

## HISTORY OF ONCOLOGY

---

# Avenzoar's (1091-1162) clinical description of cancer

Marianna Karamanou<sup>1</sup>, Gregory Tsoucalas<sup>1</sup>, Zenia Saridaki<sup>2</sup>, Christos Iavazzo<sup>3</sup>, George Androutsos<sup>1</sup>

<sup>1</sup>Department of History of Medicine, Medical School, University of Athens, Athens, Greece; <sup>2</sup>Laboratory of Tumor Cell Biology, Medical School, University of Crete, Heraklion, Greece; <sup>3</sup>Department of Gynaecological Oncology, Christie Hospital, Manchester, United Kingdom

### Summary

In the 11<sup>th</sup> and 12<sup>th</sup> century the Western caliphate flourished, making Cordoba the capital of physicians and philosophers. During that period lived and practised the famous physician Ibn Zuhr or Avenzoar. In his monumental treatise *Al Taysir*, Avenzoar provided the first clinical description of a polypoid colorectal tumour

as well as the case of a uterine cancer and a basal cell carcinoma. His medical work remained popular through middle ages, influencing the development of western medicine.

**Key words:** Arab-Islamic medicine, colorectal cancer, history of oncology, western caliphate

### Introduction

In the 7<sup>th</sup> century AD, while a part of the world was trying to encounter the decline of the West Roman Empire and the enfeeblement of Byzantine Empire, Arabs created an empire that extended from Spain to India.

During that period, Caliph Abdullah Al-Ma-mun (786-833), of the Abbasid dynasty, encouraged the study of Greek science and philosophy and founded the "House of Wisdom", an institute for translating Greek and Roman manuscripts into Arabic. The work of several medical authors was translated, among them Hippocratic corpus, the works of Galen (130-201), "Materia Medica" of the distinguished pharmacologist Dioscorides (40-90) as well as the manuscripts of Rufus of Ephesus (late 1<sup>st</sup> century AD), Antyllus (2<sup>nd</sup> century AD), Oribasius (320-400), Aetius of Amida (c.501-575) and Paul of Aegina (625-690). However it is of interest that the work of Soranus (98-138) and Aretaeus of Cappadocia (1<sup>st</sup> century AD) were not translated.

During the Golden Arab-Islamic Age (7<sup>th</sup> to 14<sup>th</sup> century) Arab physicians created a new Hip-

pocratic medicine and a chain that preserved, expanded and brought medical knowledge to the Latin West. Having a practical spirit and excellent skills of clinical observation, Arab physicians studied among others cancer and proposed its therapeutic approach [1]. In the work of distinguished Arab physicians such as of Rhazes (865-926), Avicenna (980-1037) and Abulcasis (936-1013) several cancer types were described as nasal, hepatic, kidney, spleen and breast, mentioning also the difficulty of their cure. A short period later, one of the most brilliant physicians of his age, Avenzoar, gave a description of skin epitheliomas, and cancer of the uterus and colon [2].

### Ibn Zuhr or Avenzoar: his life and work

Abu Marwan `Abd al-Malik Ibn Zuhr, known in the Medieval Latin medical tradition as Avenzoar, was born in Seville around 1091. Avenzoar belonged to a family of which all the members were jurists, men of learning or physicians, enjoying the favor of sovereigns in al-Andalus region [3].



**Figure 1.** Portrait of the famous physician Avenzoar.

As a child he received an education proper to his family status based in Islamic Law, theology and literature. His father Abu 'l-'Alâ' initiated him in medicine and soon Avenzoar became familiar with a number of medical treatises including the Hippocratic and Galenic writings [3].

