Abstract
A large number of people are affected by cancer and the primeval history of this malady has attracted attention toward complementary and alternative therapies to manage this disease. The present study has performed a survey on cancer in the Islamic era (ITM) by focusing on cancer terminologies and related diseases over a millennium, from medieval to the early modern era. Seven ITM medical texts, in Arabic and Persian languages, from 7th to 18th century AD were evaluated. These medical literatures have been our the sources of ITM cancer recognition clues. These clues have been related to some cancer and cancer-like diseases. The terminologies could be helpful for future ethnopharmacologic assay about cancer in ITM.

Key words: Avicenna, Cancer, Historical texts, Iranian plateau, Iranian Traditional Medicine, Tumor

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Introduction

Despite enormous technology development in recent years, a large number of people are diagnosed with cancer and consequently so many deaths are reported. The statistics released by the American Cancer Society and the International Union against Cancer show approximately 27 million diagnoses and 17 million deaths by 2030 worldwide. Determining the exact time for treatment of illnesses like cancer is too difficult because the herbal and other preparations have already been used for treatment of such maladies since antiquity.

Understanding the knowledge about particular diseases in the past and through history might be possible. Regarding that it is necessary to look for immutable facts in every clue and then attempt to explain them based on the current knowledge. The clues could be collected from several sources including fossils, skeletons, preserved cadavers and written information and it is well noted that this kind of study is an interdisciplinary study.

The Medical literatures were created under the influence of civilizations formed in different nations such as Greeks', Egyptians', Indians', Chinese' and Persians'. On the way toward studying the history of medicine, it is revealed that an important part is a strong tradition of medicine that is called Islamic Medicine also known as Arabic, Medieval Islamic and Greco-Arab Medicine. This medical tradition refers to science development founded during the flourishing period of the Medieval-Islamic Empire that lasted for about 9 centuries from the middle of the 7th to the end of the 15th century. Although the geopolitical feature of the empire had changed during this 9 centuries and beyond, the land of the initial emperorship mainly, was divided into at least three distinct empires: Iranian, Turkish and Indian. In brief, the effect of Arabic language among the Arabs was the cause of influence of this language not only as the language of religion but also as the official language of all the emperorship especially during Umayyads and also as a scientific language during Abbasids. So, in all of the expanded territory from the western provinces -Spain and Maghreb- to the eastern provinces -Iranian borders of China and India- all scholars wrote and read mostly in Arabic although they were not Arabs or even Muslims. Some of these non-Arab scholars had also created some manuscripts in their original ethnicity. For example, Avicenna wrote some important manuscripts in Persian like “Danish namah-yi’ Alai”.

1- Aggarwal et al., 2009: 1083-1094.
4- De Vos, 2010: 28-47.
5- Aggarwal et al., 2009: 1083-1094.
6- Shu, 2010: 85-103.
7- Sahebkar et al., 2012: 4-23.
8- Saad and said, 2012.
the important references of our study should have been written in Arabic language.\textsuperscript{11} Besides, because of the strong role of Iranians in building the Islamic empire, their language was known as the next important language of the Islamic Tradition.\textsuperscript{12} Beginning the 7th century AD, Iranian medical practitioners by merging different Middle Eastern medical systems with their own experiences started taking the integral and indispensable part to form what we call the ITM.\textsuperscript{13}

\textbf{Materials and Methods}

We studied some of the most influential medical literatures of ITM to understand how the practitioners diagnosed and managed the disorders like cancer and related diseases. The importance and influence of these literatures in ITM came from the reputation of the scientists, who created those literatures and also the solidity and acceptance of transferred and practiced information through 7th to 18th centuries AD. To determine a list of such manuscripts, we used Brockelmann’s Geschichte des Arabischen literature. This book and its comprehensive supplements described literatures that were created in Arabic language and include all authors up to 1937 and were published periodically from 1943 to 1949.\textsuperscript{14} The next reference was the Persian translation of the book Geschichte des Arabischen Schrifttums.\textsuperscript{15} In the third volume, the compiler made a collection of the scientists’ information in the fields of medicine, pharmaceutics, zoology and veterinary. This volume had two main parts. First, Fuat Sezgin (the author) surveyed the Greek, Syrian, Iranian and Indian scholars that had a strong influence on the basis of Medieval Islamic Medicine -as well as ITM- and their works was translated into Arabic. ITM medieval scientists gave reference to these manuscripts several times. The second part, Sesgin described the Medieval Islamic scholars’ manuscripts. This collection of information was about those literature creators who were alive up to 1050 AD and their manuscripts were written in Arabic.

