Vessel and the Conception Vessel. Both are strongly tied to the Kidney and circulate Wei Qi².

The tongue was pale. Pulse diagnosis was not performed.

The owner stated that Nezmar suffered from two colics in the last 6 months. The owner knows Nezmar since he is one year old and he never had colic before. According to the owner the two colics were mild to moderate and from a spastic type.

At the moment feces and urination are normal.

Nezmar was presented because of his skin problem, which is an allergic reaction and belongs to the immune mediate diseases. Furthermore probably also the colics play a role in this case.

The chronic lesions seen in the gelding reveal that there is a **Blood Deficiency**. Blood is Yin in nature and one of the Vital Substances³. Typical signs which are also shown here are: Dull hair coat, dry skin with dandruff (large flakes), the skin is partially thickened and the hooves are cracked.

The chronic lesions have their origin in an insect bite hypersensitivity which often shows a Wind-Heat pattern in acute cases. Wind is an External Pathogen Factor (EPF). Often Heat is created due to the struggle between EPF and Wei Qi. Heat and Wind are both

Yang in nature and attack the Blood and the Yin. It is conceivable that the acute phases in summer injured the Blood, so that we now still can see Blood deficiency.

But we also have to keep in mind that there are symptoms that match to a **Spleen Deficiency**. These symptoms are: weak, flabby muscles and gastrointestinal dysfunction (two colics in the past). The Spleen is the root of Post-Natal Qi and so it is necessary for the building of Blood. If the Spleen is weak there is not enough Blood.

The Liver also seems to be in imbalance. LIV 14 is sensitive and G-GT is slightly elevated. The Liver is responsible for storing Blood and regulating the Blood volume.

Due to the underlying immune mediated component of this case it can be assumed that there is a deficiency in Wei Qi. If Blood is deficient Wei Qi is also diminished and the skin will become dry.

The Lung disperses the Wei Qi throughout the body and therefore nourishes and protects the skin. Wei Qi originates from the Kidney Jing, what could give a hint to a genetic predisposition. The Lung is also involved in the transforming of Gu Qi into Blood. If the Lung's function is impaired, there may be Blood Deficiency. Dry skin may also be a symptom of Lung Qi Deficiency³ and Nezmar was sensitive at LU 1.

He also was sensitive at CV12 which is the Alarm (Mu) point of the Stomach. The Stomach and Spleen work as a team. So also the Stomach is involved in building Blood. But they are not only important for Blood but also for the Body Fluids. The Body Fluids, especially the clear thin parts, itself are crucial for the distribution with Wei Qi to the surface of the body, primarily to the space between skin and muscle⁴. So also here is a link to the present skin problem.

Nezmar is noticeably calm, almost absent. This could be a first sign of Shen disturbance. The Shen is anchored in the Heart with the help of Blood, and if there is not enough Blood the Shen cannot find rest at night and behavioral changes occur.

When Spleen (and Stomach) does not build enough Blood, respectively the precursors of Blood, the Liver does not have enough Blood to store and to move throughout the body. Also the Lung gets in imbalance if there is not enough GU Qi to transform into Blood.

The mostly affected areas are connected to two of the Eight Extraordinary Vessels, which are strongly tied to the Kidney, which have a connection to genetics. And the Governing Vessel (GV) and the Conception Vessel (CV) also circulate Wei Qi.

The TCM diagnosis is **Blood Deficiency** with an underlying **Spleen Qi Deficiency**.

CONVENTIONAL (WESTERN) TREATMENT

The most effective conventional treatment is avoiding exposure to insects. This can be achieved through clothing with special Sweet Itch Rugs for horses, Fly repellents and stabling in a protected environment between dawn and mid-morning and mid-afternoon and dusk⁵.

Medical treatment often means corticoids, like Prednisolone.

In this case the owner refused the use of corticoids and reported that Nezmar does not accept a special cover. The Owner used different free for sale Fly repellents and tried to keep Nezmar inside as often as possible in periods when a lot of insects are present.

