



Treatment of Hospital Acquired Pneumonia (HAP) with Persian Medicine (PM): A Case Report

Hoorieh Mohammadi Kenari¹, Gholamreza Kordafshari², Mohammad Kamalinejad³, Somayeh Aghighi⁴, Maryam Moghimi^{2*}

¹Research Institute for Islamic and Complementary Medicine, School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran

²School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran

³Faculty of Pharmacy, Shahid Beheshti, University of Medical Sciences, Tehran, Iran

⁴School of Unani Medicine, Hamdard University, New Delhi, India

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Abstract

Hospital acquired pneumonia (HAP) caused by resistant microorganisms is one of the common reasons of mortality in hospitalized patients, which causes many complications and costs. In addition, nutritional support of a patient with pneumonia is very important. In this article, we present a case of pneumonia in which the therapeutic and nutritional instructions of Persian Medicine (PM) saved a patient's life. The patient suffered from multiple trauma, affected by HAP during hospitalization. He was treated with a variety of broad-spectrum antibiotics for 9 days, but no improvement in the fever and respiratory state was observed, and eventually he was intubated and transferred to the ICU. Due to lack of improvement, he was treated with PM. One day after starting the treatment with PM, fever was reduced and was discontinued the following day. Three days later, the respiratory state improved and the chest X-ray was normal. Eventually, after 6 days the patient was discharged from the ICU.

Before starting the PM orders, despite the administration of multiple antibiotics, due to the lack of proper diet, there was no satisfactory response to treatment. The therapeutic approach of PM began with diet modification and improvement of the patient's digestive system and simultaneously benefited from herbal medicines to improve the patient's pulmonary status. The therapeutic methods of PM with special attention to temperament and the individual type of treatment and nutrition can be useful in many cases where conventional therapies do not improve the complications of the disease.

Keywords: Hospital acquired pneumonia (HAP), Conventional medicine, Persian medicine, Treatment

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*Corresponding author: Maryam Moghimi
School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran
Cell: +989125135631
E-mail: mmoghimi60@yahoo.com

Introduction

Hospital acquired pneumonia (HAP) often occurs in very ill patients – especially those suffering from trauma - about 5-7 days after hospital admission. Most of these patients should be admitted to ICU due to respiratory failure and it is associated with significant mortality [1-2]. In addition, prolonged mechanical ventilation and subsequent prolonged hospitalization in the ICU give rise to numerous complications, including necrotic infections, bronchiectasis, etc. On the other hand, microorganisms involved in this type of pneumonia, including *Pseudomonas aeruginosa* and Methicillin Resistant *Staphylococcus aureus* (MRSA) are highly resistant to treatment. *Pseudomonas aeruginosa* has been shown to be able to resist against all common antibiotics, even if antibiotic susceptibility is initially present. In addition, diet and nutrition is very important in a patient with pneumonia, because pneumonia leads to a catabolic state in which the patient is at risk in terms of nutrition [1]. Therefore, treatments in conventional medicine sometimes do not really improve the complications of this disease.

Persian medicine (PM) is a widespread and rooted science based on temperament and quadruple humors (blood, yellow bile, phlegm, and black bile) that has been preserved from great physicians and scientists such as Rhazes and Avicenna. The change in temperament and the quality and quantity of these humors is the basis of the disease in PM and temperament adjustment is the main principle of treatment [3]. In the PM point of view, the first step in modifying the temperament is correcting lifestyle, espe-

cially nutrition [4]. In this article, a case of HAP treated by nutritional and therapeutic recommendations of Persian medicine is presented.

Case Report

A 28-year-old man riding a motorcycle crashed with a truck on 31/07/2011 was admitted to the hospital for multiple trauma with a Glasgow score of 15. During the first 5 days of admission, the patient underwent multiple orthopedic surgeries. On the 6th day, the patient suffered a fever of 38 degrees, and it continued at lower grades until the 9th day. On the 9th day, tachypnea occurred and the patient received nasal oxygen. The chest X-ray showed the right diaphragm slightly higher than normal. To rule out the probable rupture of diaphragm, a thoracic CT scan was requested. Meanwhile, tip of the central venous catheter, the peritoneal catheter of peripheral vessels, drainage secretions, ulcers, etc. were cultured to study the origin of fever. On the 10th day, the fever reached 40 degrees and tachypnea intensified. The patient was transferred to the ICU receiving an oxygen with mask. The thoracic CT scan report was as follows:

“Right lung pleural effusion plus collapse turbidity is seen in the posterior part of the lung, extending from the tip to the base. There is a multiple fracture of the ribs, and the alveolar patch-shaped and ground glass infiltration is visible in the left lobe.”

