



Diagnosis and treatment of cancer in medical textbooks of ancient Iran

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Abstract

Research shows that ancient Iranians were among the pioneers of medical science, and are therefore admired and praised by non-Iranian scholars for their efforts and accomplishments in this field. Investigations of medical and historical texts indicate that between the 10th and the 18th century A.D., ancient Iran experienced a golden age of medicine. Great physicians such as Rhazes, al-Ahwazi, Avicenna and others reviewed the medical textbooks of civilizations such as Greece and India. Theories were scientifically criticized, superstitious beliefs were discarded, valuable innovations were added to pre-existing knowledge and the ultimate achievements were compiled as precious textbooks. Alhawi by Rhazes, Cannon by Avicenna, and Kamil al-Sina'ah by al-Ahwazi are among the works that were treasured by domestic and foreign scientists alike, as well as future generations who continued to appreciate them for centuries.

The above-mentioned textbooks discuss diseases and conditions related to neurosurgery, ophthalmology, ear, nose and throat, gastroenterology, urology, skeletomuscular system and other specialties, as well as cancer and similar subjects. One of the richest texts on the description, diagnosis, differential diagnosis, and prognosis of cancer and therapeutic approaches is Alhawi by Mohammad ibn Zakarya al Razi (Rhazes).

This article presents a brief summary of Rhazes' views about the definition of cancer, types, signs and symptoms, prevalence, complications, medical care, treatment and even surgical indications and contraindications. Moreover, his opinions are compared against the views of other physicians and theories of modern medicine. It is also recommended to review the medical heritage of Iran and evaluate the proposed treatments based on modern methodologies and scientific approaches.

Keywords: *cancer, Iranian ancient medicine, Rhazes*

Introduction

Although medicine and medical practice is considered to be as old as the human history, most physicians and researchers believe that detailed knowledge of cancer may be no older than some decades or a century at the most.

It is amazing that prominent Iranian physicians have mentioned the term “cancer” in their textbooks since about twelve centuries ago, and have associated certain conditions with it. Among these are headaches, ailments of the ear, eyes, pharynx, larynx, nervous system, musculoskeletal system,

gastrointestinal tract, and urologic diseases. They have also provided descriptions of some types of cancer, methods of diagnosis and treatment, prognosis, and other interesting issues.

One of the most significant works on the description, diagnosis, differential diagnosis, prognosis and therapeutic approaches towards cancer is Alhawi by Rhazes (Figures 1 and 2), which was written prior to Avicenna's Cannon and al-Ahwazi's Kamil al-Sina'ah.