For Persian literature, the book series “Persian literature, a bio-bibliographical survey” written by Charles Ambrose Storey was used. This book had different parts describing various scientific divisions whereas the ITM literature data were gathered in the second volume part b.\textsuperscript{16} The next reference was the “Annotated bibliography of Persian works” which covered different areas, but volume 5 of this book was about medicine, pharmaceutics, natural sciences and chem-
Performing the study, we decided to use seven medical literatures from ITM manuscripts (table 1) according to the following parameters:

- A continuous timeline during all these centuries as far as possible. We tried to choose notable literatures in every important historical period.

The geographical living zone of the practitioners. We tried to choose literatures from the geographical territory called Iranian plateau. This region is a geological formation in Western and Central Asia which is the part of the Eurasian Plate, located between the Zagros mountains to the west, the Caspian Sea and the Kopet Dag to the north, the Hormuz Strait and Persian gulf to the south and the Indus River to the east in Pakistan. This geographic region was more or less accommodated with the historical region, Khurassan which is a vast geographic region from near the south east of the Caspian Sea to the Great Pamir and Hindu Kush mountain barriers. To the south Khurassan supposedly extend to India. At the same time the term historical Khurassan contains Rayy (present Tehran). People of Khurassan have strong common historical, cultural and linguistic roots.

Naturally, the information which was transferred in these literatures was differently classified according to writers’ desire. For data collection, we looked over the headings of the chapter and phrases which had noted the Arabic word ORAM /ɔːɾɑːm/ the plural form of VARAM /væɾæm/ which means “swelling” in the present Persian language and tumor in ITM. This word was our heading main key word in the present study. We chose this key word because former studies about cancer in ITM showed that it could be a good idea to look for different kinds of ORAM as a related term to cancer, specially solid tumors. On the other hand, the phonography of our headings about cancer and related disease names in the ITM (table 2) could help future studies to avoid misunderstanding. This would be applicable about a short and practical definition about maladies.

Results

In all seven literatures studied (table 1) the ITM scholars, more or less, explained the same etiology for cancer: the unnatural humor, the burned black bile. Most of them clearly expressed that this malignancy was hard to cure or incurable. Nonetheless, all of them had introduced different therapeutic approaches: pharmacotherapy, surgery, and cauterization.
<table>
<thead>
<tr>
<th>Author and Title in English</th>
<th>Title in Arabic</th>
<th>Place Produced</th>
<th>Original Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali bin Raban Tabari</td>
<td>The Paradise of Science on Medicine</td>
<td>Iranian Plateau</td>
<td>Arabic/Persian</td>
</tr>
<tr>
<td>(c. 864 A.D.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Razes, 1962)</td>
<td></td>
<td></td>
<td>Arabic/Persian</td>
</tr>
<tr>
<td>(Avicenna, 1037 A.D.)</td>
<td></td>
<td></td>
<td>Arabic/Persian</td>
</tr>
<tr>
<td>(Jorjani, 1136 A.D.)</td>
<td></td>
<td></td>
<td>Persian/Persian</td>
</tr>
<tr>
<td>(Ibn ‘Iwād, 1449)</td>
<td></td>
<td></td>
<td>Arabic/Persian</td>
</tr>
<tr>
<td>(Alavī, 1749)</td>
<td></td>
<td></td>
<td>Persian/Persian</td>
</tr>
</tbody>
</table>

Table 1: Selected Medical Literature of ITM in this study
Some even emphasized a change in lifestyle and also supportive methods because they believed that tumors should not be manipulated; otherwise they would spread, leading to the progression of the lesion. Among all of the studied literatures, the most proper and apparent classification belonged to Avicenna’s The Canon on Medicine.

In the next step, we defined some ITM terminologies which could be related to cancer (table 2). These terminologies were included according to the signs, symptoms and sometimes the definition of disease that could have a relationship to cancer and related states. These conditions could occur before or during malignancies. Table 2 exhibits a section of the terms which were nearly related to the formation of cancer. These aspects of disease were focused, because:

- There was an old idea that some kinds of cancers could cause lesions and these might be infected or even superinfected.21
- Nowadays many kinds of cancerous conditions might be formed due to infectious diseases. For example, papillomavirus is a known cause of cancer.22
- Because of the ITM classification of cancerous conditions, mostly under the tumor like situations, we focused on dense tumors for ITM survey.

Discussion

In this study, we have introduced some reliable references of ITM. We have also attempted to find some disorders in these references which could be related cancerous ones. In addition, we have highlighted the strong tradition of medical sciences in the territory “Iranian Plateau” which lasted for about one thousand years. This Medical Tradition could be identified as Iranian Traditional Medicine.

