

Disease in tenth-century Iran and Irak according to al-Rāzī's Casebook

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Abstract: This article addresses the sum of diseases found in al-Rāzī's Casebook, the oldest and largest extant collection of medieval Islamic medical case records. This study is framed in M. Grmek's concept of pathocenosis that can be explained by the interaction of diseases at a given time and place as a consequence of external and internal factors, a premise with relevant implications for medicine today. Our primary aim is to provide a glimpse of health concerns and the prevalence of pathological conditions in tenth-century Iran and Irak. In the context of the historiographical debate about retrospective diagnosis, it also encompasses an analysis of specific difficulties raised by this particular collection of nearly nine hundred clinical accounts. A further purpose is to inquire whether the nature of the source under discussion makes any

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difference when trying to identify the condition from a modern medical perspective.

Keywords: History of medicine – Medieval Islamic Medicine – Clinical Records – Retrospective Diagnosis – Pathocenosis - Disease prevalence - al-Rāzī

Introduction

Clinical accounts stand out as the medieval Islamic medical source most likely to give us a hint about actual health disorders encountered by physicians in daily medical practice. By its very nature, theoretical medical treatises –as much then as now— are intended to encompass as comprehensive a body of medical knowledge as possible, and therefore they do not reflect actual medical concerns of given populations. This particularly applies to medieval Islam, whose learned medical tradition flowed without major changes throughout a vast geographical area (from India, via North Africa, to Spain) over several centuries. Thus, with regard to early periods for which archival records are virtually non-existent, case histories certainly become our sole source to approach a particular pathocenosis in a given geographical area, that is, the sum of pathological conditions encountered in a given population, the existence and frequency of each illness at a particular time as a consequence of external or internal factors, and the balance to be found between the small number of prevalent diseases and the number of other morbid entities which rarely occur.² However, when premodern medicine –or in our case, medieval Islamic medicine— is concerned, research based on that type of material is not without its risks. On the one hand, in this particular instance case histories and medical anecdotes may well respond to purposes other than to convey true medical information for instruction.³ On the other hand, and more importantly, a superficial look at any medieval medical treatise,

² See M. D. Grmek, *Les maladies à l'aube de la civilisation occidentale. Recherches sur la réalité pathologique dans le monde grec préhistorique, archaïque et classique*, Paris: Payot, 1983, pp. 14-30; M. Grmek and D. Gourevitch, *Les maladies dans l'art antique*, Paris: Fayard, 1998, pp. 352-357.

³ See the articles by the present author, “The Clinical Account in Medieval Islamic Medical Literature: *Tajārib* and *Mujarrabāt* as Source”, *Medical History*, 54.2 (April 2010), pp. 195-214; “Medical Anecdotes in Ibn Juljul’s Biographical Dictionary”, *Suhayl (Journal for the History of the Exact and Natural Sciences in Islamic Civilization)*, 4 (2004), pp. 141-158; “Practice versus Theory: Tenth-Century Case Histories from the Islamic Middle East”, in E. Savage-Smith and P. Horden (eds.) *The Year 1000: Medical Practice at the End of the First Millennium*, Special volume of *Social History of Medicine*, 13.2 (2000), pp. 293-306; and “Graeco-Roman Case Histories and Their Influence on Medieval Islamic Clinical Accounts”, *Social History of Medicine*, 12.1 (1999), pp. 19-43.

Arabic or Latin, reveals the irreconcilable breach between the conceptualization of disease in premodern societies and those at present: a distance which—aside from other methodological complexities I will refer to later on—actually turns retrospective diagnosis in many instances into a particularly conflicting, if not impossible, task.

Medieval Islamic medical literature—although richer in clinical accounts than the Western medical tradition of the same period—is not very prolific in collections of case histories concerning real patients. Nevertheless, out of three works known to have been preserved, the *Kitāb al-Tajārib* or Casebook by the tenth-century physician Abū Bakr Muḥammad b. Zakarīyā' al-Rāzī (d. 925 AD) appears to be a potentially suitable source for the study of disease in tenth-century Iran and Irak. This work is the earliest and largest extant collection within medieval Islamic medical literature.⁴ Containing nearly nine hundred short medical reports and, since in most instances complaints are presented as an enumeration of symptoms, it is actually the closest we can get to real suffering and disease in medieval Islam. From this standpoint, my aim here is to offer an overview of prevalent diseases as an approach to pathocenosis in tenth-century Iran and Irak, but it also seeks to address the issue of disease conceptualization in medieval Islam and the identification of disorders from a modern biomedical point of view. Therefore, following a description of the source material in the first part of this study, the second section will deal with the issue of nosographical descriptions in an attempt to raise an interdisciplinary analysis regarding the actual possibility of determining disease identities—and hence, a given pathocenosis—in historical retrospective through this particular source. Finally, following a general classification based on the part of the body affected or on specific disorders, the third part will focus on conditions encountered by al-Rāzī and their estimated prevalence according to his Casebook, so as to give a glimpse of disease in tenth-century Middle East.

⁴ In chronological order, these collections are al-Rāzī's *Kitāb al-Tajārib* in the Eastern lands of Islam, and Aḥmad b. 'Isā al-Hāshimī's *Kitāb al-Majālis fī l-ṭibb* or Medical Sessions (Arabic ed. and study by S. Kaddouri, Madrid: CSIC, 2005) and Abū l-'Alā' Zuh'r's *Kitāb al-Mujarrabāt* or Book of Medical Experiences (Arabic ed., Spanish transl. and study by C. Álvarez Millán, Madrid: CSIC, 1994), written in eleventh and twelfth century al-Andalus respectively. Although an edition of the first work has been published by K. Ḥarbī (*Kitāb al-Tajārib li-Abī Bakr Muḥammad b. Zakarīyā' al-Rāzī*, Alexandria, Dār al-Thaqāfa al-'Ilmiya, 2006), the texts included in this article—based on the manuscript copy preserved in Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975—do not always coincide or appear in that printed version.

1. Al-Rāzī's *Kitāb al-Tajārib* or Casebook as source of information.

Abū Bakr Muḥammad b. Zakarīyā' al-Rāzī is a well-known and prolific Islamic author born in Rayy, near modern Tehran. Professionally and intellectually interested mainly in medicine, philosophy, alchemy and music, throughout his life he wrote nearly two hundred books on various topics which, in the case of medical treatises such as the *al-Kitāb al-Manṣūrī* and the *al-Kitāb al-Ḥāwī*, became very influential in the Western Latin tradition. He is also known to have directed his town hospital in Rayy and, later on, to have been appointed to head a hospital at Baghdad.⁵ Moreover, for what really matters here, al-Rāzī stands out as one of the few medical theoreticians of medieval Islam whose medical practice is actually attested, additionally providing by far the largest amount of medieval Islamic clinical records that have come down to us from that period.⁶ This Casebook alone contains nearly nine hundred cases treated by him or by his students under his supervision. Although the word 'hospital' (*bimaristān*) does not appear in the work, it is possible that consultations were conducted in that medical environment (more likely, in an out-patient ward), even if a number of them were actually carried out by a third individual on behalf of the patient and a

⁵ For al-Rāzī's life, writings and impact in the Western medical tradition, see L. Richter Bernburg, "Abū Bakr Muḥammad b. Zakarīyā' al-Rāzī (Rhazes) Medical Works", *Medicina nei secoli*, 6 (1994), pp. 377-99; E. Savage-Smith, "Medicine", in R. Rashed (ed.), *Encyclopædia of the History of Arabic Science*, 3 vols., London: Routledge, 1996, III, pp. 903-62; and E. Savage-Smith, "Europe and Islam", in I. Loudon (ed.), *Western Medicine: An Illustrated History*, Oxford: O.U.P., 1995, pp. 44-45. D. Jacquart, F. Micheau, *La médecine arabe et l'Occident médiéval*, Paris: Maisonneuve et Larose, 1990, pp. 55-68.