Figure 1. The front cover of Al-Hawi, Arabic manuscript, Vol.12

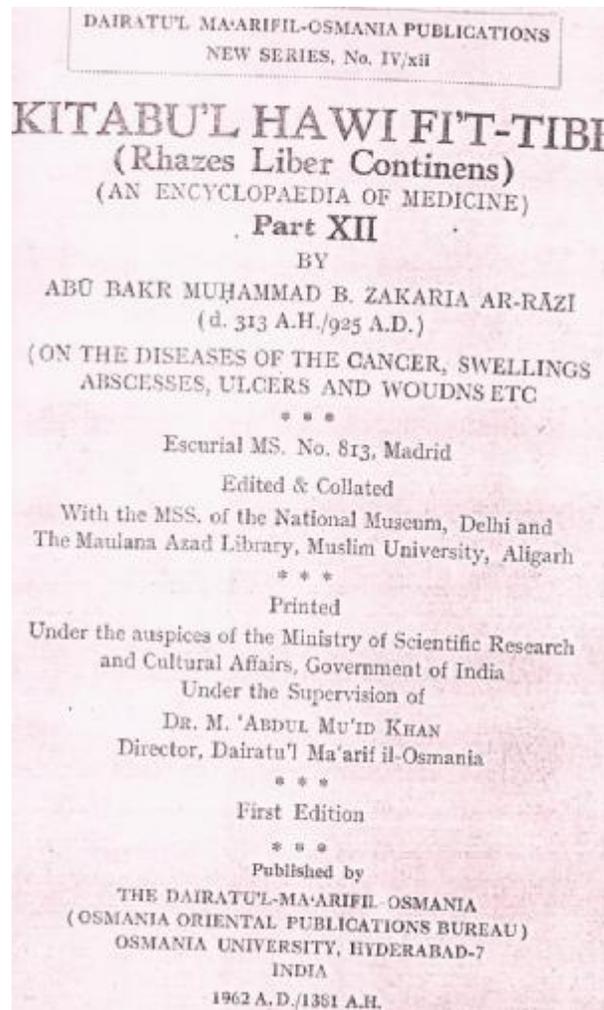


Figure 2. The back cover of Al-Hawi, Arabic manuscript, Vol.12

In this article, first a brief summary of Rhazes' views on cancer is presented, and subsequently it is recommended to review the medical heritage of Iran and evaluate the proposed treatments in order to help resolve complicated and problematic cases.

Definitions and general information about cancer in medical textbooks of ancient Iran

According to ancient Iranian textbooks, cancer is a hard lump with a dark color, abnormal appearance and uneven margins with peripheral outgrowths that give it the appearance of a crab, and hence it is called "cancer" (1, 2). Cancer may occur in the skin, external or internal organs, especially in intestines or the uterus (1, 3). It can also occur in some major organs of the body, such as the brain and heart, which will make surgery impossible (1).

If cancer spreads to internal organs and surgery is not an option, it must not be manipulated because any form of stimulation may lead to side effects such as severe and intolerable pain (1, 4).

Some causes of cancer

1. Liver dysfunction and production of abnormal or harmful chemicals by this organ (1, 5).
2. Spleen dysfunction and inability of this organ to remove abnormal or harmful substances from the blood (1, 5).
3. Eating food that can cause cancer (1, 6, 7).

Prevalence

As mentioned in medical textbooks of ancient Iran and confirmed by modern studies, the prevalence of cancer is higher in women than men (1, 8, 9), with uterine and breast cancer being the most common. Breast cancer is the most prevalent type of cancer among women. Cancer is more common in soft tissues than in hard tissues (1, 6) and also in organs with more blood vessels. It also occurs more frequently in organs closer to the neck area and those organs with abundant blood vessels and nerve fibers (1).

Diagnosis of cancer

According to Rhazes and Avicenna it is difficult to diagnose cancer at its onset stage and most physicians cannot successfully detect it at first. If diagnosed early on, however, medication may be administered, although definitive treatment is rarely achieved (1, 4).

At the onset stage, a cancer mass or tumor is the size of a fava bean, lacks adhesion and moves

when touched, but after growth it becomes adhesive and immovable. The outer tissue turns red and becomes very painful, and the patient may feel a burning and agonizing sensation (Figure 3). After the tumor grows, there are sometimes unclean and foul smelling secretions, and in some cases the vessels surrounding the cancer afflicted organ become congested, warm and dark (1).

من كتاب العلامات^٢: السرطان يكون ابتدؤه وربما صغيرا يشبه
الباقلي^١ أو الجلويزة ثم ينتقل من مكان إلى مكان وربما عظم حتى يصير
كالجلويزة، وربما عظم جدا ولا يبرح من موضعه إذا عظم؛ ويكون
جاسيا جدا و يضرب الى حرة مخالفة للون الجسد، وربما كان على لون
الأبار [وأحمر]؛ ويكون معه وجع يشبه النخس وحرقه و يضر
من كل دواء يوضع عليه وله حدة وحرافة^٣، وربما انفجر من ذاته
فيوجد^٤ جوفه رديا غفنا يسيل منه دم كالدردي يأكل ما حوله ويفسده،
ويكون كثير الخس؛ فإن وضعت عليه في هذه الحال أدوية لها قوة
عرض منه التشنج والخى والقشى والتأفص، والمدة التي تسيل من هذه
القرحة تلذع^٥ اللحم الصحيح وربما أقرحته.

Figure 3. Rhazes on the appearance of cancer

Symptoms of some types of cancer

Rhazes, Avicenna, Ali ibn Abbas al-Ahwazi and other physicians have written about cancer of the eye, nose, pharynx and larynx, breast, uterus, gastrointestinal tract and other organs in their textbooks; they have described diagnostic signs and symptoms, differential diagnosis, treatment and prevention, and have discussed other interesting details that can be subject of research and study. In the following section we will investigate some instances of their works.