TCM (EASTERN) TREATMENT

The TCM Diagnosis is Blood Deficiency with an underlying Spleen Qi Deficiency. Nezmar is an Earth type. He is friendly, easygoing and always willing to please. He has a good body condition in general. Due to his Earth constitution he is prone to Spleen Qi Deficiency.

The main treatment principle according to the TCM Diagnosis is to nourish Blood, moisten the Dryness and tonify Spleen.

The acupuncture points used are listed in Table 1.

All of them were stimulated by Dry Needling with 0.30 x 13mm silicon coated needles with copper handle. They were placed at a depth of max. 10mm where possible and were left in for 5-7 minutes. No extra needle stimulation was done.

Table 1: Acupuncture points used for treatment

Acupuncture Point	Anatomic description	Function related to the principles of treatment
BL 17 Bladder Meridian, GE-SHU Diaphragm Association	In the depression 1.5 cun lateral to the caudal border of the spinous process of the 7 th thoracic vertebra.	Influential point for the Blood, tonifies Blood
SP 10 Spleen Meridian, XUE HAI, Sea of Blood	In the depression 2 cun proximal to the cranio-medial border of the patella, on the bulge of the cranial portion of the sartorius m. when the stifle is flexed.	Invigorates and nourishes Blood
LIV 3 Liver Meridian, TAI-CHONG Supreme Surge	In the depression just plantar to the 2 nd metatarsal (medial splint) bone and distal to its base, at the junction of the proximal and middle thirds of the 3 rd metatarsal (cannon) bone.	Source point, Shu Stream and Earth point, promotes flow of Liver Qi
LI 11 Large Intestine Meridian, QU-CHI Pool at the Bend	In the depression in the transverse cubital crease, just cranial to the lateral epicondyle of the humerus, between the extensor carpi radialis and common digital extensor mm. This point is easily palpated when the elbow is flexed.	Tonification/Mother, Earth and He-Sea point, regulates Qi and Blood, immune stimulation, dry dermatitis

CV 12 Conception Vessel, ZHONG- WAN Central Stomach Duct	In the depression on the ventral midline halfway between the xiphoid process and the umbilicus.	Benefits Spleen and Stomach function
GV 14 Governing Vessel, DA-ZHUI Big Vertebra	In the depression on the dorsal midline between the spinous processes of the 7 th cervical and 1 st thoracic vertebrae.	Meeting point for all Yang channels, Sea of Qi point, regulates Nutritive and Defensive Qi
LU 7 Lung Meridian, LIE-QUE, Broken Sequence	In the depression on the medial surface of the radius, 1.5 cun proximal to the most medial prominence of the styloid process. This point is 0.5 cun distal to the level of PC 6.	Master point for Head and Neck, Connecting (Luo) point, Opening point for Ren Mai; stimulates Wei Qi and the descending and dispersing function of Lung Qi
GB 34 Gallbladder Meridian, YANG- LING-QUAN Yang Tomb Spring	In the depression craniodistal to the lateral condyle of the tibia and the head of the fibula (non-palpable), between the long and lateral digital extensor mm. (superficial) and in the interosseous space between the tibia and fibula (deep). Needled cranio-lateral to caudomedial.	Earth, He-Sea point, benefits the Liver function of patency of flow of Qi; helps in gastrointestinal problems and Liver and hepatobiliary problems ⁶
ST 36 Stomach Meridian, HOU-SAN- LI Rear 3 Miles	In the depression just lateral to the tibial crest, in the muscular groove between the tibialis cranialis and the long digital extensor mm., 2 cun distal to the proximal edge of the tibial crest. The direction of the needle insertion is cranio-lateral to caudomedial. Alternate location: see in Appendix ⁷ .	Master point for the Abdomen and Gastrointestinal tract. Earth/Element and He-Sea point. Benefits the Stomach function of descending and benefits the Spleen function of transformation and transportation. Tonifies Qi and Blood.
LIV 8 Liver Meridian, QU-QUAN Crooked Spring	In the depression caudal to the medial condyle of the femur, cranial to the insertion of the semitendinosus and semimembranosus mm. and caudal to the medial saphenous vein.	He-Sea, Water and Tonification/Mother point; nourishes Blood

Treatment results

First treatment January 5, 2022

For the first treatment BL 17, SP 10, LI 11 and LIV 3 were used regarding to the results of the TCM examination.