⁶ Al-Rāzī's *al-Kitāb al-Ḥāwī*—a huge collection of medical notes and extracts from Greco-Roman, Indian, and Syriac medical texts for the author's personal use as an aide-mémoire—is paved with clinical observations, some of which can actually be considered as control trials. See selected passages in *The James Lind Library* by E. Savage-Smith (http://www.jameslindlibrary.org/illustrating/records/kitab-al-hawi-fi-al-tibb/key_passages) and S. Tibi (<http://www.jameslindlibrary.org/illustrating/articles/al-razi-and-islamic-medicine-in-the-9th-century>), and P. Pormann, "Medical Methodology and Hospital Practice: The Case of Fourth-/Tenth-Century Baghdad", in P. Adamson (ed.) *In the Age of al-Farabi: Arabic Philosophy in the Fourth/Tenth Century*, *Warburg Institute Colloquia*, 12 (2008), pp. 95-118. Different in purpose, but also collected by the author himself, we must add the group of thirty-three case histories to be found in the *Ḥāwī* and the third chapter of his treatise entitled *Sirr ṣinā'at al-ṭibb* (The Secret of the Medical Art). Al-Rāzī, *Kitāb al-Ḥāwī fī l-ṭibb*, 23 vols., Hyderabad, Osmania Oriental Publications Bureau, 1955-68, vol. 16, pp. 189-208; M. Meyerhof, 'Thirty-Three Clinical Observations by Rhazes', *Isis*, 23 (1935), pp. 321-56 (reprint in *Studies in Medieval Arabic Medicine*, ed. by P. Johnston, London: Variorum, 1984); R. Kuhne Brabant, 'El *Sirr ṣinā'at al-ṭibb* de Abū Bakr Muḥammad b. Zakariyyā' al-Rāzī', *Al-Qanṭara*, 3 (1982), pp. 347-414; 5 (1984), pp. 235-92; 6 (1985), pp. 369-95. For an analysis of literary and stylistic features of these two groups of case histories, see Álvarez Millán, "Graeco-Roman Case Histories", note 3 above, pp. 37-41.

few others consisted in consultations via correspondence from distant areas. For the most part, the information seems to respond to some kind of systematic procedure in recording every consultation, having been perhaps transcribed by al-Rāzī's students for future reference and study. What is known for sure is that these clinical descriptions, primarily arranged in a head-to-foot order throughout thirty chapters or sections, were compiled after his death by his students and circulated as a text-book later on. In the context of the varying types of clinical account to be found in Islamic medical literature, al-Rāzī's *Kitāb al-Tajārib* presents little –if any– literary elaboration, that is, case histories contained in this particular work appear to be a literal and reliable account of daily medical practice and disease in an urban environment. Unfortunately, it is impossible to determine whether these clinical accounts belong to al-Rāzī's medical practice in his home town in Iran or in Baghdad –or both– and so, it is also impossible to know if the span of time covered by these clinical records only comprises a few years, while working in one of those cities, or if the collection assembles patients treated throughout a longer period which, nevertheless, would not sum up much more than forty or fifty years.

The case histories contained in this work are not accounts of an illness from onset to recovery, but are short reports which start with a basic identification of the patient's sex and age. Some entries are concise, such as “a man suffered from migraine and fever, and he had been constipated for the last three days”, or “a woman complained of an intense migraine and that she was losing hair from her head”, “man with dry cough”, or “a man complained of pain in the thorax with no cough or any other symptom”.⁷ Occasionally there is a reference to his or her temperamental complexion, but often the enumeration of symptoms includes uroscopy and, some times, the examination of the patient's pulse or the body area involved, as well as the interrogation of the patient, as in the following examples:

- 1) A young man came and complained that he felt a great bitter taste [in his mouth] every day and a visibly intense languor to the extent that all his body had become lax and he fainted. He [al-Rāzī] touched his vein and felt a regular pulse, so he wondered about the matter, since had [the condition] been due to heart weakness, he would certainly feel a difference in the pulse. He said [to the patient]: ‘By chance, have you had much sexual intercourse after which this matter appeared?’ He replied:

⁷ Al-Rāzī, *Kitāb al-Tajārib*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fol. 5a, fol. 5b, fol. 47b, and fol. 50a respectively.

‘Yes’. He [al-Rāzī] instructed [him] not to tire himself too much, to abstain from sex for a year, to take sitting-baths every day in cold water, to anoint his stomach with both types of sandalwood, to behave appropriately, and to increase his sleep.⁸

2) A man had an intense pain in the bone of his chest [the sternum], at the height of his left nipple [extending] towards his heart and throat. In the right side he did not feel [the pain] which had seized him over the past two days and perhaps it had occurred twice until he employed cold water to pour over that area and he felt relief. [The man] was affected by gout in his limbs. [Al-Rāzī] prescribed bloodletting from the left cephalic vein, pills of camphorated bamboo shoots, to drink acidic pomegranate water and apple juice, to eat what soothes the blood and the heat, and to anoint his chest with rose water, sandalwood and camphor.⁹

3) A young man came crying due to a pain in one side [of his chest]. He said that he had had that pain continuously for a year. He [al-Rāzī] touched his vein and found it full (*mumtali*) and uneven (*mutawattir*). His urine was viscous (*khāthir*) and a little yellow. He [al-Rāzī] touched the affected area and pointed out an abscess (*khurā*) from the inside. He prescribed for him bloodletting in the basilic vein of the opposite side, and as a means for relief he prescribed pomegranate-water, and a diet on *hall wa-zayt*.¹⁰

4) A man of bilious complexion (*rajul miṣfār*) complained of flatulence in his abdomen, along with normal intestinal evacuation which tended towards loose [bowels], and dizziness in his head when standing up. He was not very thirsty, and his urine was thin, tending to a yellow colour. [Al-Rāzī] prescribed him ten drachmas of rose-honey with cumin water.¹¹

⁸ *Ibid.*, fol. 14a (Chapter 5, On hemiplegia, numbness, laxity and the remaining brain and nerve disorders).

⁹ *Ibid.*, fol. 45b (Chapter 13, On pleurisy, cough, anxiety and the remaining chest and lung disorders).

¹⁰ *Ibid.*, fol. 54a-54b (Chapter 14, On pain in the joints and the hip, pain in hands and feet, Medina worm and gout). *Hall wa-zayt*, literally meaning ‘vinegar and oil’ was ‘a cold side dish of bread pieces sopped in a mix of vinegar, topped with shredded roasted meat of pullets or chicken, drenched with olive oil, and garnished with nuts, pulp of small and smooth cucumber, and fresh herbs. It is the perfect dish for hot summer days, served before the main hot dishes’. See N. Nasrallah, *Annals of the Caliphs’ Kitchens. Ibn Sayyār al-Warrāq’s Tenth-Century Baghdadi Cookbook*, Leiden and Boston: Brill, 2010, p. 609.

¹¹ *Ibid.*, fol. 63a (Chapter 15, On flatulence, colic and constipation).

5) A woman complained of pain in her spleen. [Al-Rāzī] examined her by touch and said: 'Her stomach is swollen'. He prescribed her the 'great rose pastilles' (*aqrās al-ward al-kabīr*) and a bandage on the upper part (lit.: the mouth) of the stomach; diet: *ḥall wa-zayt* and light food.¹²

At this point it is convenient to recall that medieval Islamic medicine consisted in the assimilation and adoption of the Greco-Roman medical tradition. Therefore, medieval Islamic anatomical, pathological, and physiological knowledge mirrored the Greco-Roman lore, and thus, the concept of disease in learned Islamic medicine was based on the Hippocratic-Galenic system of humoral theory, in which the four basic elements (fire, air, water and earth), as well as their primary qualities (hot, dry, wet and cold), combined to form the humors (blood, phlegm, yellow bile and black bile), which in turn corresponded with four complexions or temperaments (sanguine, phlegmatic, choleric and melancholic).¹³ Greco-Roman –and by extension, Islamic— medical theory also developed a complex scheme of correspondences between humors and temperaments on the one side, and seasons, age, sex, colours, tastes, smells, etc. on the other. Likewise, a substantial part of health preservation was based on the concept of the so-called “six non-natural things” potentially capable of altering the humoral balance: air or climatic environment, food and drink, sleep and wakefulness, physical exercise and rest, evacuation and retention (which included the bath and sexual intercourse), and emotions (joy, sadness, anger, etc.).¹⁴ Regardless of local mechanisms of disease, to a large extent diagnosis performed by medieval medical practitioners conformed to this system's internal logic. As a result, in the absence of modern tests and sophisticated technology to reveal what is happening in our organism, ancient and medieval practitioners had to interpret the external signs of the human body in the belief that humoral imbalance –that is, disease— was expressed through a

¹² *Ibid.*, fol. 73a (Chapter 20, On spleen disorders).

¹³ For a description of medieval Islamic medical theories, see M. Ullmann, *Islamic Medicine*, Edinburgh: Edinburgh University Press, 1978, pp. 55-85 and P.E. Pormann and E. Savage-Smith, *Medieval Islamic Medicine*, Edinburgh: Edinburgh University Press, 2007, pp. 41-79. As for the role of humoral theory in actual medieval Islamic therapy, see E. Savage-Smith, “Were the Four Humours Fundamental to Medieval Islamic Medical Practice?”, in P. Horden and E. Hsu (eds.), *The Body in Balance: Humoral Medicines in Practice* (New York, Oxford: Berghahn, 2013), pp. 89-106.

¹⁴ See L. J. Rather, “The ‘six things non-natural’. A note on the origins and fate of a doctrine and a phrase”, *Clio Medica*, 3 (1968), pp. 337-347; L. García Ballester, “On the Origin of the ‘Six Non-Natural Things’ in Galen”, in *Galen and Galenism*, Ashgate: Variorum, 2002 (Variorum Collected Studies Series).

change or external and visible sign in the body, either in the skin or in body fluids such as urine.