1. Eye cancer

If cancer occurs in any of the eye layers, they become red and varicose-like protuberances develop in ophthalmic vessels. The patient will feel a severe pain from cornea to the temporal bone, and the pain will be more severe while walking or moving around (Figure 4). Other symptoms are headaches, diluted and burning secretions and loss

المطوى الكبير ٧٣ ج-٢
ساعة هرة والثالث تيب فيه الإصبع إلا أنه يبرد فيه سريعا جدا ولا
وجع معه ولونه لون البدين والرايب يكون معه في الجفون وفي العين
كلها، وربما امتد حتى يبلغ الحاجبين والوجنين وهو صلب لا وجع
معه ولونه كد، وأكثر ما يمرض في الجذوى والرمه المزمن وخاصة
لنساء، على الانتفاخ قد عد في امراض اللحم وأنا أرى أن يمد في
امراض الاجفان،
في السرطان
قال والسرطان العارض في العين يؤلمه وجع شديد فيها والشداد
العروق التي فيها حتى يمرض فيها (الف ١١٧) كذبه القرسوس وحرد
في حفاقات العين وانتهيها ونحس شديد ينهي الى الصدغين وخاصة
ان مضي العليل أو تحرك حركة صلبة وعيه صناع يسيل ان عينه
مادة حريفة رقيقة ويذهب عنه شهوة الطعام ولا يجمل التكمل الحار
ويومه ألاما شديدا، قال سيلان المواد الى العين، ربما كان في العروق التي
فوق القحف، وربما كان في داخل القحف، وعلامات سيلان خارج
القحف امتداد عروق الجبهة والصدغين (والانتفاخ) تضيق الرأس ١٥
وتأثر بلرق على الجبهة من الانتفاخ التابعة فان لم يظهر من ذلك شي
ومثال ذلك سيلان وازين كانت معه حكة في الاقدار وعطاب
السيلان في داخل القحف،
قال الوجع الشديد يكون في العين اما لحدة الزحوة التي تورمها
(١١) كذا.

Figure 4. Rhazes on Eye cancer

of appetite. Potent drugs are not effective and may even intensify the patient's pain (3, 5, 6, 10-15).

Uterine and Breast cancer

One symptom of uterine cancer is a prolonged, diluted bloody discharge (1). Ali ibn Abbas al-Ahwazi wrote that a hard and thick mass detected between the navel and pubic area in a woman may indicate uterine cancer (7).

According to Rhazes, there is a correlation between breast cancer and the quality and quantity of menstrual bleeding, that is, the more regular and normal the menstrual bleeding is, the less the possibility of breast cancer will be (1, 3, 16). There is also a correlation between breast cancer and liver and spleen dysfunction (1, 5).

2. Intestinal cancer

Ali ibn Abbas al-Ahwazi believed that continued, bloody stools, diarrhea, and painful, frequent and foul smelling defecation may be symptoms of

advanced intestinal cancer, which usually leads to the patient's death (3).

Differential Diagnosis

In the differential diagnosis of cancer, detection is of great importance as some non-cancerous cases may be very similar to cancer in the examination and evaluation stage. For example, if the areas around the neck or axillary lymph nodes are suspected to be cancerous, the physician will examine those areas carefully, and if they are warm

to the touch, he may conclude that they are afflicted by cancer. On the other hand, some tumors like Scrofula are colder than body temperature or have the same temperature as the body (1, 6).

Metastasis

In some cases of breast cancer, despite mastectomy of the cancerous breast, the cancer will spread to the other breast due to the causative factor (1, 4) (Figure 5).

الحاوي الكبير

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ج - ١٢

الجانبة، واينكن قصارى أمرك ألا يهيج فليجلب الوجع الشديد .
 إنطيش قال: قد قطع بعض القدماء سرطاناً مزماً في الثدي
 واستأصل الثدي البتة ودمى به فخرج به سرطان في الثدي الآخر لأن
 المادة اندفعت إليه .