BL 17, GE-SHU belongs to the Water Element. It is the Influential point for Blood and tonifies Blood. It is useful for immune-stimulation and non-responsive skin problems⁸.

SP 10, XUE- HAI (Sea of Blood) belongs to the Earth Element and was used to nourish and invigorate Blood.

LI 11, QU-CHI (Pool in the Bend) is the Source point of the Large Intestine Channel, it is also the Earth and Mother point. LI 11 belongs to the Metal Element, regulates Qi and Blood and stimulates the immune system.

LIV 3, TAI-CHONG (Supreme Surge) belongs to the Wood Element and is Yuan-Source point and Shu-Stream point. It is a very powerful point that nourishes Blood and promotes the smooth flow of Liver Qi. Smooth Qi flow is essential for the movement of Blood.

Nezmar was very relaxed during the whole treatment and it was no problem to put the needles in the right place.

The advice to the owner was to feed only high quality hay and minerals as needed.

The second treatment took place on February 2, 2022

At the second treatment the owner reported that there is less dandruff and that the coat seems to be a little bit shinier. Nezmar is friendly and relaxed. There is no pruritus obvious. The big white flakes are already detached from the skin but are still sticking to the hair of mane and tail. The skin at the sides of the neck is still thickened but less rough and the coat got a slight shine. Also the skin at the ventral abdomen is not as dry as it was before. Nezmar started coat change.

The Back-Shu points BL 17 and BL 21 were still sensitive and BL 20 was still hollow. Nezmar showed no more reaction on LU 1, LIV 13 and LIV 14. No other Back-Shu points or Mu points were active.

The points chosen for this treatment were GV 14, CV 12, BL 17, SP 10.

CV 12, ZHONG-WAN is the Alarm (Mu) point for the stomach and Influential point for all Yang organs. It was chosen because it benefits the Stomach function of descending and the Spleen functions of transportation and transformation. Furthermore a lot of the pathological findings in this case are in the area of the Conception Vessel.

GV 14, DA-ZHUI is the Meeting point for all Yang channels and a Sea of Qi point. It regulates the Nutritive and Defensive Qi in this case. And as with Conception Vessel a lot of pathological findings are in the area of the Governing vessel.

SP 10, XUE- HAI (Sea of Blood) belongs to the Earth Element and was used to nourish and invigorate Blood.

BL 17, GE-SHU belongs to the Water Element. It is the Influential point for Blood and tonifies Blood. It is useful for immune-stimulation and non-responsive skin problems⁸

Again Nezmar did not mind putting the needles.

Third treatment on March 3, 2022

The owner reported that Nezmar is doing very well. He seems to get more active in a positive way and is more interested in his surroundings.

The skin continued to improve as it is no longer dry and rough. Also new shiny hair is growing in the alopecic areas as coat change goes on.

This time BL 13, LU 1 and BL 18 (Back Shu point of Liver) were sensitive to touch and BL 20 was still hollow.

Obviously this time Lung needed a bit more support. Maybe it was because of the windy and temperature changing weather that the Lung was more affected. As the Lung is responsible for the dispersion of Wei Qi to the surface of the whole body it is especially useful to stimulate the Lung and by doing this supporting the immune system.

LU 7, LI 11, LIV 3 and GB 34 were used.

LU 7; LIE-QUE, Broken Sequence is the Master point for the head and neck, it is Connecting (Luo) point, Opening point for the Ren Mai and Couple point for the Yin Qiao Mai. In its capacity as Master point, LU 7 is useful for the skin of the neck and as Opening point for the Ren Mai it enhances the Qi flow through the Conception Vessel where also pathological findings are present. But LU 7 was primarily chosen because it stimulates Wei Qi and the dispersing function of Lung Qi.

The reasons for using LI 11 and LIV 3 are stated above.

GB 34, YANG-LING-QUAN, Yang Tomb Spring is the Earth and He-Sea point for the GB-Channel. It was chosen to benefit the Liver function of patency of the flow of Qi. It also supports the gastrointestinal function and helps in Liver problems⁶. And GB 34 balances Yin / Yang in the selected points for this treatment.

