

## Can Hospital Osteomyelitis Be Treated Without the Use of Antibiotics?

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### ABSTRACT

**Statement of the Problem:** As we know osteomyelitis is a bone infection which can reach a bone by traveling through the bloodstream or spreading from nearby tissue. It can also begin in the bone itself if an injury exposes it to germs. Once considered an incurable condition, osteomyelitis can sometimes be successfully treated today by surgery to remove parts of the bone that have died and then with strong antibiotics [3].

**Purpose of the Study:** To show why the treatment of osteomyelitis is so difficult and in most cases incurable. However, to improve chances of cure, we need to look at the patient in his entirety, and associate other theories that can be found within other traditions, and not only focus on the infected area.

**Methods:** Example of this it is the methodology used in two case reports presented, of which the first shows an infection resulting from knee fracture surgery done after a motorcycle accident that had been treated by the use of a large spectrum of antibiotics without any improvement. The second case was another hospital osteomyelitis after a post-prosthesis infection in the knee which had been treated profusely with antibiotics with no improvement.

**Findings:** Both cases were treated successfully taking out all the anti-inflammatory and antibiotic drugs, and then treated by changing diet, balancing the Yin, Yang, Qi, Blood energy and removing Heat retention following the theories of Oriental Medicine. In these two cases, the condition that was maintaining the symptoms of infection was exactly the aggressive use of antibiotics.

**Conclusion:** Osteomyelitis treatment showed in this study, demonstrated to us that we need to see the patient and not only the disease, to treat adequately the symptoms presented by the patient, and both cases were successfully treated without the use of antibiotics.

### Keywords

Osteomyelitis, Hospital infection, Antibiotic, Traditional Chinese Medicine, Acupuncture, Energy, Diet, Chinese herbal, Hippocrates.

### Introduction

Chronic osteomyelitis is a pernicious infectious disease that involves bacterial infections in the bones [1]. The infection that causes osteomyelitis often is in another part of the body and spreads to the bone by the blood. Affected bone may have been predisposed to infection because of recent trauma. In children, the long bones are usually affected. In adults, the vertebrae and the pelvis are most commonly affected. Bone infection can be caused

by bacteria or by fungi. Osteomyelitis is divided into several types depending on where an infection begins and where it occurs. The types of osteomyelitis include: infections that travel through the bloodstream, infections that occur after injury or surgery, infections in people with poor circulation, and infection in the spine bones [2].

Staphylococcus aureus is the most isolated agent. Antimicrobials used without pre-established criteria do not produce good results [3]. Complications include recurrent abscesses, necrotic tissues and bones, and tracts through soft tissues that precipitate infection. In cases of chronic osteomyelitis, the patient's quality of life

can suffer dramatically. In extreme cases, amputation is used to prevent sepsis. Standard biomedical interventions include large doses of antibiotics and surgery (Tlougan et al.). Long-term use of antibiotics may lead to drug resistance. When the blood supply to affected areas is restricted, systemic use of antibiotics may not be adequate to control the disease [1]. According to the Center for Disease Control in the United States, nosocomial infection is considered to be, what was not present or incubated on hospital admittance [4].

Clinical research demonstrates Traditional Chinese Medicine (TCM) significantly benefits patients with chronic osteomyelitis [1]. Acupuncture reduces systemic inflammation due to infections and prevents sepsis [6]. Researchers find acupuncture and traditional Chinese herbal medicine effective treatment modalities for patients with chronic infectious diseases [1].

### Purpose

The purpose of this presentation is to demonstrate whether hospital osteomyelitis can be treated without the use of antibiotics.

### Case 1

D.A.P, 23 year-old woman, suffered a motorcycle accident on December 17, 2004 producing a knee injury. She was admitted to a local hospital in the city where she lives in Brazil, and stayed there for three months. There, she went through an open bone reduction, eleven days after her accident. The antibiotic used prophylactically was cefazolin sodium applied intravenously.