Amongst body fluids, by far urine is the one which actually deserves a broader range of descriptive categories in al-Rāzī's Casebook, such as thin or thick, with or without blood and purulent discharge, and in varying degrees, it is also said to be transparent, yellow, red, brownish, black, pearly, or otherwise, as in the following case histories:

6) An individual had a headache, along with a green urine turbid like first pressed oil; the headache was accompanied by constipation, and his eyes and tongue were not yellowish. [Al-Rāzī] said: 'This is a leek-green bile (*marār kurrāthī*) which pours forth through urine'. He prescribed for him a purgative enema along with prune water with sugar at night [just before] dawn, and the next day, barley water and to apply a cloth on his head moistened with vinegar, rose water, and rose oil; diet: spinach with almond oil.¹⁵

7) A man was affected by intense vomiting and his urine was similar to pomegranate water; he felt sad (*ghumma*) and a burning sensation (*lahīb*). [Al-Rāzī] prescribed him pastilles of aloe with pomegranate water every time he would be seized by vomiting and to anoint his stomach with sandalwood and camphor.¹⁶

8) Urine resembling frozen water [in] a woman that had recently been in labour. There was no trace of heat, no thirst, and no burning sensation (*iltihāb*), but she felt continuous pain in the sides of her chest, along with regular breathing (*salāmat al-tanaffūs*). The course of the condition had persisted until she ceased to be relieved by the intake of chicory (*hindibā*). He thought that there was a swelling in the lower membrane (*bi-ḥijābi-hā al-aṣfal*, peritoneum?), and he ordered to take half a *raṭl* of chicory water and to boil five drachmas of cassia (*khiyārshanbar*) in it and three drachmas worth of almond oil; diet: *ḥall wa-zayt*, and if the oil is substituted by almond oil it will be better. After two or three days, [she must be given] rose-honey (*julanjubīn*) and mastic (*maṣṭakā*).¹⁷

9) Woman whose urine looked like curdled milk and complained [of pain] below her navel; she stated that the painful area was hot at touch.

¹⁵ Al-Rāzī, *Kitāb al-Tajārīb*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fols. 2b-3a (Chapter 1, On headache and migraine).

¹⁶ *Ibid.*, fol. 32b (Chapter 12, On stomach disorders and vomit).

¹⁷ *Ibid.*, fol. 43a (Chapter 13, On pleurisy, cough, anxiety, and the remaining lung and chest conditions).

[Al-Rāzī] said: 'Her urine indicates [the presence of] much purulent matter'. And he prescribed for her bloodletting, pastilles of hazelnut (*aqraṣ al-banādiq*) with julep, and a diet of spinach with almond oil.¹⁸

10) A young man complained of difficulty in passing water over the past ten years; he felt heaviness [in the pubic area?] when he lies down [to the extent that] it is impossible for him to bow in worship and sometimes a purulent discharge comes out; his urine is raw tending to turbid (*fijj ilā l-kadūra*). [Al-Rāzī] said: 'This pain in the kidney is due to an ulcer'. He prescribed three drachmas of pastilles of alkekengi in the morning along with *mayfukhtaj* [a type of spiced wine], and three drachmas of seed pills (*ḥabb al-buzūr*) with julep at night.¹⁹

11) The man (lit. owner, *ṣāḥib*) of the urine sample containing abnormal sediment (*muthawwara*) which looks like donkey's urine complained of intense headache and acute fever. The master said: 'According to what Hippocrates said in one of the *Aphorisms*, indeed this kind of urine is always accompanied by a headache'. He prescribed for it cold things.²⁰

Particular attention is given to the description of the patient's intestinal evacuation, as well as to menstruation in the case of women. The latter was relevant information for the understanding of female complaints, since the womb was classified as a wet and cold organ able to raise all kinds of conditions.²¹ Leaving aside the presence of amenorrhea and hypermenorrhea as disorders on their own within the chapter devoted to female genitalia, throughout al-Rāzī's Casebook, only in three cases is menstruation said to look like bile or a yellowish watery discharge, and for the most part, menstruation is said to have stopped, to be normal, to be lighter than usual, to have disappeared and then returned, etc., in such varying conditions as a headache, ophthalmia, pleurisy, a cough, nose bleeding, heart palpitations, stomach-ache, colic, pain in the joints, pain in the liver accompanied by swelling of the spleen, or fever.

An additional consideration regarding the information provided by clinical records under scrutiny is that prognosis is seldom mentioned and the outcome is

¹⁸ *Ibid.*, fol. 59a (Chapter 15, On flatulence, colic and constipation).

¹⁹ *Ibid.*, fol. 75b-76a (Chapter 21, On kidney and bladder disorders, and sexual intercourse).

²⁰ *Ibid.*, fol. 103a (Chapter 27, On fevers, laxity, heaviness, shivering and heat).

²¹ For a detailed study of Greco-Roman ideas about women and their bodies, see H. King, *Hippocrates' Woman. Reading the Female Body in Ancient Greece*, London and New York: Routledge, 1998; and R. Flemming, *Medicine and the Making of Roman Women. Gender, Nature, and Authority from Celsus to Galen*, Oxford: Oxford University Press, 2000, pp. 116-7, and 333-5.

rarely reported, although anamnesis (data concerning the patient's past illnesses) is occasionally given:

12) A man complained that he was vomiting, along with much nausea (*ghathayān*), and abundant water was flowing from his nostrils; this happened just after he had suffered from measles (*ḥaṣba*), and he had lost weight. He [al-Rāzī] said: "This [vomiting] should end because of the water which comes out from his nose; otherwise, it would cause him severe and fatal diarrhoea." He prescribed him rose and aloe tablets, to rub the upper part of his heart (*ra's fu'ādi-hi*) with both types of sandalwood and camphor, and to strengthen him with chicken [cooked] in water of unripened grapes or in sumac water, and a diet for the convalescent.²²

As far as diagnosis is concerned, we can encounter conditions identified as diabetes, gout, epilepsy, haemorrhoids, hernia or measles, whose equivalence in modern medicine need not to be questioned, for even if employed in a completely different medical, social and cultural framework, it may well be assumed that the biological reality has not changed. However, as reflected by the examples seen so far, only in a proportionally small amount of instances does the clinical account include this kind of information or provide a cause potentially underlying the patient's symptoms, that is, data likely to help in determining diagnosis itself such as a swelling in the peritoneum after labour (example 8) or an ulcer in the kidney (example 10). Furthermore, since the concept of disease in medieval Islam relies on that of Greco-Roman medicine, we often come across nosographical descriptions which leave the historian –as much as the physician— at a loss as to the nature, cause or location of the patient's disease when described in terms of humoral imbalance such as illness caused by "yellow bile that has crept to the head" in a young man affected by dizziness, pain in the knees, a bitter taste in his mouth and a little bit of cough or "headache caused by a yellow bile vapour from the stomach".²³ With regard to retrospective diagnosis, what are historians and modern doctors to do with "a leek-green bile which pours forth through urine" as in example number six? Alternatively, is a headache accompanied by constipation, apparently normal

²² Al-Rāzī, *Kitāb al-Tajārib*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fol. 38b (Chapter 12, On stomach disorders and vomit).

²³ *Ibid.*, fol. 6a (Chapter 2, On dizziness and vapours in the brain) and 2b respectively (Chapter 1, On headache and migraine).

eyes and tongue, along with a turbid urine like green oil a condition that can be identified and labelled from a modern scientific perspective?

2. Retrospective diagnosis and pathocenosis in tenth-century Iran and Irak.

In a pioneering study fifty years ago, D. G. Bates not only demonstrated the need to undertake retrospective diagnosis in its biological and intellectual contexts, but also its difficulty even for physicians still fluent in the pre-bacteriological medical language and conceptual framework. He most likely addressed the contingences of textual interpretation for modern historians for the first time in history, but more importantly, his analysis of a particular seventeenth-century example allowed him to pinpoint the influence of contemporary theoretical knowledge upon the physician's perception of a given ensemble of symptoms. It is also worth noting his observation regarding conditions which –whether or not represented in today's literature— are seldom seen clinically, as well as the fact that “the gradual subordination of clinical to laboratory descriptions of disease increasingly limits the value of modern textbooks for historical purposes”. In short, while highlighting the relevance of clinical records for the historian of diseases –both regarding what men thought about a given condition and what we may learn about the condition itself— Bates' view is summarized in his quotation of Ch. Creighton's text published in 1894, here partially extracted: “... the historian of diseases ... has to look for the realities amidst the ‘favourite opinions’ or the ‘preconceived fancies’ of contemporary medical writers ... necessary truths or verbal constructions of some doctrine”.²⁴

More recently, other well-known scholars have also addressed the historiographical complexities of retrospective diagnosis. As A. Cunningham put it, “you die of what your doctor says you die of”, that is, according to social constructs, disease identities and concerns present at a given time and culture.²⁵ J. Arrizabalaga has likewise analysed the issue of how real understanding of disease is always far more than just a biological phenomenon. Like Cunningham, he has also discussed the essential discontinuity between the identity of disease as conceptualized in the Western medical tradition before and after laboratory medicine, revealing how difficult it is to imagine that any medical expression of disease can be fully understood outside its relevant

²⁴ D. G. Bates, “Thomas Willis and the Epidemic Fever of 1661: A Commentary”, *Bulletin of the History of Medicine*, 34.5 (1965), pp. 393-414; quotations in pp. 396 and 394 respectively. I wish to thank the anonymous reviewer of my article for drawing my attention to this seminal publication.