Fourth treatment April 16, 2022

The owner was pleased with the development of Nezmar. She stated that Nezmar is more awake and more active than before the acupuncture treatment and that the skin improved markedly.

During the clinical examination it was obvious that the rugae at both sides of the neck almost had disappeared. The skin was smooth all over the body and the hair coat was shiny and even. The dandruff was completely gone. There was apparently no pruritus even though accordingly to the owner that he had normally already noticeably pruritus in this time of the year and there were clearly insects around him.

Nezmar was sensitive again at BL 17 and BL 20 is still a little bit hollow. No other Shu or Mu points were active.

Points chosen for the fourth treatment were BL 17 both sides, SP 10, ST 36 and LIV 8.

The reason for needling of BL 17 and SP 10 is stated above. ST 36, HOU-SAN-LI was added this time to enhance the stimulation of gastrointestinal function. ST 36 is Master point for the Abdomen and Gastrointestinal tract, it is Earth/Element and He-Sea point. It benefits the Stomach function of descending and the Spleen function of transformation and transportation. ST 36 tonifies Qi and Blood and stimulates the immune system.

Liver 8, QU-QUAN was used, because it is the He-Sea, Water and Tonification/Mother point of the Liver channel. It nourishes Blood.

On June 19, 2022 Nezmar was presented by chance as when an appointment was done in the stable for another horse. He is doing very well. The owner reported that the horse has only a slight pruritus which she controls with local application of evening primrose oil. The coat is shiny, mane and tail are full and have obviously recovered. The skin is without dandruff.

The owner refuses another acupuncture treatment because she is satisfied with the present situation.

DISCUSSION

Nezmar was presented with a four year history of insect bite hypersensitivity. Insect bite hypersensitivity, also called Sweet itch, Summer itch or Queensland itch is the most common cause of severe itching in horses. It is characterized by seasonality and most of the affected horses recover completely during the winter period. Any horse can be affected but a genetic predisposition is suggested.

Symptoms are strong pruritus, mainly on the tail and mane. The ventral midline can also be affected, called “ventral midline dermatitis”. The suspected diagnosis is usually made by the medical history. Confirmation of this diagnosis is not easy because histopathological examination is not pathognomonic. The best way is to get the patient out of contact with insects. When the symptoms disappear in 2-4 weeks and reappear as soon as the horse is again in contact with insects the diagnosis is safe.⁸ This was indirectly done because it was obvious that Nezmar always fully recovered in winter; except this year.

The owner stated that Nezmar does not accept an adequate blanket. She tried to keep him inside between dawn and mid-morning and mid-afternoon and dusk, but not on a daily basis. The horse lived in an open stable with one other horse near a forest and a small stream, which was the optimal habitat for insects.

Normally Nezmar recovered in winter but this year (winter 2021/2022) he did not fully recover. He did not have pruritus but the skin lesions from summer were still present and the dandruff even got worse. Furthermore the horse had two colics in the last 6 months and his muscles seemed flabby, not at all as well defined as they should have been accordingly to his training status. The blood analysis revealed a slightly elevated G-GT and erythrocytes, hemoglobin and hematocrit were at the lower limit.

The owner wants improvement of life quality for Nezmar, recovery from the “old” skin changes and reduction of his severe pruritus during insect season.

The TCM Diagnosis for insect bite hypersensitivity usually is Wind-Heat of the skin. Wind as Exogen Pathogenic Factor enters the body and in struggle with Wei Qi Heat is created. In the present case the situation is a bit different because only the long term consequences of Sweet Itch are seen and not the acute phase.

On presentation Nezmar's skin was dry, rough with thickening and rugae at the sides of the neck and at the tail base. Also at the ventral abdomen at the midline there was dry skin with thin hair and all over the affected areas where small alopecic parts. The mane and tail were thin and the whole mane showed white flakes of dandruff. He reacted sensitive at BL 17 the Influential Point for Blood, BL 21 the Back Shu point for Stomach,

at LU 1 the Mu point of Lung, at LIV 13 the Mu point of Spleen and also sensitive at LIV 14 the Mu point of the Liver itself. BL 20 was obviously hollow.