About one month later, acute osteomyelitis was diagnosed, and they started to treat her with cephalothin and garmycin intravenously for four weeks.

This medication did not have the desired effect. And in the following month the medication was changed to vancomycin also intravenously for four more weeks. The use of vancomycin was also not successful and one more change was made. She started to take Imipenem intravenously in the following month. The knee didn't improve and the drainage of yellow secretion continued. Besides this medicine, she took other anti-inflammatory medicine as well as pain-killers and she gained a lot of weight during her three-month stay in the hospital. She was then released from the hospital and prescribed Ciprofloxacin to take at home and anti-inflammatory medication. Three months later her doctor, an orthopaedic surgeon, decided to admit her into hospital for a surgical debridement which unfortunately resulted in no improvement in her condition. Almost a year later her knee still maintained a constant secretion and her doctor asked for a culture exam of this secretion which showed the presence of *Pseudomonas aeruginosa* sensitive only to Polimixin B. Two years after the accident and with no improvement, she was referred to an Infectious Disease Specialist and that's how she came to my office.

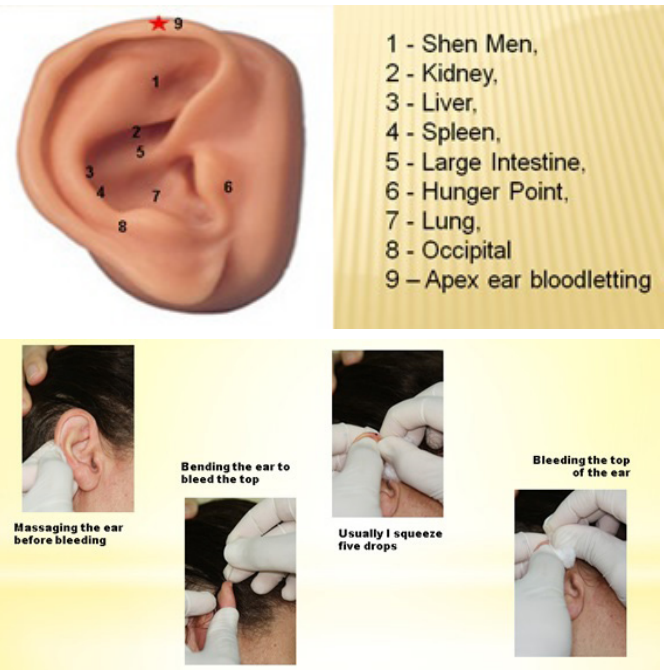
At the first appointment, it was learned that she had undergone a two-year treatment for osteomyelitis. It was noticed that she was over-weight and she revealed her dietary habits to be rich

in dairy products. Her knee showed swelling and edema and the oozing of a yellow secretion which showed retention of humidity and mucosity. The yellow colour revealed retention of the Heat, according to Traditional Chinese Medicine (TCM). In this case, the Heat was in the Gall Bladder energy meridian, according to TCM, due to – as appeared to be the case – the excessive use of antibiotics, anti-inflammatory medication, aggravated by the wrong types of food and drink (according to their energy) in her diet.

She had three sessions of auricular acupuncture, and she was given the dietary counselling to avoid dairy products, raw food, cold drinks, and sweets to reduce the production of humidity and mucosity caused by the deficiency of energy in the Spleen and Pancreas, all according to TCM. Also she was orientated to avoid fried food, eggs, honey, coconut, pepper, chocolate and alcoholic beverages, because these kinds of food and drink, could generate Heat in the Gall Bladder meridian, which was in this case, causing the osteomyelitis symptoms. Besides this, Chinese herbal therapy was associated at the same time, which she followed strictly. This herbal medicine is called Long Dan Xie Gan Tang, and it's used to clear the Heat in the Gall Bladder meridian.

Because a different approach was used based on Traditional Chinese Medicine, it was recommended her to discontinued the use of all medication as of antibiotics and anti-inflammatory medicine, because the continuous use of this medication was maintaining the heat in the Gall Bladder meridian and causing the chronic symptoms of osteomyelitis.