²⁵ A. Cunningham, “Identifying Disease in the Past: Cutting the Gordian Knot”, *Asclepio*, 54.1 (2002), pp. 13-34.

representational and historical framework.²⁶ Moreover, if D. Bates referred to the impact of contemporary medical knowledge upon the physician who confronted a disease and recorded a clinical account in the past, Arrizabalaga has additionally pointed out how far conjecture by historians of disease could sometimes reach with the aim of retrospective diagnosis. In fact, Arrizabalaga notes “how intriguingly close their proposed disease labels are to the nosological concerns of medicine at their precise historical times”.²⁷ In other words, retrospective diagnosis may also be at the mercy of the historian’s (or medical professional’s) ‘preconceived fancies’ at present. In this context of limitations and often conjectural nature of this subject matter, M. D. Grmek has acknowledged that diagnosing ancient pathologies or clinical realities in some instances is impossible, but nevertheless, he has also extensively addressed and shown the interest of retrospective diagnosis for philologists and historians of medicine.²⁸

Very few studies on retrospective diagnosis have been carried out on the basis of non-written sources such as illustrations,²⁹ a type of evidence which only allows one to get as far back as the eighteenth century and which –like paleopathological analysis— restricts information to a short number of diseases. They reflect a limited scope of biological phenomena at a given period, but not

²⁶ J. Arrizabalaga, “Medical causes of death in preindustrial Europe: Some historiographical considerations”, *Journal of the History of Medicine and Allied Sciences*, 54 (1999), pp. 241-260. See also the introductory discourse by the same author, “Historia de la enfermedad: nuevos enfoques y problemas” in the monographical section published at *Dynamis*, 11 (1991), pp. 17-26.

²⁷ J. Arrizabalaga, “Problematising Retrospective Diagnosis in the History of Disease”, *Asclepio*, 54.1 (2002), pp. 51-70. On the role of diagnosis as a social entity over the last two centuries, see Charles E. Rosenberg, “The Tyranny of Diagnosis: Specific Entities and Individual Experience”, *Milbank Quarterly*, 80.2 (2002), pp. 237-260.

²⁸ For an analysis of factors which determine the possibility of retrospective diagnosis, see M. D. Grmek, “Le diagnostic rétrospective des cas décrits dans le livre V des Epidémies hippocratiques”, in J. A. López Férez (ed.), *Tratados Hipocráticos: Estudios acerca de su contenido, forma e influencia. Colloque International Hippocratique (7^e, 1990 Madrid)*, Madrid: UNED, 1992, pp. 187-200. For some examples showing how retrospective diagnosis may influence the critical edition of an old text, see by the same author, “Le diagnostic rétrospective dans Épidémies V et VII”, in Hippocrate, *Épidémies V et VII*; texte établi et traduit par J. Jouanna; annoté par J. Jouanna et M. D. Grmek, Paris: Les Belles Lettres, 2000, vol. IV, 3^e partie, pp. LXXVI-XC. A recent survey of retrospective diagnosis (also discussing the debate about social *versus* modern biological diagnosis) is that by Piers D. Mitchell, “Retrospective diagnosis and the use of historical texts for investigating disease in the past”, *International Journal of Paleopathology*, 1 (2011), pp. 81-88.

²⁹ See D. Wallach, J. Coste; G. Tilles, and A. Taieb, “The first images of atopic dermatitis: An attempt at retrospective diagnosis in dermatology”, *Journal of the American Academy of Dermatology*, 53.4 (2005), pp. 684-689.

the ensemble of pathological states present in a specific population at a particular moment in time, that is, a pathocenosis. Likewise, for the most part, studies dealing with disease before the germ theory and involving retrospective diagnosis for statistical epidemiological purposes are based on causes of death as reflected by bills of mortality and similar registers preceding modern annual health statistic reports in every country according to the *International Classification of Diseases*. And alternatively, in order to draw a pathocenosis of the high Middle Ages, Jean-Noel Biraben attempted an outline of diseases in medieval Europe derived from Wickersheimer's catalogue of Latin medical manuscripts in French libraries.³⁰ This attempt was far from being a proper statistical portrait of the diseases or a reliable depiction of its distribution, as admitted by the author himself. Moreover, derived from unspecified but undoubtedly comprehensive theoretical medical manuals, his analysis in no way resulted in a full representation of the health concerns of that particular society either. However, in this study we are dealing with a different type of source material. Rather than a list of 'morbid species' people died of in the tenth-century Middle East and a statistical table of diseases described in theoretical literature, al-Rāzī's case histories generally provide us with an enumeration of symptoms in each individual complaint, including external signs such as urine colour. This is why, in this work, I am purposefully ignoring the historiographical complexities just mentioned above, since the question is whether the nature of the source under discussion makes any difference when trying to identify the condition from our medical perspective in terms of retrospective diagnosis. More to the point, undoubtedly, a number of clinical descriptions in al-Rāzī's Casebook are conditions which anybody may have suffered in our time, such as a cold, hernia, ear or toothache, sciatica, a colic, epilepsy, or diabetes. Whatever changes naturally occurred or unconsciously operated in disease identities throughout time, let us consider for a moment that those biological realities are the same now as ten centuries ago, or as Cunningham would say, "that's that". However, a large proportion of clinical descriptions in this collection actually lead to a rather problematic landscape for retrospective diagnosis in many different ways, some of which I would like to discuss now.

I cannot avoid a familiar impression when reading this collection of case histories: they very much remind me of an appointment with one's own general

³⁰ J.-N. Biraben, "Diseases in Europe: Equilibrium and Breakdown of the Pathocenosis", in M. G. Grmek (ed.), *Western Medical Thought from Antiquity to the Middle Ages*, Cambridge, MA, and London: Harvard University Press, 1998, pp. 319-353.

practitioner, that is, when one tells a medical doctor about the ongoing symptoms (pain, cough, diarrhoea, vomit, dizziness, fever...) and –without further modern technical investigation such as blood tests, microbiological analysis, x-rays, biopsies— the practitioner prescribes a medicine which usually works and which proves that the information provided by the patient, orally and visually, sufficed for the physician to diagnose –or at least treat— the condition. Therefore, one cannot but wonder whether al-Rāzī’s reports are as informative for a modern doctor as a common complaint any of us may report in a medical consultation today. More particularly, not being a medical doctor, I would like to know to what extent a particular aspect of a given body fluid can make a real difference in the identification of disease without practicing modern blood, urine, faeces, or tissue tests. Let’s turn back again to bodily secretions and excretions –faeces, vomited food, sputum, perspiration and peculiar skin features— whose consistency and colour sometimes are described in detail. Regarding intestinal evacuation, it ranges from normal defecation up to varying degrees of constipation or looseness of the bowels. Occasionally, a lively picture of the faeces is given:

13) For pain in the abdomen along with rumblings (*qarāqir*) and colitis (*saḥaj*) [with faeces] looking like nasal mucus, he prescribed soaking two drachmas of garden-cress (*ḥurf abyāḍ*) in water until it grows, mixing [the liquid] with two drachmas of oil and drinking it, along with a diet of egg yolk.³¹

14) A man complained that he only defecated once every four days; afterwards, faeces came out like hazelnuts at the beginning and, later on, they came out extremely loose, and [then] he had a fever accompanied by shivering. [Al-Rāzī] said: ‘This is the sign of an imminent colic (*hādhā qulanj qarīb*)’. He prescribed him to take five drachmas of small pastilles of cassia every night followed by a draught of julep in order to avoid the formation of [faeces like] hazelnuts, and to take rose-honey because of the fever and the shivering.³²

15) A man complained of dysentery (*zahīr*) which at first produced [faeces] like saliva (*mithla al-buzāq*) and afterwards like [animal] dung (*mithla al-ba‘ar*). He prescribed him pills of bedelium (*ḥabb al-muql*), and a diet of egg yolk along with leek to be taken as an omelette.³³

³¹ Al-Rāzī, *Kitāb al-Tajārīb*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fol. 62b (Chapter 15, On flatulence, colic, and constipation).

³² *Ibid.*, fol. 65b-66a (Chapter 15, On flatulence, colic, and constipation).

³³ *Ibid.*, fol. 92a (Chapter 25, On diarrhoea, colitis, dysentery and [anal] bleeding).

Are the clinical descriptions detailed above enough for a modern medical doctor to identify the pathological phenomenon affecting the patients? More to the point, is the aspect and changing texture of faeces in examples 13 and 15 peculiar to a particular gastrointestinal condition or type of infection in modern medical theory? This is a challenging issue since the Arabic words *saḥaj* and *zahīr* (here translated as colitis and dysentery just to express some kind of difference between them) are both thought to correspond to dysentery. However, while it is highly improbable that medieval Islamic physicians would go as far as to distinguish two different types of dysentery on account of slight clinical visible differences – such as the amebian variety and that caused by a bacillus— these terms do not seem to be employed as synonyms throughout the work, but as two different biological realities. In fact, several patients suffering from *zahīr* also present severe diarrhoea, in addition to being occasionally combined with anal haemorrhage, intestinal ulcers, tinnitus, etc.