The TCM diagnosis was Blood Deficiency with underlying Spleen Qi Deficiency. Also Lung, Liver and Stomach were involved.

Spleen and Stomach belong to the Earth Element. They work as a team. Spleen governs transportation and transformation (Yun-Hua) of nutrients into Gu Qi. So it is the factory that generates Qi and Blood, which are essential for Zang-Fu organ function. It is also called “the mother of the five Zang organs”⁹ and the “root of postnatal life”⁹. The Spleen controls the Blood and dominates muscles and limbs. It also controls the lifting Qi and opens into the mouth and manifests in the lips¹⁰. If Spleen gets deficient all other Zang-Fu organs can be involved. If there is not enough Gu-Qi there will not enough Qi be sent to the Lung and thereby not enough blood is built. The skin is controlled by the Lung. If there is not enough blood to be sent to the skin it will become dry. When Blood gets deficient the Liver gets imbalanced, because the Liver is responsible for the storage of Blood and the smooth flow of Qi and Blood throughout the body. It also regulates the Blood volume accordingly to activity or rest.

For the first treatment BL 17, LI 11, SP 10 and LIV 3 were used. The Influential point of Blood, BL 17, tonifies Blood. LI 11 regulates Qi and Blood, stimulates the immune system and is useful in dry dermatitis. SP 10 invigorates and nourishes Blood, especially in combination with BL 17. The Source point LIV 3 promotes the smooth flow of Liver Qi.

At the second treatment BL 17, SP 10, CV 12 and GV 14 were chosen. CV 12 benefits the Spleen and Stomach function and GV 14 regulates the Nutritive and Defensive Qi. CV 12 and GV 14 are the meridians where there are skin changes over a long distance.

BL 17 and SP 10 nourish Blood.

A change in point selection was also made at the third treatment. Besides LIV 3 and LI 11 which were chosen for the same reason as in the first treatment, this time additionally LU 7 and GB 34 were needled. Lu 7 is the Master point for Head and Neck, Connecting (Luo) point and Opening point for Ren Mai. It also stimulates Wei Qi and aids the Lung’s dispersing function which is responsible above other things to bring Wei Qi to the skin. The neck is one of the most affected regions, as is the Ren Mai at the ventral abdomen. GB 34 benefits the Liver function of patency of flow of Qi, helps in gastrointestinal problems and Liver problems. The Liver plays an important role in Blood storage and flow of Blood.

For the fourth treatment again BL 17 and SP 10 were used, for the same reason than before. To this combination ST 36 and LIV 8 were added. ST 36 is the Master point for the abdomen and gastrointestinal tract. It benefits the Stomach and Spleen function and therefore tonifies Qi and Blood. LIV 8 is the Tonification point and nourishes Blood.

Nezmar responded very well to the acupuncture treatment. After four treatments with dry needling, his skin and hair were shiny, moist, without dandruff and almost full. In June he showed only light pruritus without damaging hair and skin, even though he was stabled and managed as always and insects were all around him.

It probably would be beneficial to treat him once a month over the whole summer to avoid relapse, but the owner was satisfied with the present situation and refused any further acupuncture treatment at the moment.

From a western perspective one can say that the activation and balancing of the immune system helps Nezmar to cope with the insect bites. Acupuncture is said to have two general actions: “Promotion of Self-Healing Capacity and Restoration of Homeostasis.”¹¹ In patients like in this case with an allergy, that means an overactive immune system, acupuncture has inhibitory effects. It can for example lower the levels of immunoglobulins and reduce signs of inflammation¹². Furthermore acupuncture has a long lasting effect.

Nevertheless the avoidance of insect bites would still be the best treatment, but it is often hardly manageable.

Without acupuncture Nezmar would have started in the next insect season in a poor condition, especially skin condition. Probably the skin changes would have become worse than the other years and he would have suffered violent pruritus and even self-mutilation due to itching.

Acupuncture in this case balanced the immune system and treated the underlying deficiency. This helped the organism to improve the skin and hair condition and to cope better with insect bites, so that itching is under control at the moment.

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