

## Measles from the Perspective of Rhazes and Traditional Iranian Medicine: a Narrative Review

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### Abstract

#### Background

Measles is a contagious illness with symptoms including fever, cough and rash. Although after the start of vaccination, its mortality rate has decreased significantly, but in some countries, the disease still leads to dangerous complications. Since infectious diseases such as measles has long been of interest to practitioners, in this study the perspective of Traditional Iranian Medicine (TIM) scholars, especially Razi (Rhazes) about measles was examined.

#### Materials and Methods

In the present study, we reviewed Rhazes' viewpoint about symptoms and treatment of measles in the book entitled "Al jodari - Al hasbah", and other TIM books. In addition, using scientific online databases, the latest studies in this regard are investigated.

#### Results

Rhazes was the first physician who described measles scientifically in a separate book called "Al jodari - Al hasbah". In addition to the disease symptoms, its complications and treatment strategies that includes three areas of general recommendations, nutritional measures and topical treatments such as laxatives, foods, fruits, vegetables and herbs with cold nature (based on TIM), he also explained the prognosis of the measles according to the division of skin rashes. Some other Iranian medicine scholars such as Avicenna in addition to the mentioning other therapeutic strategies also pointed out the contagious nature of measles.

#### Conclusion

Given that some of the diagnostic, therapeutic and preventive perspectives in TIM textbooks, especially Rhazes' "Al jodari - Al hasbah" have been supported by evidence of new studies, it seems that the opinion of these scientists in the field of infectious and contagious diseases such as measles can be helpful.

**Key Words:** Complementary Medicine, Measles, Persian Traditional Medicine, Rhazes.

\*Please cite this article as: Khodabakhsh M, Mehri M, Ghorbani F, Feyzabadi Z. Measles from the Perspective of Rhazes and Traditional Iranian Medicine: a Narrative Review. Int J Pediatr 2016; 4(10): 3661-68. DOI: **10.22038/ijp.2016.7628**

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Received date Aug, 23, 2016; Accepted date Sep, 22, 2016

## 1- INTRODUCTION

Measles is a viral disease characterized by fever, malaise, skin rash, cough, coryza, and conjunctivitis (1). The incidence of this disease in the United States is 0.02 % per thousand persons. Before the development of measles vaccine, there were more than two million deaths a year due to measles, especially in children with less than 5 years of age (2, 3).

The introduction of measles vaccine in 1960s was successful in reducing the mortality and morbidity caused by this disease. Following routine vaccination of infants in the United States, the peak age of onset for measles epidemics reached under 12 months (4). Now, in some minor regions of the world, due to inadequate vaccination and economic factors, this disease is still common. Since measles transmission occurs through personal contact and 90% of the cases are caused by direct exposure, it occurs more frequently in densely populated areas such as schools (5, 6). The incubation period of the disease is 6-19 days and is contagious 5 days before to 5 days after the skin rash appears (7). In terms of weather, in tropical areas, the peak incidence of measles occurs in late winter and early spring and those who have already had measles are immune for a lifetime (8-10). Despite the identification of risk factors for measles and discovery of vaccine, the disease still exists in the countries with low level of vaccination coverage and low economic status and its dangerous complications such as blindness and pneumonia afflicting children with measles still happen (11).

Considering the infectious diseases such as measles, due to creating major epidemics and the mortality and morbidity, has long been of interest to practitioners; thereby familiarity with ancient scholars' experiences traditional medicine viewpoints on the management of measles and its complications can be useful.

Traditional and alternative medicine, have claimed an increasing share of the public's awareness and the program of medical researchers in the past decades (12), and the believing that herbs are natural and hence safer than synthetic drugs, and that a complex mixture of herbs can effectively treat complex diseases is growing (13).

Rhazes, the famous philosopher and chemist of 9<sup>th</sup> century AD and the author of the book *Al-Hawi* (Liber Continens), is the first person who wrote an independent book on measles and smallpox, called "*Al jodari - Al hasbah*" and in this book outline complete clinical symptoms and a step-by-step treatment of these diseases and their complications (14). As the principles of treatment in Traditional Iranian Medicine (TIM) is based on the modification of life style and nutritional patterns (15) and with regard to the eradication of smallpox, in this article, we fully define measles from the perspective of traditional medicine based on "*Al jodari - Al hasbah*" book, and with a glance over other TIM books.

## 2- MATERIALS AND METHODS

In this study, using the keyword "typhoid" which we consider to be equivalent to the word "measles", we investigate the clinical manifestations and step by step treatments of the disease based on the books "*Al jodari - Al hasbah*" written by Rhazes on measles and smallpox diseases in fourteen sections along with other Persian traditional medicine text books which are currently taught at the universities in the Western Asia. In this review study, using the keywords "measles", "complementary medicine", "Persian traditional medicine", and "herbal therapy", also a literature search about the new studies about maintenance therapy for measles using a structured predefined search string was performed in online databases (Medline, Scopus, Cochrane library,

and EMBASE databases) with no temporal restrictions.