Concerning whether or not body fluids and excretions may throw any light on disease identification, vomit is seldom described when referred to gastrointestinal disorders, but patients often complain of throwing up what they eat, and more particularly, of difficulty to digest sour or acidic food. Only once is it said to be “yellow” or bile vomit, accompanied by constipation in the chapter devoted to colics (16).³⁴ Otherwise, in a patient affected by pain in the stomach as well as heaviness like that caused by flatulence and which spreads towards the left side, vomit appears mixed with phlegm (17).³⁵ In another two patients, vomit presents a peculiar feature:

18) A man complained of difficulty in digesting food; he was constipated and nothing relieved him except vomiting what he had eaten, and [the food] that remained [in his stomach] was so acidic, the vomit made his teeth grind. [Al-Rāzī] prescribed him pastilles of *kawkab* with aloe, and chickpea water as food.³⁶

19) A man complained of hoarseness [in his throat] (*buḥḥa*) and stomach burns; he threw up everything he had eaten [as] acidic vomit which looked like liver, viscous like a putrid boiled egg. [Al-Rāzī] prescribed him [to induce] vomiting with radish (*fūjl*), oximel (*sakanjubīn*) and honey, and a diet of bread and honey.³⁷

³⁴ *Ibid.*, fol. 62a (Chapter 15, On flatulence, colic and constipation).

³⁵ *Ibid.*, fol. 34b (Chapter 12, On stomach disorders and vomit).

³⁶ *Ibid.*, fol. 32a (Chapter 12, On stomach disorders and vomit).

³⁷ *Ibid.*, fol. 33a (Chapter 12, On stomach disorders and vomit).

When vomit consists of blood –and especially when its texture is described— the question that arises again is whether its combination with complementary symptoms may allow identifying the pathological condition from a modern medical view: for instance, in the case of an old man who had formerly suffered from hemiplegia (*fālij*) presenting blood vomit along with a swollen tongue (20). Also, a female patient is said to have been throwing up like burnt-black blood over three years since she had felt an acid vapour rising up from her throat, and her menstruation had stopped, later it had returned and afterwards –according to ancient and medieval pathology—“it had gone upward to her head” (21). Another female patient was vomiting black blood, everything she ate became acidic in her stomach and then vomited; a burning sensation remained in her stomach, and on this occasion the clinical description was diagnosed as black bile pouring from her spleen into her stomach (22).³⁸

Regardless of how some of the conditions are interpreted within the Greco-Roman humoral system as in the last example above, the same applies when dealing with lung disorders and different types of sputum. Is there a single and unmistakable diagnosis in modern medicine for the following clinical case?

23) [Al-Rāzī] was told of a young woman who had been coughing for five months and had now been expelling a foamy blood for the last three days. He was presented this in a bowl, and it looked like pulmonary tissue. He said: ‘This comes from the lung and was easily expelled’. He asked: ‘Is she in pain?’ He was told that she felt pain on the right side. He prescribed pastilles of poppy for her and barley-water without sugar.³⁹

What about a patient who complains of pain (body part not specified), constipation and headache who expels blood when coughing (24) or someone who expels something similar to phlegm (?) which contains blood (*yaqdhifu mithla l-ḥulūq wa-fī-hi damm*) and presents cough and red urine?(25).⁴⁰ Do these

³⁸ *Ibid.*, examples number 20 and 21: fol. 36a; example number 22: fol. 40a (Chapter 12, On stomach disorders and vomit).

³⁹ *Ibid.*, fol. 47a-47b (Chapter 13, On pleurisy, cough, anxiety, and the remaining lung and chest conditions).

⁴⁰ *Ibid.*, fol. 38a and 40b respectively (Chapter 12, On stomach disorders and vomit). It should be added that example 24 clearly seems a respiratory condition misplaced within the manuscript, but example 25 could actually be a stomach disorder. Although *q-dh-f* is the Arabic root employed in the text for patients who expel some kind of fluid when coughing, it also means to vomit. While it has not been possible to identify the exact meaning of the word *ḥulūq* (pl. of *ḥalq*, throat) in the sentence, it should be noted that in this instance the verb meaning to expel or to vomit is dissociated from cough.

and the following combination of symptoms correspond to a distinct respiratory disorder such as –to mention what non-medically trained people are familiar with— a common cold, asthma, bronchitis, pneumonia, tuberculosis or flu?

26.i. Dry cough without expectoration, a burning sensation, and relief with cold air.

26.ii. Dry cough without expectoration, constipation, fever and a burning sensation.

26.iii. Intense coughing along with heat, abundant expectoration, normal intestinal evacuation and red urine.

26.iv. Man who coughs up intensely, presents a swollen face, is seized by pain in his chest and expectorates blood.

26.v. Intense cough accompanied by thick white sputum mixed with blood.

26.vi. Cough along with expectoration, and a putrid watery discharge from the nostrils accompanied by a turbid urine.

26.vii. Old woman whose urine is transparent and presents cough and expectoration mixed with blood and pus.

26.viii. Young man who had been coughing for a month, afterwards he had expelled a lot of blood all of a sudden, and at the time of the consultation expectorated blood and foamy pus when coughing, although he has no difficulty to breath.

26.ix. Woman who had been coughing for the last seven months and expectorated a white matter from her chest; her feet had become swollen and when she put her head down at night [to sleep] she was seized by difficult breathing (*buhr*).

26.x. Cough accompanied by thick sputum looking like mucus, and no thirst; the patient is affected by anguish (*dīq al-nafs*) due to the cough, but there is no fever.⁴¹

These are but a few examples of the varying combinations to be found amongst chest disorders. Those involving fever would normally indicate the presence of an infectious process, but how should we see the remaining ones? Are they distinctly respiratory conditions or could they entail a different physiopathological disorder? Clinical accounts concerning fever as the main symptom raise an additional handicap. This is not just because they may result

⁴¹ *Ibid.*, 26.i: fols. 43a-43b; 26.ii-26.iii: 43b; 26.iv: 44a; 26.v: 44b; 26.vi-26.vii: 45a; 26.viii: 45b-46a; 26.ix: 46b; 26.x: 48a (Chapter 13, On pleurisy, cough, anxiety, and the remaining lung and chest conditions).

equally informative or confusing in terms of clinical description, but because historians, medical doctors and epidemiologists would also need to make some sense of past diagnostic expressions (ephemeral, putrid, hectic, quotidian, tertian, quartan, etc.) light-years away from current medical theory. In the best of situations, perhaps in some instances “intermittent” fever might be identified with malaria.⁴² Perhaps, even if before the germ theory or the use of thermometer it is biologically and historically improbable to distinguish conditions like typhus (the epidemic, acute and high-mortality infection caused by the microorganism *Rickettsia prowazeki*) and typhoid fever (the usually endemic, chronic and low-mortality infection caused by the bacterium *Salmonella typhi*), we may suspect that al-Rāzī’s patients could only suffer the latter as nothing in the source suggests that a large number of patients died under the effect of a highly contagious kind of fever, and because no historical chronicle reports a ‘feverish’ epidemic episode at the time causing demographic havoc. Nevertheless, in accounts where fever is not of such an explicit epidemic nature but only of a more common infectious origin, it may respond to a broad range of causes whose identification –as in other kinds of conditions— again would be instrumental for the statistical allocation of patients within a basic disease classification, past or present. And in al-Rāzī’s Casebook, quite often there seems to be no way of determining what exactly causes the fever or to what kind of infection it might possibly respond.

Regarding medieval Islamic medical terminology and disorders involving fever, the same uncertainty applies to the conditions named *sill* –a kind of consumptive illness— and *diqq*, usually translated as hectic fever and phthisis, that is, disorders akin to –but not unequivocally identifiable as— tuberculosis. Furthermore, some Arabic nosographical words have traditionally been rendered into Western languages without actually considering the corresponding symptomatology in medical theory, in both medieval Islamic and modern Western treatises.⁴³ Hence, the pathological interpretation and translation of

⁴² For a recent study on the early history of malaria in southern Europe addressing new hypotheses and evidence, see R. Sallarés, A. Bouwman, and C. Anderung, “The Spread of Malaria to Southern Europe in Antiquity: New Approaches to Old Problems”, *Medical History*, 48.3 (2004), pp. 311-328.