Except for the text Khulasat al-Hekmah which was created in India, the other six ITM references were written in historical Khurassan. The book, Khulasat al-Hekmah, can be classified under ITM literature since although Indian subcontinent had never been a part of Islamic or Persian Empire it had a strong effect on the Islamic and especially the Persian cultural heritage and vice versa. This could be because of common cultural and historical roots, people migration, especially scholars and Persian speaking Mughal empires of India.23 The other point about this literature (Khulasat al-Hekmah) was the ethnicity of the author “Muhammad Husayn Ibn Muhammad Hādī”. His lineal descent went to peo-
Table 2: Extracted medical keywords

<table>
<thead>
<tr>
<th>ITM Terms in Arabic</th>
<th>English Translation</th>
<th>ITM Term Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghorooh-e-Akele</td>
<td>Cankers</td>
<td>Cancers might cause invasive hard to cure ulcers with disgusting appearance and thick red or green borders inclined to the extreme of the lesion. The lesion caused decay.</td>
</tr>
<tr>
<td>Ghorooh-e-Khabise</td>
<td>Horrid ulcers</td>
<td>It was a kind of ulcer that was formed because of waste villainous humors of the body. These humors could cause ulcers that would not or hardly be cured and might lead to death.</td>
</tr>
<tr>
<td>Ghrooh-e-mozmene</td>
<td>Chronic ulcers</td>
<td>Cancers might cause ulcers. Occasionally, they would be cured or changed into chronic black ugly ulcers and dispersed.</td>
</tr>
<tr>
<td>Khanazir</td>
<td>Pigs, Scrofula</td>
<td>It was a kind of tumor, stucked to the neighboring tissues. It might grow and might new ones be formed from the first one, just like warts. It mostly occurred around the neck and armpit. It was called Pigs because of the resemblance of the patient's neck to the pig's neck. It had an amplitude from benign to malignant tumors.</td>
</tr>
<tr>
<td>Nasour</td>
<td>Fistula</td>
<td>It was an old sore with thick borders. The progression into the lesion was like a pipe and had a permanent discharge.</td>
</tr>
<tr>
<td>Oram-e-sodavi</td>
<td>Black bile tumors</td>
<td>They were constructed from black bile but showed no other signs of cancer except for hardness and dark appearance.</td>
</tr>
<tr>
<td>Varam-e-sard</td>
<td>Cold tumor</td>
<td>It was a tumor, constructed from black bile or phlegm. Normally, it was non-invasive and benign. It had a slow growing rate. It was a kind of tumor, stucked to the neighboring tissues. It might grow and might new ones be formed from the first one, just like warts. It mostly occurred around the neck and armpit. It was called Pigs because of the resemblance of the patient's neck to the pig's neck. It had an amplitude from benign to malignant tumors.</td>
</tr>
<tr>
<td>Varam-e-solb</td>
<td>Hard, dense or solid tumor</td>
<td>They were made from phlegm, black bile or the combination of both and were dispersed from places to places.</td>
</tr>
</tbody>
</table>

Notes:
- The key words are ITM terms that were transferred to English and managed in alphabetical order in this table. ITM Terminologies. We tried to find the closest alternative in English language. The definitions are summarized descriptions, extracted from selected historical manuscripts of ITM, from ITM literature (mentioned in the table 1).
people from an important Persian city “Shiraz” used to belong to historical Khurassan.24

In the present study, understanding the knowledge about cancer through historical ITM literatures has been based on the Islamic Traditional Medical heritage which has hired the Galenic humoral theory.25 ITM etiologic data of the lesions and the description and pattern of them have helped us to construct table 2. Similarities between narrations in various literatures and step by step progression in the procedure of diagnosis, treatment approaches and prognosis, Have also helped us understand the disease. It can be concluded that cancer as a malignancy , as well as its management , has a longtime story. The ITM also has had its own approach similar to Greek medicine. For example, Hippocrates (460-375 BC) used the terms Carcinos as a tumor, Carcinoma as a malignant tumor and Cancer as a non-healing malignant ulcer and to Galen (ca. 130-200 AD) Tumorus meant all swellings, even obesity.26 This finding basis, besides rational sub-classifications, detailed descriptions, disease transformation observations and differential diagnosis made by ITM scholars, is of crucial importance for demonstrating what traditionally was called cancer.

The data gathered in the present study would be helpful to perform further ones about more detailed aspects of cancer history in the ITM and practical ethnopharmacological assays.

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