On the 11th day, the patient underwent bronchoscopy and tracheal washing. The results of patient's lab tests on this date are shown in Table 1.

On the 13th day, the patient suffered from tachypnea at a rate of 43/min and underwent mechanical ventilation with SIMV + VC mode. Due to the suspicion of pulmonary embolism, spiral CT scan of the lung was performed and embolism was ruled out. During this time, the high fever continued. After numerous tests, the origin of the infection was diagnosed in the patient's lungs.

The chest X-ray report on patient's 14th day of admission:

"Multi-rib fracture plus patches in the right lung and upper left lung areas, indicating bilateral pleural effusion. Ground glass density is seen at both costophrenic angles."

During this period, the patient was treated with a variety of antibiotics such as vancomycin, ciprofloxacin, amikacin, meropenem, metronidazole, tazocin, ceftazidim and clindamycin which were alternated according to his condition, but despite this treatment, fever and respiratory failure continued. Furthermore, the patient's diet was composed of various foods including milk, white of the egg, walnut, wheat germ, dates, honey, orange juice, apple, cheese, boiled potatoes, fish, red meat, cooked vegetables (celery, tomatoes, green beans, pumpkin, mushrooms), rice, yogurt and lentils. Being admitted in the ICU, fruit juices, jelly, crushed bananas, carrots and carrot juice have been added to the diet and every 3 hours some of the mixture of all mentioned foods was used to feed the patient. During this period, the patient received 5 units of packed cells due to low levels of hemoglobin. On the 15th day of admission, following a lack of improvement in the condition of the patient

and deteriorating of his status despite the treatment, the physician requested a consultation with a Persian medical practitioner, stating in a letter that the patient's condition was critical and from the viewpoint of conventional medicine, there was little hope for recovery and survival.

During the first visit of PM doctor, the patient was intubated and his body temperature was about 39.5-40 degrees Celsius. There was also flatulence in the stomach and intestines and lack of proper defecation. Therefore, the following instructions were prescribed:

Breakfast: A teaspoonful decoction of thyme (*thymus vulgaris*) mixed by a teaspoon of honey and a teaspoon powder of fresh walnut.

An Hour after breakfast: one glass of fresh pear juice.

1.5 hours after drinking pear juice: 30 cc "*Sekanjabin*" (a mixture of honey and vinegar boiled to syrup)

Lunch: quail meat cooked with onions, saffron and olive oil and half a cup of well cooked rice mixed in a blender. The mixture is divided into 3-2 servings and given to the patient every 1.5 hours.

2 hours after lunch: 30 cc "*Sekanjabin*"

1 hour after "*sekanjabin*": A teaspoonful decoction of thyme (*thymus vulgaris*) mixed by a teaspoon of honey.

Dinner: like lunch recommendations.

2 hours after dinner: 30 cc "*Sekanjabin*"

Following the administration of the above diet, the previous diet of the patient was discontinued and the diet was strictly followed.

By executing the orders, on the 16th day (one

day after the first visit), the fever was reduced to 37.9. On the 17th day the fever was completely discontinued. On the 18th day, the patient's tracheal tube was removed and he received nasal oxygen. On the 19th day, auscultation of the lungs was clear.

The chest X-Ray report on the 19th day:

“There is no evidence of pleural effusion in the lungs. The patch-shaped and ground glass density in the right lung and the upper left lung area are still present.”

On the 21st day, the patient was again visited by a PM practitioner. He was still treated with nasal oxygen at the ICU, but spoke himself and the respiratory rate was 33/min. flatulence was resolved and defecation was improved. The results of patient's lab tests on this date are shown in Table 1.

Considering the patient's condition and the test results, it was recommended that the previous measures be continued and following recommendations was added:

- 1) Replacing the sheep meat instead of quail
- 2) Eating grated mango (*Mangifera indica* L.) with sugar as a snack
- 3) Using the distillate of caper (*Capparis spinosa* L.) root.