### **3- RESULTS**

#### **2-1. History of Measles in Traditional Persian Medicine**

Muhammad Ibn Zakariyya al-Razi (865-925 AD) is the physician who first described the smallpox and measles in a book called "Al jodari - Al hasbah". According to a study by Najmabadi, this book used to be known as "pestilent", because its translator (G.Vallae) gave it the name «De Pestilentia» which was the first published in Venice in 1498 BC called «Le Livre de pestilence» (14). At the beginning of the book "Al jodari - Al hasbah", Razi notes that while philosophers before him such as Galen knew the smallpox very well, they did not clarify its treatment. He also stipulates that no book had been written with these details about smallpox and measles. The book contains several sections describing the issues ranging from susceptibility to measles and smallpox to treatment of the diseases (14).

#### **2-2. Epidemiology of measles in the Traditional Persian Medicine Books**

In traditional Persian medicine which is a comprehensive doctrine including various health and treatment methods dating back over a thousand years ago, one of the very important principles is the "temperamental and humoral" principle. Different temperaments are considered for the human body, which include blood, yellow bile, phlegm, and black bile. Each of these humors is an expression of a corresponding quality. These qualities include the hot and moist, hot and dry, cold and moist and cold and dry. In addition, four singular temperament types (warm, cold, dry, and moist) are also defined in the Persian traditional medicine (16). An imbalance in these humors can lead to dis-temperament and subsequently can cause a disease (17). According to this

viewpoint, people who are thin and have hot and dry temperament (Mizaj) are more susceptible to measles. Also, if the warmth and dryness increase in the person's temperament, he will be prone to measles (14).

#### **2-3. Symptoms of measles in Traditional Iranian Medicine Texts Books**

Baha' al-Dawlah Razi (1392-1464 AD) in the book entitled "Kholasat al-Tajarob" explains the signs of measles, including skin rashes with fever (18). Such skin rashes are usually flat, and do not become swollen and are not itchy and normally disappear after the disease period. Some other symptoms mentioned by this scholar include pain, itchy nose, back pain, fatigue, fear, heavy head, headache, red eyes, flow of tears, hoarseness, cough, dry mouth, nosebleeds and severe anxiety. Thick saliva, hoarseness, pain in the chest, flushing of the face, cheeks and eyes may also be observed (14).

It is noteworthy that in addition to the measles and smallpox, another disease called "homaigha" has been mentioned in the Iranian medical sources. The clinical manifestation of this disease consists of febrile illness with large white and swollen rashes which are larger than smallpox and its complications are less severe than smallpox and measles (19). However, Hakim Arzani considers it as a non-febrile illness (20).

#### **2-4. Diet and Maintenance Therapy of Measles in Traditional Iranian Medicine**

Rhazes believed that as long as a patient can be treated with food, we should not use medications and as long as the disease can be treated with simple drug, the combination drugs should be avoided (21). On this basis, the following description of some food therapy and lifestyle modification for this disease from the perspective of Rhazes and other Iranian medicine scholars are discussed:

**2-4-1. General recommendations:**

1. Venesection only in patients with measles who have blood congestion is recommended as the first-line of therapy.
2. Bathing, sexual intercourse and walking in hot weather must be avoided.
3. Sipping cold water and smelling the scenes with cold temperament like sandalwood and camphor are recommended to strengthen heart and create happiness in patients (14).

**2-4-2. Nutritional recommendations:**

1. The patient should take foods, fruits, vegetables and herbs with cold nature, e.g. lentils, cabbage, cilantro, lettuce, poppy, chicory, nightshade, sand plantain, pomegranate, rhubarb, barberry, barley, and sour grape soup.
2. Laxatives such as fresh or soaked plums in rose water, and sugar as laxatives for the patient are prescribed but figs and grapes are not suitable laxative in these patients.

3. The use of milk, manna, wine, dates, honey, wine, and sweets should be avoided (14).

**2-4-3. Topical instructions:**

1. Gargling (same root as 'gurgle') with sour pomegranate juice is recommended in case of rash in the throat and mouth.
2. To accelerate rash manifestation at the beginning of the disease, it is better to massage the patient's body and to dress it in order to sweat or the patient's body (except the head), can be placed in a space filled with steam for excessive sweating and expelling the excreta from the body, then the body should be dried up to sweat again.
3. Fumigating chamomile, nightshade, violet and mallow shortens the duration of rash manifestation.
4. Washing the face or body with cold water, drinking cold water and putting the patient in a cool place help to abate rashes (**Table.1**) (14).