Like his father, Avenzoar was initially attached as physician to the princes of Almoravid dynasty (1040-1147). However he fell out of favour with the Almoravid ruler Ali bin Yusuf bin Tashufin who exiled him in Marrakesh, spending almost ten years in prison. In 1147 Almohads replaced Almoravids as a ruling dynasty and Avenzoar earned such a good reputation as court physician that soon became Vizier in the court of the Caliph Abd al Mumin [3]. Moreover, he transmitted his medical knowledge to his children. His son Abu Bakr became a well known physician and his daughter one of the most known midwives [2]. According to the writings of hafiz Abu-l Khattab Ibn Dihya: "Avenzoar occupied a firm station in philology and his knowledge on medicine was drawn from the purest sources. He knew by heart the poems of Zu " 'r-Rumma to which he joined a full acquaintance with all the doctrines held by the physicians; he enjoyed high favor under the

sovereigns of the West; his family was ancient, his wealth great and his possessions ample" [4].

As physician, Avenzoar was a convinced Galenist but he was more focused on practical and therapeutic medicine that on theoretical. Several anecdotes on his piety, generosity, medical skills and originality of his treatments are preserved in his own work and by his biographers [5] (Figure 1).

Avenzoar was also a prolific medical writer. At least nine of his works are known but few are extant such as: *al-Tiryāq al-sab 'īnī* (On Antidotes), *Fī 'Illatay al-Baras wa'l-'bahaq* (On Dermatological Affections, mainly vitiligo and leprosy), *Fi al-zīna* (On Beautification and Cosmetics), *al-Aghdhiya'* (On Dietetics, written at the request of his patron, Abd al Mumin to provide information on foods and their therapeutic advantages), *Fī'Ilal al-kilā* (On Kidneys), *al-Tadhkirah* (The Remembrance, dedicated to his son), *al-iqtisad fī Islah Al-Anfus wa al-Ajsad* (Book of the Middle Course, concerning the reformation of souls and the bodies, summarizing his views on hygiene and the role of psychology in therapeutics), *Jāmi' Asrār al-Tibb* (Compendium of Medical Wisdom) and finally his major work, written near the end of his life, *al-Taysir* (Book of Facilitation). *Taysir* was translated into Hebrew and also into Latin in 1281 by John of Capua under the name *Alteisir scilicet regiminis et medelae*, reprinted at least ten times till 16<sup>th</sup> century and was used as textbook in Universities. It was also served as a companion book to *Colliget* the work of the philosopher and physician Averroes (1126-1198) [2,5].

Avenzoar's work is a mixture of Hippocratic and Galenic theories along with his original observations and the insights came from a rich family tradition in medicine. He was the first to describe in detail scabies; he also mentioned pericardial effusion as "watery humidity, as if urine confined to the membrane of the heart", fibrous pericarditis, pharyngeal paralysis, abdominal hernias, inflammation of the inner ear and performed experimentally a tracheotomy on a goat, proving the safety of this operation in humans. He referred also to head ailments such as epilepsy, lethargy, headaches, and tremor. Avenzoar was also very keen in pharmacology and *Taysir* contains a rich nomenclature of herbs and plants used for therapeutic purposes [2,5] (Figure 2).

He died at Seville in 1162 and he was buried outside the gate called "Babuh-l-fatah" or the "Gate of Victory". It was said that on his dead bed Avenzoar gave directions that these lines should



**Figure 2.** A 15<sup>th</sup> century reproduction of Avenzoar's monumental work *al-Taysir*.

be inscribed upon his tomb: "Stand and reflect! I behold the place to which we are all impelled. The earth of the tomb covers my cheek, as I have never trod upon its surface. I treated people to save them from death, yet here I am, brought to it myself [4]."

The name of several of his pupils and admirers are preserved as Averroes who mentions him as "the greatest physicians since Galen" and Maimonides (1138-1204) who considered him "unique in his age and one of the great sages" [2].

## Cancer as described in Avenzoar's work

Avenzoar provided the description of three cases which indicate respectively cancer of the colon/rectum, uterus and basal cell carcinoma.

### 1. "On the type of verrucae that originates from the stomach"

In *Taysir* we may find a chapter entitled "On the type of verrucae that originates from the stomach". Avenzoar described the case of a man that met during his stint in prison: "He could not digest his food and he was suffering from relapsing fever, stronger at times and weaker at other times.