These are the auricular points used on her (Figure 1). Through my experience, treating this case, the most important procedure was the Apex Ear Bloodletting at the top of the ear, which is done by taking out 5 drops of blood, being this is one of the best procedures to clear the Heat (Figure 2).



**Figure 1:** Auricular acupuncture points used to treat the patients with Hospital osteomyelitis.

**Figure 2:** Apex ear bloodletting.

She lost 30 kilos in two months of treatment, the secretion disappeared and she didn't suffer anymore knee pain (Photo 1). Nowadays she continues to work normally (Photo 2), and she believes that this treatment saved her life, and also avoided the possibility of an amputation.



**Photo 1:** Patient's left knee after her recovery.

**Photo 2:** Patient working normally after recovery from the Hospital Knee Osteomyelitis.

## Case 2

T.S.L.S., 78 year-old, female, had osteoarthritis in both knees.

Even though she had a good private health insurance plan that covered the whole country of Brazil, she decided to be treated by a doctor who attended only privately. He recommended a prosthesis, which was placed in her left knee in 1994, when she was fifty-five years old, without any problems. The procedure was done at Sao Francisco Hospital, in Ribeirao Preto, a city one hundred kilometres far from the city she lived in.

On February 2nd., 2007, thirteen years later, when she was sixty-eight years old, a total prosthesis was placed in her right knee, by the same physician who operated her left knee, at the same hospital. Soon after the surgery, the patient remembered that the knee became very swollen and red, and had a purulent secretion. Anti-inflammatories and clexane were prescribed with success.

Three months later, when she was already living in my city, she decided to go to an orthopaedic doctor there, specialized in knees, and not going back to her first doctor. She didn't want to spend any more money and this new doctor attended patients using her health insurance plan. The new physician told her to take five-hundred milligrams ciprofloxacin, orally every twelve hours. It was not clear enough what her symptoms were at that time, but probably the symptoms indicated an infectious condition in her right knee. He also recommended her to go to an infectious disease doctor, and that was how her case was known. The antibiotics were changed to cephalexin and rifampicin. Then, the energy disturbances according to TCM were diagnosed, and Chinese herbal therapy (Lon Dan Xie Gan Tang) was prescribed. As well as, gave her dietary counselling, which was the same as in the first case: she had to avoid food that could cause Spleen deficiency, which leads

to both humidity and Heat retention in the Gall Bladder meridian. Auricular acupuncture was administered and apex ear bloodletting, to balance her *Yin Yang*, *Qi* and Blood energy. The same mentioned before.

Nine months after her right knee operation, she went to a pulmonologist who admitted her to hospital, where she was medicated with oral prednisone and four hundred milligrams moxifloxacin per day for three days, continuing this medication at home.

Two years after her right knee operation, she was complaining that her right knee was hurting, and was swollen. After lab exams, it was noticed that her C-reaction protein (CRP) was increasing, and then cephalexin plus rifampicin was prescribed for 2 months.

Six months later, she went to see her orthopaedic surgeon, the same mentioned above. He removed the prosthesis in her right knee, because it was infected, and antibiotic-loaded bone cement was placed with external fixation. Before, during and after the operation, she was given 1 gram cephazolin every 8 hours, and forty milligrams clexane subcutaneous.

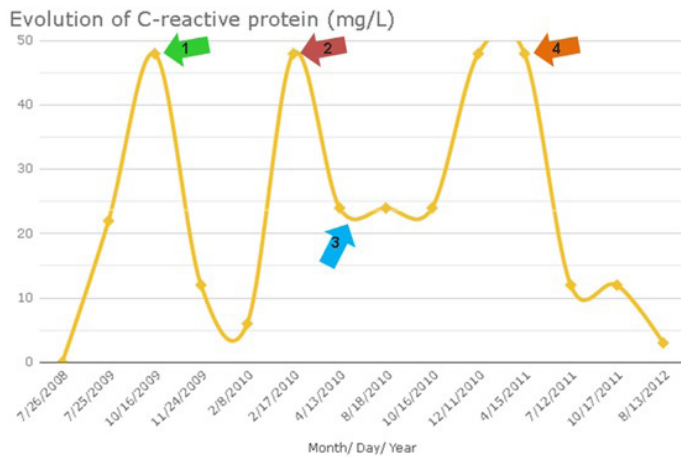
Some secretion culture was collected that identified *Pseudomonas aeruginosa*.