**Table-1:** Some of Diet and Maintenance Therapy of Measles in Traditional Iranian Medicine

Type of Recommendation	Recommendation	Comments
General	Venesection	only in patients with blood congestion
	Smelling the scenes with cold temperament	such as: sandalwood and camphor
	Avoidance from: Bathing, sexual intercourse and walking in hot weather	
Nutritional	Using foods, fruits, vegetables and herbs with cold nature	such as: lentils, cabbage, cilantro, lettuce, poppy, etc.
	Prescription of laxatives	such as: fresh or soaked plums in rose water and sugar
	Avoidance from: Milk, manna, wine, dates, honey, wine and sweets (eating)	
Topical	Gargling with sour pomegranate juice	
	Body massage	
	Sweating	
	Fumigating chamomile, nightshade, violet and mallow	
	Washing the face or body with cold water	

Part of the mentioned treatments, are based on the temperament of the individual; for example, Venesection is recommended in patients with hot and wet temperament. Rhazes stipulates the fact that as the patients with measles often gets bowel movement at the end of the disease, the use of laxative at the end of the disease should be avoided. In the case of measles, prune juice, fresh or soaked plums in water with sugar are prescribed as laxatives while manna, milk and violets should be avoided due to nausea. At the beginning of measles, additional amount of the patient's yellow bile should be expelled out by drug and the rest with cold foods. Symptoms of excessive yellow bile are severe inflammation, sadness, vomiting, anorexia, bitter mouth, dysuria and yellow eyes (14).

#### **2-5. Measles Prognosis from Traditional Iranian Medicine Perspective:**

One of the points that Rhazes stated in determining the prognosis of patients with measles and may need to be studied epidemiologically, is that the safest type of measles is the one with less intense red rashes, while the one with dark red rashes is more malignant. Measles with green and purple rashes are fatal. If the rashes after measles incidence suddenly disappear, it can cause severe complications and can be fatal unless the rashes reappear. If measles is accompanied by delusions and late-onset rashes, it will be fatal (14).

### **5- DISCUSSION**

World Health Organization (WHO) has considered the development of traditional medicine since a few decades in order to put into practice its slogan, the "Health for All by the Year 2000" (22). Traditional Persian medicine is the collection of knowledge and procedures that dates back to over 2,000 years ago (23), and Abu Bakr Muhammad ibn Zakariya Razi (Persian physician) that is known in the West as Rhazes, is one of the most prominent medical scientists of Islamic

Golden age (24), who has written about 250 books and treatises (25). He is the first person who distinguished the infected rashes caused by smallpox and measles through clinical observations (22). Despite vaccination against measles, the presence of drug resistance in some countries, including African countries (26), and severe incidence of the disease in children who are immunocompromised (11), and cannot receive the vaccine have led researchers to investigate a new approach for treatment and reducing complications of this disease. Therefore, close scrutiny of the views and methods of different world medical doctrines, especially traditional Iranian medicine and scholars such as Zakaria Al Razi can help to achieve this goal. The important fact is the view to the contagious nature of measles in Iranian medicine, in a way that Avicenna (980-1037 AD) categorizes measles as a disease that is transmitted through the air pollution (cholera fevers) (22). In addition, Ali Ibn Majusi (930-994 AD) in his book mentions that sitting in a place with the patients and inhalation of the air emitted from the wounds of such patients is an effective risk factor in the incidence of measles (27).

In terms of therapeutic, the comparison of treatments mentioned in the TIM textbooks with recent studies indicates the consistency of some of the treatments. From this perspective, the treatment of measles is divided into two groups of oral and topical treatment (22).

With regard to oral treatment, the use of sour pomegranate, rhubarb, cilantro, cabbage, grapes, beer, Talbineh (a kind of soup) (28), vinegar and lentils have been considered effective; for example, antiviral properties of rhubarb have already been proved (29). Also, the researchers have shown that pomegranate activates the immune system and plays an important role in the treatment of viral diseases (30). The antioxidant properties of sour grapes have also been demonstrated (31). Several

properties of lentils have been proven, of which its antioxidant properties are likely the most important properties in the disease treatment (32). Cabbage with its excellent and unique characteristics has been scientifically known as a probiotics with a special role in the treatment of viral diseases (33). Talbiyeh which is known as a functional food contains high levels of carbohydrates and tryptophan. It has been shown that it has anxiolytic and antidepressant effects and can improve the mood. Since in traditional Persian medicine people with measles are at higher risk of mood disorders (14), they can benefit from this food. In the recent articles, the treatment of measles is mostly based on vaccination and immunoglobulin, but the use of supplements such as vitamin A is also considered useful (34).

According to other traditional medicine doctrines in the world, a number of herbal medicines have been utilized to treat this disease and researchers now are reconsidering and analyzing these plants. Most of the drugs used in China against measles contain pyrrolizidine alkaloids, which is a strong anti-virus (35). Furthermore, the use of anti-fever herbs in Japan has been scientifically proved (36). Violets with the same mechanism is used in the treatment of measles in traditional Persian medicine (37). Besides, the effectiveness of Lamiaceae family which is used in Iranian medicine, has been demonstrated (38).

## 5. CONCLUSION

As a general conclusion, the authors of this study believe that despite the increasing advances in medical science studies, such as the discovery of vaccination and eradication or containment of many diseases, the opinions of past scientists can be beneficial, especially the comments of TIM scholars experiences, and valuable opinions have been expressed regarding prevention and treatment of

diseases. On the other hand, considering the socio-economic situation of less developed countries, these ideas can play a more helpful role to treat the diseases.

## 6- CONFLICT OF INTEREST

The authors had not any financial or personal relationships with other people or organizations during the study. So there was no conflict of interests in this article.

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