⁴³ I leave aside bizarre, acritical, conjectural or overenthusiastic interpretations of medieval Islamic theoretical descriptions of some pathological entities over the last century and in presumably respected Western biomedical journals at present. A significant example is the attribution of the first description regarding the tumour of the mediastinum to the well-known Sevillian physician Abū Marwān ‘Abd al-Malik b. Zuhr (Avenzoar) in ‘Abdelmalik Faraj’s doctoral dissertation, published in 1935. To judge by the abysmal breach between the Arabic text and the author’s misinterpretation of the passage concerning tracheotomy, Ibn Zuhr’s pioneering description of a

some of those terms at present have remained unquestioned even if symptoms radically differ, as is the case with *sirsām* and its usual translation as meningitis.⁴⁴

As for skin conditions (or conditions which are manifested as a skin eruption), in the same line, the identification of pathological disorders becomes even more complicated. For the most part, in al-Rāzī's Casebook, the skin condition is simply designated by its name in Arabic, whose nature may not necessarily appear described in theoretical treatises as clearly as to find a modern equivalent. As a matter of fact, in medieval Islamic medical literature the identification of the skin conditions named *baraṣ*, *bahaq* and *waḍaḥ* in Arabic with a given type – or stage— of leprosy has been the subject of a large amount of scholarly literature, and its precise meaning is still open to speculation.⁴⁵ Alternatively, P. Horden's point about the “inevitably somewhat arbitrary” choice that often challenges translating the nuances of medieval disease terminology indeed reaches its full meaning here.⁴⁶ In al-Rāzī's clinical accounts the aspect of the dermatological manifestation may appear described, but it turns out to be of potentially little use or, worse, lends itself to arbitrary translation. This is the

mediastinal tumour well deserves a critical reassessment. Aside from the fact that the mediastinum is not an organ or membrane but a cavity, according to his fragmentary and free translation of the corresponding passage, as with tracheotomy, Ibn Zuhri would have suffered this fatal condition at present, and would have survived it in twelfth-century al-Andalus. See, R. Kuhne Brabant, C. Álvarez Millán and E. García Sánchez, “Abū Marwān ‘Abd al-Malik b. Zuhri”, in J. Lirola (ed.) *Biblioteca de al-Andalus*, Almería: Fundación Ibn Tufayl, 2009, vol. 6, p. 357.

⁴⁴ If we just stick to a basic concept of the disease, it entails the swelling of the brain's membranes as physical cause in both medical systems. However, the condition named “*sirsām*” in the medieval Islamic tradition includes fever, heaviness in the head, intense redness in eyes and face, headache, photophobia or sensitivity to light, and a quick and dense pulse. Today this description evokes either ‘meningitis’ or ‘meningism’, although it is a frequent syndrome (associated with influenza and various respiratory viruses) that mimics meningitis, but in which there is no actual inflammation of the meninges. I thank Dr. Joël Coste for drawing my attention to the nineteenth-century chronology of the contemporary concept. For a broader description of the condition by al-Rāzī and Ibn Sīnā, see D. Jacquart, “Les avatars de la phrénitis chez Avicenne et Rhazès”, in D. Gourevitch (ed.), *Maladie et maladies: Histoire et conceptualisation. Mélanges en l'Honneur de Mirko Grmek*, Genève: Droz, 1992, pp. 181-192.

⁴⁵ For a detailed discussion of this issue, see Dols, M., “Leprosy in Medieval Arabic Medicine”, *Journal of the History of Medicine and Allied Sciences*, 24 (1979), pp. 314-333, and by the same author, “Djudhām”, in *The Encyclopaedia of Islam*. 2nd ed., 12 vols. Leiden: E.J.Brill, 1979-2004, XII, p. 271; C. Elgood, “On the Significance of Al-Baraṣ and Al-Bahaq”, *Journal of the Asiatic Society of Bengal*, 27 (April-June 1931), pp. 177-181.

⁴⁶ P. Horden, “The Millennium Bug: Health and Medicine around the Year 1000”, in E. Savage-Smith and P. Horden (eds.) *The Year 1000: Medical Practice at the End of the First Millennium*, Special volume of *Social History of Medicine*, 13.2 (2000), pp. 201-219, esp. pp. 204-209.

case, for instance, of a man affected by “pustules in the right flank similar to white millet (*shabīhat bi-l-arzan al-abyaḍ*)” (27).⁴⁷ In principle, that visual image can be translated as small white pimples, that is, little pustules full of pus; however, the adjective “white” might be interpreted as “transparent” as when associated with urine. Hence, since *arzan*—the Persian word meaning millet—is also metaphorically employed for “bubbles”, can we be sure that the skin eruption did not look like small rounded blisters or vesicles? Another patient is said to suffer from “dry pustules that peel like an onion (*buthurāt yābisa ya ‘lūhā shibhu qishr al-baṣal*)” (28).⁴⁸ This skin eruption is then diagnosed as *qūbā*, a term usually interpreted as a kind of ulcerative skin disorder and which is rendered in Arabic-English dictionaries as tetter; in turn, the latter term can be any of various skin diseases such as eczema, psoriasis, and herpes.⁴⁹ As a final and general comment regarding this particular issue, it might be also worth pointing out that, while al-Rāzī has traditionally been praised for his treatise *On Smallpox and Measles*,⁵⁰ paradoxically an authoritative scholar in medieval Islamic medicine wrote in 1978 that “the description of the different forms of smallpox is, however, so imprecise that modern research has identified it with erysipelas, chickenpox (Varicellae), genuine smallpox, anthrax and measles”.⁵¹ Although Prof. Ullmann is not a medical doctor, to the best of my knowledge, no academic or medical study has so far debunked his words.

Although the identification of a given combination of symptoms might be occasionally verified in terms of medieval Islamic pathology as advocated in al-Rāzī’s own or any other author’s medical works, it is not only that medieval medical vocabulary in Arabic often makes difficult for a philologist to provide an accurate translation and for a medical doctor to determine its precise identification in modern medical theory. In fact, another major point is that it

⁴⁷ Al-Rāzī, *Kitāb al-Tajārīb*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fol. 94b (Chapter 26, On tumours, pustules, scabies, itching and itching skin eruption). The extant edition of al-Rāzī’s *Tajārīb* transcribes these words as “*shabīhat bi-l-udhun*”, that is, “similar to the ear”; cf. ed. by K. Ḥarbī, cited in note 4 above, p. 270.

⁴⁸ *Ibid.*, fol. 94b (Chapter 26); ed. by K. Ḥarbī, cited in note 4 above, p. 270.

⁴⁹ See, for instance, the online dictionary of the National Library of Medicine (<http://www.nlm.nih.gov/medlineplus/medlineplus.html> (accessed January 2011)).

⁵⁰ For a dispassionate description of al-Rāzī’s actual contribution on these conditions, see E. Savage-Smith, ‘Medicine’, in Roshdi Rashed (ed.) *Encyclopedia of the History of the History of Arabic Science*, 3 vols., London and New York, Routledge, 1996, vol. 3, pp. 914-5. See also al-Rāzī, *A Treatise on the Smallpox and Measles*, trans. by W.A. Greenhill, London, 1847, and E. Savage-Smith, “John Channing, Eighteenth-Century Apothecary and Arabist”, *Pharmacy in History*, 30 (1988), pp. 63-80.

⁵¹ M. Ullmann, *Islamic Medicine*, note 13 above, p. 84.

may also be virtually impossible for anyone to make any sense of certain nosographical entities within the medieval Islamic medical tradition itself. With regard to retrospective diagnosis, it is important to note the potentially different and varying terminology employed in the vast geographical area under Islamic domination to designate a given pathological condition,⁵² and more to the point, the possibility that in some instances the meaning may change throughout time or, simply, from one author to another. Al-Rāzī's Casebook alone confronts us with medical terms such as *saḥaj* and *zahūr* whose distinct clinical symptoms, or differential diagnosis, so far seems to defy a precise identification. Likewise, this particular author also confronts us with words which clearly designate a different biological phenomenon than the disease with which it has been traditionally associated, such as *sirsām* (meningitis) mentioned above, and *birsām*, as we will see when describing respiratory conditions in the third section of this paper. Moreover, not only do many conditions seem puzzling, but some of them are a complete –and most likely unsolvable— mystery, such as *dubayla*. It is beyond the scope of this study to undertake a thorough research on the term, especially since a quick look at a few Arabic medical works is extremely 'symptomatic' and illustrative. Ibn Sīnā mentions this ailment in the section devoted to hot tumours in the stomach, but this is the only thing he does –in fact, he promises to devote a separate section to the hot tumour which becomes a *dubayla* or *khurāj* (abscess) and, when the time comes, he settles the subject in five lines stating that its symptoms have already been described in the section on hot tumours in the stomach.⁵³ He deals again –and less deceitfully— with the term in the section devoted to hot tumours in the kidneys, stating that when it becomes a *dubayla*, "the sensation of heaviness increases and the kidney feels as if there was a ball in the abdomen, swelling occurs in the empty space around and symptoms [of the hot tumour] become extremely intense along with an intense pain in the abdomen".⁵⁴ Al-Rāzī himself does not mention this type of tumour in *The Book of Classification and Tabulation of Diseases* (neither amongst hot nor cold tumours).⁵⁵ Three centuries later, in the thirteenth-century Ḥafṣide kingdom

⁵² In this respect, it is very illustrative to compare the medical terms appearing in the work under discussion by al-Rāzī and in the theoretical treatise by Ibn Hindū (d. 1032), who was active in the same geographical area throughout the following century after al-Rāzī's death. See Abū l-Faraj 'Alī ibn al-Ḥusayn Ibn Hindū, *The Key to Medicine and a Guide for Students (Miftāḥ al-ṭibb wa-minhāj al-ṭullāb)*; trans. by A. Tibi, Reading: Garnet Publishing, 2010, pp. 66-99.