الرابعة عشر من حيلة البرء: ابتداء السرطان يموت أكثر الإحباء ،
 فلا يعلمون أنه سرطان ، ويكون من انصباب الدم السوداوي الفكر الى
 عضو ما ، فإذا علمت ذلك فافصد على المكان لاستفراغ هذا الخلط بالسهولة

Figure 5. Rhazes on the metastasis of cancer

Disease transmission

Ali ibn Abbas al-Ahwazi argued that some malignant diseases may affect the male semen and thus be transmitted to the next generation. It is interesting that he differentiated between this kind of transmission and the transmission of diseases such as smallpox (3), as the hereditary transmission of cancer is an ongoing topic of discussion in modern medical texts (17).

General principles in cancer treatment

1. If cancer is detected at the onset stage, in some rare cases it can be treated definitively.
2. If cancer is advanced, the physician must try to prevent its progress by medication or surgery. In surgery, all cancerous cells must be removed and the whole afflicted organ may need to be extracted.
3. If cancer is confirmed to be resistant and permanent, its progress must be prevented in order to prolong the patients' life. In such cases, however, inappropriate attempts may cause side effects that can lead to the patients' death. Sometimes the patient may live longer and suffer less without undue intervention.
4. In cases where surgery is impossible, the cancerous mass must not be incised or pierced, and if ulcerated, prevention from infection must be provided and the ulcerated area must be treated carefully.

5. The important side effects of surgical therapy such as damage to the nerve fibers, vessels and/or muscles should not be overlooked (1).

Generally speaking, ancient physicians would have three objectives in treating patients with cancer:

1. Preventing progress of the disease
2. Preventing the cancer mass from being incised or pierced in order to avoid complications
3. Reducing the side effects and trying to calm the patient and treat secondary infections (18).

Prognosis

The majority of great ancient Iranian physicians have categorized cancer and leprosy among major malignant diseases (3), and have pointed out that pessimism, continuous anxiety and depression can cause malignant diseases. In modern literatures on psycho-oncology, it is stressed that cancer patients are afflicted by depression and anxiety and similar disorders are important factors in the prognosis of the disease (16, 19).

Ancient Iranian physicians believed that cancer is a malignant disease which is particularly challenging for the physician, and that the physician must not expect a definitive treatment as there is not much hope for one (2, 7, 20). They also thought that the darker and more concentrated the patient's blood is, the more malignant the disease

will be. This may be true of certain types of cancer that are associated with abnormal changes in the blood (8). They also believed that in cancers of the throat, palate and female genital organs, surgery might result in the patient's death (20).

Discussion

Ancient Iran experienced a golden age of medicine between the 10th and the 18th centuries A.D., when great physicians such as Rhazes, al-Ahwazi, Avicenna and others lived and practiced. These physicians revised the medical textbooks written in the centuries before Christ that were adopted and translated from civilizations such as Greece and India, and attempted to advance this very important and vital science. Each of these prominent physicians revised and criticized the opinions of others before themselves, eliminated incorrect ideas such as superstitious beliefs, added their innovations to the pre-existing knowledge and passed their achievements to the next generations. It can be claimed that Iranians made great contributions to

the medical science during these years and provided the grounds for the development of modern medical knowledge, a fact that most people nowadays are hardly aware of. Among the above-mentioned contributions are valuable textbooks such as *Alhawi* by Rhazes, *Cannon* by Avicenna and *Kamil al-Sina'ah* by al-Ahwazi, all of which contain a wealth of medical knowledge. This article presents a brief, selective investigation of the phenomenon of cancer as discussed in these works. It is clear that despite their limited resources and lack of advanced equipment, ancient Iranian physicians had succeeded in gaining valuable information that may even be beneficial to modern science. The details in these works on the diagnostic symptoms, differential diagnosis, predisposing factors, treatment, and prognosis of cancer are strong evidence for this claim. We hope that contemporary researchers will review and study the above-mentioned textbooks to help solve some of the medical problems in our age.