On the same day, she received the transfusion of 2 blood bags. In the next 2 days, she had a fever from 37.8°C (100.04°F) to 38°C (100.4°F).

Four days later, she was discharged from the hospital, located in our city. Not the same hospital where the knee operation was done (Ribeirao Preto city). She was prescribed five hundred milligrams ciprofloxacin taken orally every twelve hours at home. She had been taking this medication for four months, when it was suspended it.

Two months later, due to her CRP still high, it was decided to prescribe ciprofloxacin again, and continue the acupuncture sessions, Chinese herbal therapy and dietary counselling.

Graphic 1 shows the evolution of the C-reactive protein throughout the patient's treatment period, prior to removal of the infected prosthesis and after its removal. In the number one green arrow, we notice a sharp fall in the values of the CRP tests, coincident with the removal of the infected prosthesis and the placement of the antibiotic-loaded bone cement and plastic spacer. Number two red arrow, demonstrates decreased CRP values when ciprofloxacin was discontinued. In number three blue arrow, we notice a slight increase in the values of the CRP when ciprofloxacin and Chinese herbal therapy, Long Dan Xie Gan Tang, were associated again. The number four orange arrow, indicates a significant decrease in the values of her CRP, when the antibiotics were totally withdrawn, and CRP values - close to the normal value - were maintained, while maintaining dietary restrictions and acupuncture (Graphic 1).



**Grafic 1:** Evolution of C-reactive protein.

Today this patient uses a walker (Photo 3), and cannot bend her right knee when sitting inside a car (Photo 4), due to the removal of the prosthesis and fixation of the joint with orthopaedic cement. Despite all this, we can note that she isn't using any antibiotic or anti-inflammatory medicine, and that the healing was perfect, showing no signs of inflammation and infection (Photo 5).



**Photo 3:** Patient after treatment of right knee osteomyelitis walking with her walker.

**Photo 4:** Right knee cannot bend when sitting in the car.

**Photo 5:** Complete recovery of her right knee from hospital osteomyelitis using auricular acupuncture and dietary counseling.

Her last treatment consisted only of acupuncture sessions associated with proper dietary counselling according to her energy imbalance. The aim was to balance her *Yin* and *Yang* energy, at last obtaining a cure.

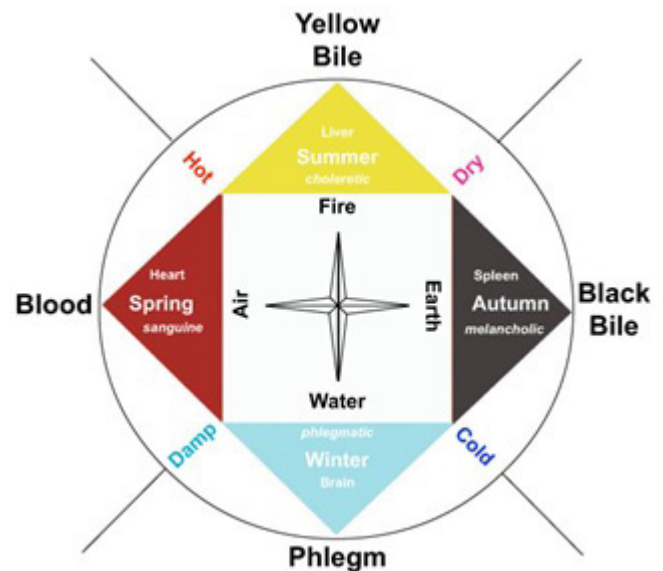
### Discussion

Different reasoning and treatment forms were used. To achieve that, it was employed clinical reasoning associated with traditional theories of the past, less used today in our Western medical culture, though it is increasing day by day. It will be presented to you what it is considered the most important points for your understanding.