⁵³ Ibn Sīnā, *Al-Qānūn fī l-ṭibb*, 3 vols., Beirut, s.n., s.d., vol. 2, p. 330, line 13, and p. 331, lines 27-28.

⁵⁴ *Ibid.*, p. 492, line 32-33 – p. 493, line 1.

⁵⁵ Abū Bakr Muḥammad b. Zakarīyā' al-Rāzī, *Al-Taqsīm wa-al-tashjūr: Taqāsīm al-'ilal*, edition and French translation by S. M. Hammami, Aleppo, 1992, pp. 568-575.

(present Tunisia), al-Rāzī's influential –though synthetic– medical treatise *al-Kitāb al-Manṣūrī* (*Book for al-Manṣūr*) was transformed into a medical alphabetical glossary by Ibn al-Ḥashshā'. According to this work, “*dubla* and *dubayla* is a malady that assembles in the abdomen. This [is its meaning] in Arabic language. As for physicians, they specifically designate by *dubayla* the abscess of cold matter (*khurāj al-bārid al-mādda*) when it occurs in the body”.⁵⁶ Going back to the East, Abū Manṣūr al-Qumrī –said to have been Ibn Sīnā's teacher⁵⁷– states that a *dubayla* is an “abscess which may occur with or without swelling. It is a viscous and thick matter which assembles in an organ and becomes corrupt [and which] corrupts adjacent bodies and so it lengthens its life-span. Later on, the colour of the [thick and viscous] matter either becomes white (which is then called sebaceous), or yellowish (called honey-coloured), or becomes black and it is called ‘*aṣīdiya* [by analogy with ‘*aṣīda*, a dark brown thick paste made of flour and clarified butter]. Within this matter, different solid substances grow similar to fingernail cuttings, small bristles, or bone morsels, pieces of china, limestone, charcoal and similar hard elements. When a poultice is applied, these substances come out of it”.⁵⁸ In short, four different authors say different things or say nothing about it. If we set aside that chaotic information for a moment, we can look at the issue from another perspective, although no less frustrating. In his *Arabic-English Lexicon*, E. W. Lane, drawing from medieval Arabic lexicographical –non-medical– works, described it as “A certain malady in the belly, being a collection of corrupt matter therein (...) an ulcer that penetrates into the belly or an ulcer that comes forth within the side, and discharges internally; the sufferer from which seldom recovers (...)”.⁵⁹ So far, lexicographers and some medical authors seem to agree that a *dubayla* is a

⁵⁶ Ibn al-Ḥashshā', *Glossaire sur le Mansuri de Razes*, ed. by G.S. Colin and H.P.J. Renaud, Rabat, Institute des Hautes-Études Marocaines, 1941, p. 46. Incidentally, I have not been able to track down this particular condition in al-Rāzī's original work (*al-Kitāb al-Manṣūrī*, El Escorial, Real Biblioteca del Monasterio, Arabic Ms. 858, fols. 111b-142b, *Al-Maqāla al-tāsi'a fī l-'ilal al-ḥadītha min al-qarn ilā l-qadam*). Ibn al-Ḥashshā's first sentence reproduces the definition given in medieval Arabic lexicographical sources, such as the well-known thirteenth-century dictionary by Ibn Manẓūr (b. 1233-d. 1311, *Lisān al-'arab*, 15 vols., Beirut: Dar Sader Publishers, 1968, vol. 11, p. 235). It should be noted that, while medieval Arabic dictionaries appear to point out the fatal nature of the condition, none of the medical sources consulted mentions this feature.

⁵⁷ Ibn Abī Uṣaybi'a, '*Uyūn al-anbā' fī ṭabaqāt al-aṭibbā'*, ed. G. Müller, 2 vols., Cairo: Bulaq, 1882; reprint F. Sezgin, Frankfurt am Main: Institute for the History of Arabic Islamic Science at the Johann Wolfgang Goethe University, 1995, vol. 1, pp. 367.

⁵⁸ Abū Manṣūr al-Qumrī, *Al-Tanwīr fī l-iṣṭilāḥāt al-ṭibbiya*, ed. by 'A. Hasan al-Kumrī, s.l.: Arab Bureau of Education for the Gulf States, 1991, p. 65.

⁵⁹ E. W. Lane, *Arabic-English Lexicon*, 2 vols., Edinburgh, 1863 (Lithographic repr. Cambridge: The Islamic Texts Society Trust, 1984), vol. 1, p. 850.

sort of purulent abscess in the abdomen which discharges internally through the intestinal tract, or the urinary tract if located in the kidney. If we look now at the condition in the practice, we find five patients in al-Rāzī's *Tajārib* affected by – or diagnosed as – having a *dubayla*, one of them in the kidneys instead of the abdomen.⁶⁰ As for the remaining ones, in all of them the *dubayla* is said to have burst (*infajara*), but strikingly, out of these four patients, one appears in the chapter dealing with diarrhoea, colitis and dysentery while the other three are included in the chapter devoted to skin disorders and, at least in one of them, the abscess discharges large amounts of pus externally through the navel during five days.⁶¹ Is it possible to make any sense of all this information on the *dubayla* or is it a lost cause?

For the purpose of this analysis it may be irrelevant that a patient suffering from a given condition appears included in a chapter devoted to a somewhat unexpected subject-matter on account of disease conceptualization such as diabetes being considered a kidney condition or psychological disorders being associated to the heart in medieval physiology. However, taking the issue of retrospective diagnosis back to the enumeration of common symptoms, it is relevant that a number of clinical descriptions in al-Rāzī's Casebook often defy precise identification. Since clinical descriptions do not clarify whether the patient was cured or died, how are we to classify the patient in example number two above, included in the chapter of lung disorders but whose symptoms actually suggest a cardio-vascular condition such as *angina pectoris*? Can we really make sense of another one presenting “pain and burning sensation in the stomach expanding towards the heart and yellow urine” diagnosed by al-Rāzī as unmanifested jaundice because the patient does not present a fever and a cough? (29).⁶² How would we diagnose today a combination of possibly unrelated symptoms in a patient complaining of a snoring-like sound (*kharkhara*) in his chest, along with looseness of the bowels and migraine (30)?⁶³ What about a child who had his testicles swollen and felt an intense pain? No food was to be given to the patient except after he had finished his activities or tiring games so that he would not move at all after eating, and following the remaining therapeutic instructions (such as to administer the cumin electuary all the time, to bathe him in cold water, to anoint the testicle with oil of ben, and to follow a

⁶⁰ Al-Rāzī, *Kitāb al-Tajārib*, Istanbul, Topkapı Saray Library, Col. Ahmed III, MS. 1975, fol. 76a (Chapter 21, On kidney and bladder conditions and intercourse).

⁶¹ *Ibid.*, fol. 97b-98a (Chapter 26, On tumours, pustules, scabies, itching and itching skin eruption).

⁶² *Ibid.*, fol. 32a (Chapter 12, On stomach disorders and vomit).

⁶³ *Ibid.*, fol. 48a (Chapter 13, On pleurisy, cough, anxiety, and the remaining lung and chest conditions).

diet of sugar with sesame oil), the account comes to its end with al-Rāzī's diagnosis: 'These are the intestines falling towards it' (31).⁶⁴ Again, is it possible that a kind of bowels prolapse causes the swelling of one's testicles? If the condition is to be identified as a prolapse or a type of hernia, why did the physician not employ the corresponding Arabic word? More importantly, are we to assume blindly that al-Rāzī actually examined the area as to identify by sight or touch the presence and nature of 'a foreign body' in the child's scrotal bag and that it allowed him to discard a common swelling or orchitis?

With regard to doubts raised by al-Rāzī's diagnosis, the same applies to the cases of cancer found in this work. In the case of the woman affected by a cancerous swelling in her stomach, we may assume that it really was a cancer since al-Rāzī states that she will not live very long (32). As for the cancer on the face of an old man, it is simply described as an ulcerated cancer (33), while the one in a woman's left thigh (provided this is a correct interpretation of a copyist's mistake), the clinical account reports that it looks like an elongated quince (34). The case of a woman, one of whose breasts looked soiled while the other one had become hard as though it were a movable and protruding growth – and which additionally is said to feel hot and to be flushed— actually seems to puzzle the author, as he “must draw the conclusion that the tumour is a cancer” despite the fact that “cancer does not protrude, for otherwise it could be extirpated” (35). Moreover, in another case, al-Rāzī diagnosed 'a cancer that has not increased' in a woman who complains of having suffered from tightness or oppression in her throat (*dīq fī-l-ḥalq*) over the last ten years (36). A similar perplexity regarding the disease identification at present –or the accuracy of the diagnosis in the past— also applies in the case of the woman presenting 'a large cancer in her neck for nine years now' (37) as well as in the case of a man with a scabby or crusty ulcer (*qarḥah khashkarīshah*) inside and outside his nose for the last three years which is diagnosed as an ulcerated cancer (38).⁶⁵ As a non specialist, one would ask if those clinical descriptions would be diagnosed as cancer today. At the very least, these three cases of cancer entail a somewhat suspicious life expectancy even if one can guess that cancer may develop at different moments in each individual and that it may take a shorter or longer time to kill its host. Hence, it may well be that a cold, a hernia, ear or toothache, sciatica, colic, epilepsy, or diabetes are not the same thing now as they were ten centuries ago after all.