References

1. Rhazes M. [*Alhawi Alkabir fi al Teb*], 1st ed. Heydarabad, India: Daerat al Maaref al Osmanyah; 1962, vol.13, p. 3-35. [in Arabic]
2. Kermani N. [*Sharh Alasbab val Alamat*]. Qom, Iran: Islamic Organization of Islamic Medical studies; 2003, vol. 2, p. 434.[in Arabic]
3. Alahwazi A. [*Kamil al Senaah al Tebyah*]. Qom, Iran: Islamic Organization of Islamic Medical studies; 2003, vol. 2, p. 284, 290,378, 449, 528.[in Arabic]
4. Avicenna H. *Cannon of Medicine*. Tehran, Iran: Traditional Publishing; 1876, vol. 4, p. 70-71.
5. Avicenna H. *Cannon of Medicine*. Tehran, Iran: Traditional Publishing; 1876, vol. 3, p. 63, 179-197, 210-212.
6. Tabatabaee SM. [Abstract of *Alhawi*], 1st ed. Mashhad, Iran: Mashad University of Medical Science; 2010, vol.1, p. 51-94, 184-188. [in Persian]
7. Alahwazi A. [*Kamil al Senaah al Tebyah*]. Qom, Iran: Islamic Organization of Islamic Medical studies; 2003, vol. 1, p. 115, 126, 502. [in Arabic]
8. Mendelsohn J, Hunt KK, Robb GL, Strom EA, Ueno NT. *Breast Cancer*, 2nd ed. New York: Springer Science & Business Media; 2007, p. 1-18.
9. Rhazes M. [*Alhawi Alkabir fi al Teb*], 1st ed. Heydarabad, India: Daerat al Maaref al Osmanyah; 1961, vol.10, p. 120. [in Arabic]
10. Tabari A. [*Ferdos al Hekmah fi al Teb*]. Beirut, Lebanon: Dar Alkotob Alelmyah; 2002, p. 227.[in Arabic]
11. Tabatabaee SM, Kalantar AJ. [Motaleeh Tatbighi Sardard as Ketab Alhawi va Osoule Novin Pezeshki]. *Majaleh Pajuhesh dar Pezeshki* 1389; 33(1): 1-4. [in Persian]
12. Tabatabaee SM, Kalantar AJ, Sedaghat MR. [Cheshm Pezeshki az Ketab Alhawi Razi va Moghayeseh an ba Danesh Novin Pezeshki]. *Majaleh Pajuhesh dar Pezeshki* 1389; 33(2): 59-63. [in Persian]
13. Rhazes M. [*Alhawi Alkabir fi al Teb*], 2nd ed. Beirut, Lebanon: Dar Ehia Altorath Alarabi; 2002, vol. 3, p. 386-407. [in Arabic]
14. Rhazes M. [*Alhawi Alkabir fi al Teb*], 2nd ed. Beirut, Lebanon: Dar Ehia Altorath Alarabi; 2002, vol. 6, p. 133. [in Arabic]
15. Rhazes M. [*Alhawi Alkabir fi al Teb*], 2nd ed. Beirut, Lebanon: Dar Ehia Altorath Alarabi; 2002, vol. 2, p. 221-226. [in Arabic]
16. Sadock BJ, Sadock VA, Ruiz P, eds. *Kaplan and Sadock's Comprehensive Textbook of Psychiatry*. Baltimore: Lippincott Williams and Wilkins; 2009, p. 2315-32.
17. Boyle P, Levin B, eds. *World Cancer Report*, 2008. Lyon, France: International Agency for Research on Cancer; 2008.
18. Avicenna. *Encyclopædia Britannica*. <http://www.britannica.com/EBchecked/topic/45755/Avicenna> (accessed in 2010)
19. Schmoll HJ, Veer LV, Vermorken J, Schrijvers D, eds. *European Society for Medical Oncology Handbook of Cancer Diagnosis and Treatment Evaluation*. NY, USA: Informa Healthcare; 2009, p. 65-73.
20. Rhazes M. [*Alhawi Alkabir fi al Teb*], 1st ed. Heydarabad, India: Daerat al Maaref al Osmanyah; 1962, vol.12, p. 5, 6, 8. [in Arabic]