Hippocrates is traditionally considered the father of modern medicine, still influencing, 25 centuries after his time, various aspects of medical practice and ethics [8].

Associating disease to the disequilibrium of body fluids may seem an ancient and outdated notion nowadays, but many of the clinical descriptions presented in the Corpus Hippocraticum (Hippocratic Collection) are still the archetypes of the natural history of certain infectious diseases and their collective interplay with the environment, climate, and society [6].

According to Hippocrates, diseases originate from the imbalance of the "four humors", which are blood, phlegm, yellow bile, and black bile. These humours determine the temperaments which are sanguine, phlegmatic, choleric and melancholic. Every physical body has in itself the elements to recover, as nature itself is the only healer, and the physician simply limits himself to accompanying and obeying nature (Figure 3) [8].



**Figure 3:** Ancient Greek Four Humours (fluids) and their relationship with the Four Elements, the Four temperaments, the Four personalities, the Four organs and the Four seasons.

Infectious diseases are prominent throughout the Hippocratic works; However, the Hippocratic approach, based on the general view of disease as a fluid dysregulation, means that most

descriptions of clinical cases are vague and could be attributed to a wide variety of pathogens [8].

This symbol that you can see in black and white represents the whole movement of the universe in which one is the opposite of the other, but one does not live without the other. Where one ends, the other begins, and this represents the flow of this energy that moves our universe. For example, the energy changes of day and night, sun and moon, man and woman, and so on (Figure 4) [6,7].



**Figure 4:** Yin/Yang diagram.

In TCM, they say that diseases come from the imbalance of the Yin, Yang, Qi, and Blood energies. In addition to the Yin and Yang theory, we have the theory of the five elements, Wood, Fire, Earth, Air and Water, each representing an internal organ of our body, liver, heart, spleen, lung and kidney respectively. Each one is associated with a hollow organ, gall bladder, small intestine, stomach, large intestine, and bladder, respectively [6].

To determine their energy disturbances, the patients are asked several questions to evaluate their Blood, Qi, Yin and Yang, and Heat Retention. To diagnose the energy deficiencies, usually it is asked to the patient if he has a daily bowel movement and if not, it could mean Blood deficiency. If the patient has excessive sweating during the day, this is a sign of Qi deficiency. If he feels colder than hotter, especially in the extremities such as cold feet, it's a sign of Yang deficiency. When the patient feels hot, mainly in the extremities, it can be Yin deficiency. The diagnosis of Heat retention is based when we ask the patient if he has dry mouth, bad breath, itching, bleeding gums, etc.

The process is justified in the practice because we treat not only the symptom but the root of the problem involving these energy disharmonies.

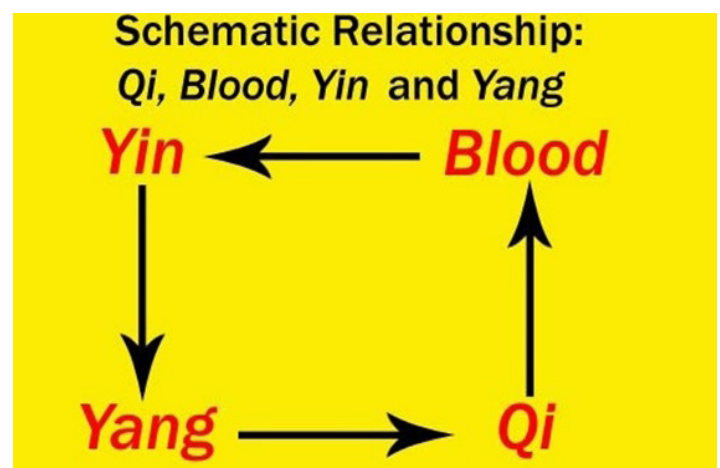
In the case of osteomyelitis, according to Traditional Chinese Medicine teachings, formation of Heat corresponds to Gall bladder energy imbalance. This Heat is usually caused by excessive energy in the Liver meridian [15].