By observing these measures, the patient was discharged from the ICU on the 22nd day, while he was completely alert and had normal vital signs. Then he was transferred to the internal ward. The chest X-Ray report on this date:

“There are very few ground glass opacities in the lungs. There is no evidence of pleural effusion.”

The last visit of PM took place on the 24th day.

The patient was quite alert, talking and laughing. There was no respiratory problem. Vital signs were stable. Defecation was normal. The number of prescriptive antibiotics was reduced and only vancomycin, ciprofloxacin and metronidazole were used. The results of patient's lab tests on this date are shown in Table 1.

Eventually, the patient was discharged from the hospital 5 days later.

Table 1: Results of patients lab tests before, during and after treatment with Persian medicine.

Date		Before treatment with PM (11 th day)			During treatment with PM (21 th day)			After treatment with PM (24 th day)		
Test	WBC	neut	lymph	band	neut	lymph	band	neut	lymph	band
		CBC diff	80	13	4	72	27	0	70	28
	Hb	8.2			11.2			12		
	HCT	26.2			38.2			39		
	Plt	153000			226000			250000		
ABG	PH	7.50			7.44			7.42		
	PCO2	31			37			39		
	PO2	66			80			90		
	O2 sat	91 %			96%			98%		
BIOCHEM	FBS	129			115			110		
	Total Protein	5.2			6.2			6.5		
	Alb	2.6			2.9			3		

Discussion and conclusion

As noted above, the high resistance of microorganisms involved in the development of HAP and the subsequent complications of the disease requires careful consideration about the treatment [1,2]. On the other hand, modification of the patient's nutrition is very important along with drug therapy, because if this issue is not considered, the patient's return to normal function will not be satisfactory even after using proper drugs [4-9]. Before the PM doctor visit, the patient's diet was composed of various foods including milk, egg white, walnut, wheat germ, dates, honey, orange juice, apple, banana, cheese, boiled potatoes, fish, red meat, cooked vegetables (celery, tomatoes, green beans, pumpkin, mushrooms), rice, yogurt, len-

tils, jelly and carrots which were mixed and administered by gavage. From the PM viewpoint, some of these foods, such as bananas, potatoes, cheese and mushrooms, cause delayed digestion and produce dense humors in the body. The accumulation of which causes various diseases. PM believes that the natural strength of the body and digestive ability of the gastrointestinal tract in a patient with aforementioned condition, is very weak, and feeding the patient by delayed digestive foods not only does not help to strengthen the body, but also produces inappropriate humors in the body and deteriorates the disease. On the other hand, in order to resolve the fever – which is called “abnormal heat” in PM –the natural heat of body should be strengthened, which is impossible by cold tem-

perament foods such as yogurt, pumpkin, tomatoes, potatoes, orange juice and fish. In addition, the point that was not taken into account in the patient's diet, was the simultaneous intake of some foods. In PM perspective, simultaneous eating of some foods, such as yogurt and fish, or milk and eggs, are not allowed, as it causes damage to the digestive system and the body [4-9]. Therefore, considering the above, changing the patient's diet seemed inevitable.

One of the most important points in the patient's first visit of PM doctor, was attention to the condition of his digestive tract. Although the patient's most important problem was pulmonary infection, but if the gastrointestinal condition was not considered, even if the correct medication was prescribed, the delivery pathway of drugs and the only way to get nutrients was impaired. Thus, how could we expect the patient to be able to combat the disease? Therefore, the first advice should be a medicine that has bilateral properties to improve both lung and gastrointestinal tract of the patient. One of the best medicines of this kind was thyme. From PM point of view, thyme is an appetizer which cleanses the digestive system from waste materials and eliminates flatulence. On the other hand consuming a decoction of which with honey - as recommended in this patient- cleanses the lungs and eliminates respiratory problems. In addition to preparing waste for disposal, honey also quickly dispenses the drugs to all parts of the body, and seems to be effective in improving the efficacy of thyme in this case [10-12]. Avicenna states that honey prevents humor infection in the body and also strengthens the

stomach [4]; both of which have been very useful to the patient.

From the perspective of conventional medicine, anti-microbial and anti-inflammatory effects of thyme have been proven in repeated research [13-15]. Also, the specific effect of thyme on the reduction of bronchoalveolar inflammation and its positive effect on the treatment of resistant microorganisms, such as MRSA, are outlined in the articles [16]. Antimicrobial properties of honey are also mentioned in the articles [17-18]. In addition, honey has significant effects on the upper respiratory tract, as it has been proven that eating 2.5 cc of honey before sleep has the same effect as dextromethorphan and diphenhydramine in reducing childhood cough [19].