He was also complaining of diarrhea and no one could understand the cause of his complaints". Avenzoar mentioned that he was cachectic and during the palpation of the abdomen he found a tumour in the inferior part of the gastric region, painful at palpation. Soon afterwards the patient evacuated in the stools a slightly elongated apple sized mass, followed by bleeding diarrhea. Avenzoar realized that the patient was suffering from an incurable disease and tried to alleviate his symptoms. However the patient died at the 9<sup>th</sup> day. Following the humoral theory Avenzoar tried to explain that this verrucae was produced by a black bile (melancholic humour) stating that the increased consumption of raw camel meat could be at the origin of this formation [3,6].

In the 18<sup>th</sup> century the Italian Anatomist Giovanni Battista Morgagni (1682-1771) in his work *De Sedibus* referred to Avenzoar's description, believing that it was an affection of the colon than of the stomach, pointing out the bloody diarrhea of the patient. In the 20<sup>th</sup> century, in his thesis on Avenzoar's work, the Egyptian born, American pathologist and historian of medicine Henry A. Azar (1927-2008) proposed that Avenzoar description fits with a polypoid colorectal tumour [2,6].

### 2. "On Uterus Chancre"

In another chapter from his book *Taysir*, Avenzoar described a gynaecological condition that he had seen during his practice. However it is worth mentioning that at that case he did not perform pelvic examination as he was believing that it was a taboo, condemned by religion and he dealt with this woman through her husband's narration. "Al -Tammati, the fortuneteller, informed that someone dear to him was stricken with this condition (*akila* or gangrene of the uterus). I worked hard at finding out what I could do until I gave up. I informed my father about this problem and he prescribed a drug for the woman, saying that the disease was fatal. The patient's condition soon deteriorated, the pain (pelvic) increased and she was bleeding profusely. All this as a result of what gangrene can do to an organ. Finally one of the major branches of a vessel burst out and she bled to death" [7].

The term *akila* indicates a disease that "eats up" her uterus and according to his description we assume the diagnosis of a uterine cancer.

### 3. "On senile verrucae"

Concerning that disease, Avenzoar mentions:

“Skin tumours seen on the shoulder region of the elderly could become profound. That kind of tumour was seen also in my father” [3]. According to Avenzoar, these tumours can have a variable volume from a lentil to a bean and they are usually located on the shoulder region, on chest or back. The cancerous degeneration is rare but it can be observed in patients who experience worries, anxiety and sorrows [3].

These senile verrucae correspond to seborrheic keratosis (SK) a common benign epithelial neoplasm that usually affects middle-aged and older patients. However, in rare cases basal cell carcinoma (BCC) may arise within SK.

## Conclusion

Avenzoar is considered one of the main representatives of Arab-Islamic medicine and the most influential physician of the Muslim medieval Spain. His work, through several translations, remained popular for more than 500 years in the medical universities of Padova, Bologna and Montpellier. Among others, in his vast medical work, he provided the first clinical report of a colorectal cancer and gave also the clinical description of a uterine cancer and a basal cell carcinoma.

## References

1. Withington ET. Medical history from the earliest times: a popular history of the healing art. London, The Scientific Press Limited, 1894, pp 138-170.
2. Azar HA. The Sage of Seville: Ibn Zuhr, his time, and his medical legacy. Cairo, American University in Cairo Press, 2008.
3. Colin G. Avenzoar, sa vie et ses œuvres. Paris, Leroux, 1911, pp 118-119, 67, 137.
4. Khallikān I. Ibn Khallikan's Biographical dictionary. de Slane M (trans), Vol.III, part 1. Paris, Oriental Translation Fund of Great Britain and Ireland, 1843, pp 137-141.
5. Millan CA. "Ibn Zuhr". In: Glick TF, Livesey SJ, Wallis F. Medieval Science, Technology, and Medicine: An Encyclopedia. New York, Routledge, 2014, pp 259-261.
6. Azar HA, McVaugh MR, Shatzmiller J. Ibn Zuhr (Avenzoar)'s Description of a Verrucous Malignancy of the Colon. *Can Bull Med Hist* 2002;19:431-440.
7. Azar HA. When I was young...Excerpts from Ibn-Zuhr (Avenzoar)'s *Kitab al-Taysir*. *JISHIM* 2002:21-26.