Integrative therapy proves itself valuable for the treatment of osteomyelitis [1].

The researchers cite an extensive history of successful TCM treatments for osteomyelitis. They add that the combination of biomedicine with TCM provides optimal patient outcomes. Given the difficulty of treatment, combined with the pain and suffering associated with osteomyelitis, researchers suggest implementing TCM into a regimen of care is paramount. Moreover, the researchers realized there is a successful track record of TCM treatments for osteomyelitis patients with compromised immune systems [1].

Integrative therapy proves itself valuable for the treatment of osteomyelitis [6] Qi et al. revealing a significant reduction in hospitalization admittance when biomedicine and Chinese medicine interventions are combined. Using only biomedicine, the average hospitalization admittance is 74 days. Using only Chinese medicine, the average is 59 days. However, when biomedicine is combined with Chinese medicine, the hospitalization admittance drops to 43 days [1].

Qi et al. find integrative therapy an optimal treatment protocol to increase effective rates. Using only biomedicine, the treatment effective rate is 54.8%. Using only Chinese medicine, the treatment effective rate is 66.7%. Using biomedicine and Chinese medicine, the treatment effective rate climbs to 88.9%. The limitation of this result is that total treatment efficacy rates represent all layers of significant improvements and do not reflect total recovery rates [1].



**Figure 5:** Schematic relationship between Qi, Blood, Yin and Yang.

All the auricular points [13] used were important because through these points, the patient's energy imbalance is treated, regulating the Yin / Yang, and promoting an equilibrium of Blood and Qi, and removing the Heat retention. This regulation is the most important principle in Chinese medicine, which was presented, at

an Acupuncture Research Conference at Harvard Medical School, in Boston, United States, in 2015 (Figure 5).

Bloodletting is the withdrawal of blood from a patient to cure or prevent illness and disease. Bloodletting was based on an ancient system of medicine in which blood and other bodily fluids were regarded as humors that had to remain in proper balance to maintain health. It is claimed to have been the most common medical practice performed by surgeons from antiquity until the late 19th century [10].

We can remember Hippocrates' very pertinent words regarding the question raised in the title. "Let food be your medicine and medicine be your food." And also, "Nature is the healer of the disease" [11].

Exploring the past will almost definitely provide a more progressive way of thinking, and this is much pronounced nowhere more than in the infectious diseases field – the Hippocratic heritage and the various ways it is still perceived today [8].

We cannot solve our problems with the same thinking we used when we created them [12].

## Conclusion

The conclusion of this study of two chronic hospital osteomyelitis case reports demonstrates the need to see the patient as a whole, treating their energy imbalances and re-orientating the dietary aspects that could be maintaining these imbalances, if they are not corrected.

We note that local manifestation, in this case, osteomyelitis is a reflection of a systemic energy imbalance, and to treat the patient as a whole was fundamental in these cases, for successful treatment.

According to this study, the inflammatory changes caused in the hospital osteomyelitis formation were motivated by the very use of anti-inflammatory and antibiotics. The withdrawal of these drugs was crucial for the improvement of the patient's condition.

According to the evolution of the C - reactive protein (CRP), we noticed that it increased in this clinical case with the introduction

of antibiotics and or anti-inflammatory drugs. This coincides with the theory in Traditional Chinese Medicine of Heat formation. Therefore, in this case, the increase of the C - reactive protein would not be a laboratory marker to predict or indicate the evolution of an infection, but rather the evolution of internal Heat formation in Chinese Medicine.

Therefore, the answer to the question raised in the title of this work is that it is possible to treat chronic hospital osteomyelitis without the use of antibiotics, based on the results of these two case reports.

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