One of the other recommendations was the use of fresh walnut that was included in the patient's breakfast. From the perspective of PM, digestion of fresh walnut is easy and it can facilitate defecation [10-12]. Therefore, the use of walnuts- especially with honey- in this patient seems to be appropriate for breakfast due to the gastrointestinal condition and defecation disorder. On the other hand, walnuts reinforce the three main organs - the heart, the liver and the brain [10-12].

In conventional medicine's viewpoint, walnuts inhibit formation of biofilms in MRSA, thus contribute in the elimination of this microorganism [20].

One of the patient's snacks was pear juice. Cleansing the stomach, pear is digestive and laxative, and also plays a role in strengthening the heart and creating joy and vitality in the patient [10-12]. Avicenna emphasizes that pear

produces good and beneficial humors for the body [4].

The other snack was “Sekanjabin”. It strengthens the liver and gastrointestinal system and plays a role in eliminating fever [12], which was one of the most important problems in this patient.

The patient’s lunch and dinner included quail meat and well-cooked rice. Quail meat is very easy to digest, and quickly passes through the gastrointestinal tract [10-11]. Rhazes believed that quail meat is very suitable for those who have to be on special regimen - like patients [5]. Therefore, lunch and dinner were selected to not burden the digestive system, but at the same time provide enough nutrients, especially proteins. Because in pneumonia, especially with the source of *Pseudomonas* and MRSA, low levels of protein and albumin is associated with poor prognosis [21]. As it is evident in the patient’s tests, total protein and albumin levels were low in the first experiments, which was finally corrected following the prescriptive diet. The intervals in food intake of the patient are due to the fact that the weak digestive system, which is still not ready to digest large amounts of food, would perform its function, gradually and with low levels of food. If these intervals are not observed, as seen in the patient’s previous diet- every 3 hours, relatively large amounts of different foods were prescribed to the patient - obviously digestive problems will occur, and this, disrupts the main process of treatment.

In the second visit, given the significant improvement in the patient’s condition, it was advised to continue the previous orders and new

ones were added. One of these recommendations was the replacement of sheep meat instead of quail in the main meals to provide the necessary proteins, which seems reasonable due to the improvement of the patient’s digestive conditions.

Grated mango (*Mangifera indica*) was also added as a snack. From the PM point of view, mango with hot and dry temperament reinforces the lung, kidneys, digestive system and all body’s strengths. It also relieves coughing and dyspnea and reduces the weakness of body. Ripe and sweet mango is also laxative [10-12].

From the perspective of conventional medicine, mango exhibits its anti-inflammatory properties by inhibiting 4 and 5 interleukins and TNF alpha. Mangoes have been shown to reduce inflammation around the vascular and bronchial tract in asthmatic patients. The polyphenols in mango keep the T cells from damages, thereby enhance the immune system [22-25].

Ultimately, the distillate of caper (*Capparis spinosa*) root was added to the patient’s diet, which is considerable. PM believes that caper removes waste and sticky humors from the lungs and relieves chest pain. It also plays a major role in strengthening the liver and spleen [10-12]. Avicenna believes that caper is useful for dyspnea [4].

Caper fruit has been used in Mediterranean area and the west and central Asia since the distant past as a food. It has also traditionally been used to treat inflammatory diseases. The anti-inflammatory effect of caper is attributed to its flavonoids, which are the kappa B (NF-kB) inhibitor. In addition, it has excellent antimicrobial effects against gram-positive and gram-negative

bacteria and its antifungal property against aspergillus has also been proven [26-28].

With careful consideration of the patient's previous and next diet, the differences between two types of nutrition in terms of quality, quantity and dietary intake are well defined.

Finally, therapeutic methods of PM with special attention to the temperament and individually different types of treatment and nutrition - a point which is unfortunately not considered in conventional medicine- can open up many nodes in the treatment of this type of pneumonia and with its highly detailed recommendations, can save the patient's life who buckles with the death in spite of all the therapeutic efforts in conventional medicine.

Conflict of Interest

None declared.

Acknowledgement

None.

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