⁶⁴ *Ibid.*, fol. 79b (Chapter 22, On conditions of the male sexual organs).

⁶⁵ *Ibid.*, fol. 32b, 98a, 100a, 49a, 42a, 98b, 24b respectively.

As far as tenth-century Iran and Irak are concerned, the information provided by al-Rāzī's case histories do not let us know, for instance, whether a skin lesion is just an opportunistic condition or a symptom associated with leishmaniasis, or whether a child presenting a burning sensation when passing water and haematuria is affected by a bacterial infection or by bilharzia (that is, schistosomiasis, a parasitic infection with trematode worms), an apparently common condition at least in Egypt. According to the concept of pathocenosis, it appears not to be sufficient to determine the presence of a number of biological phenomena as we conceptualise them at present, nor the relationship between diseases and between each one of them and their ecology. Yet, perhaps the examples translated and described so far in this paper are crystal clear biological phenomena in modern medicine. On this point, provided it is academically undertaken far away from professional or regional chauvinism (as well as from scientific or nationalist propaganda), medical doctors have the last word and the question is there for them to answer it. Be it as it may, much interdisciplinary work needs to be done, namely addressing the approximate modern equivalence of Arabic medical terms as described in medieval Islamic theoretical works as much as identifying the conditions reflected by the patients' symptoms in al-Rāzī's Casebook. At the very least, the first proposed line of research would serve to improve our knowledge of the history of disease. As for the second line, a data-base designed for interdisciplinary study of al-Rāzī's collection of case histories may not ideally have determining implications in the understanding of the interaction of diseases for medicine today, but it would certainly provide us with a rather detailed view of disease in the tenth-century Middle East.

3. Diseases in tenth-century Iran and Irak.

Moving on to the third and last part of this work, regarding the presence and frequency of disorders, a few other considerations are to be noted. The first one concerns the distribution of cases throughout the work, presumably according to the main or first symptom mentioned by the patient, or the part of the body affected. In this manner patients said to be suffering from diseases such as cancer, diabetes, phthisis, meningitis or epilepsy appear in disparate sections, and as a matter of fact, clinical cases presenting similar symptoms often appear in chapters devoted to conditions of a different nature. In the first instance, the location of a given case is not a problem for determining how many patients in this casebook are affected by a particular disease, but in the second, given the amount of recorded clinical descriptions, it makes it rather difficult to determine the exact number of patients affected by a seemingly common illness or presenting the same combination of symptoms.

Furthermore, it is worth saying in passing that in some instances, a given symptom, disease category or particular information might not always be totally accurate in al-Rāzī's case histories. In fact, on account of current biomedical literature, studies on bioethics and the present author's recent experience, even twenty-first century clinical records actually are incomplete or contain inaccurate data for reasons which range from failure to record meaningful details of the patient's examination up to deliberate adulteration or omission of information provided by the patient.⁶⁶ Perhaps the inadvertent record of an erroneous symptom within a particular case history (like mistakes by copyists in the process of transmission of a given information) may not radically change its modern medical interpretation. Nevertheless, the presence of mistaken clinical data in al-Rāzī's tenth-century collection should not be discarded either.

Likewise, percentages provided in this article are based on one extant copy, but the intricate textual tradition of manuscripts containing al-Rāzī's Casebook should also be borne in mind; although establishing a critical edition of this text constitutes more than a challenging enterprise, it may lead to a slight variation in figures, since in addition to common cases located in different chapters, there are also entries in one manuscript which are missing in another copy. Additionally, although al-Rāzī's Casebook is a large register of consultations including a wide range of conditions –and although clinical descriptions seem to respond to some kind of systematic procedure in recording every single consultation as

⁶⁶ Despite modern facilities such as computer technology to collect and keep updated a patient's clinical chart for a given medical speciality (or for that matter, the electronic health record as such), a number of biomedical articles expose the unreliability of studies based on retrospective case series or those dealing with a given treatment due to the physicians' failure to report given data systematically in patients' case records. See for example F. H. Verbrugge *et al.*, "Lymph Node Biopsies in a General Internal Medicine Department: Algorithm or Individualized Decision-Making", *Acta Clinica Belgica*, 66.4 (2011), pp. 274-279, in which the majority of the findings are inconclusive because of case series' inconsistencies regarding missing data such as size, consistency, location, etc. of the lymph node (that is, instrumental information pointing to a benign/malignant pathology or the location of a cancerous primary tumor). Another example is N. Mor *et al.*, "Middle Ear Cholesteatoma Treated with Mastoidectomy. A Systematic Review of the Measures Used", *Otolaryngology-Head and Neck Surgery*, 151. 6 (2014), pp. 923-929, a survey of 380 articles which calls for the standardization of recorded data (such as the severity of the disease, its recurrence, postoperative follow-ups, surgery complications or treatment outcomes) as a means to optimize future reporting, for otherwise it is impossible for clinicians to compare results, to establish best practices and to apply them appropriately to patient care. With regard to deliberate omission or adulteration of data and symptoms reported by the patient, it is a practice aimed at counteracting potential legal actions in the event of misdiagnosis or medical negligence, although it may additionally serve the purpose of making the patient's profile fit in an ongoing biomedical research. Despite being a common practice, its absence from biomedical or bioethical literature is nothing less than conspicuous.

mentioned earlier— on the one hand, it is not impossible that only those of particular interest were included. On the other, a most striking feature is the absence of patients being treated for bone fractures or other types of injuries to the body, which should have occurred at that time as much as today.⁶⁷ The same applies, for instance, to goiter, varicose veins, tetanus, rabies, and a parasitic infection caused by the guinea worm (*'irq al-madīnī* or filariasis), the latter being actually included in the title of chapter fourteen, devoted to pain in the joints, legs and feet, and gout.⁶⁸ Last but not least, in the absence of medical training on the part of the present author, in some instances patients have been classified within a generic category or may have to some extent arbitrarily been included in another. The difficulties of identifying individual diseases in al-Rāzī's accounts mean that most of my classification is built around general groupings by symptomatology or by the part of the body, or system affected, while a few specific conditions whose modern identification does not seem problematic are also included. Therefore, sometimes data only encompasses a specific disorder instead of a general category, such as migraine and dizziness, or the other way round, as is the case with stomach disorders, colic and dysentery –included in the general category of gastrointestinal disorders— as well as emotional conditions, which have been placed after mental disorders. Otherwise, the order of diseases listed below basically follows the order of chapters in the work. Conditions such as diabetes, cancer, hernia, etc. –which appear scattered throughout the work— have been listed at the end under the heading 'Other conditions', along with the category concerning iatrogenic complaints, of which al-Rāzī was undoubtedly aware, although it is a contemporary disease concept non-existent in his Casebook and included here for the sake of knowledge regarding disease in that period.

⁶⁷ Paleopathological studies regarding medieval Islamic human remains in the Near and Middle East have rarely been undertaken, but the analysis of a tenth to thirteenth century small urban Islamic necropolis in the Spanish Mediterranean island of Ibiza shows a considerable incidence of bone fractures. Although trauma conditions are not prevalent in this group of eighteen individuals, the following fractures were identified: fracture of two ribs, one possible clay-shoveller's avulsion fracture in the spinous process of the vertebrae, fracture (and infection as a result of it) in the forearm, depressed fracture in femur, depressed fracture in frontal bone, and soft tissue trauma and marginal osteophytes in a right *os coxae*. See Nicolás Márquez-Grant, *Paleopathological Comparison Between Two Mediterranean Populations in the Island of Ibiza (Spain)*. Unpublished MSc Dissertation, Dept. of Archaeology and Prehistory, University of Sheffield, 1999, pp. 30-31. Although cases reporting traumatic injuries also are virtually non-existent in the other two extant collections, it is as yet difficult to ascertain why this information was not recorded in general, and more particularly, why it is not represented in al-Rāzī's Casebook.

⁶⁸ Al-Rāzī, *Kitāb al-Tajārib*, Istanbul, Topkapi Saray Library, Col. Ahmed III, MS. 1975, fol. 51a.

Percentages are mainly based on the number of patients of each chapter, although it may also include patients from other sections of the work who seem to be misplaced in the text, present similar symptoms or are eventually diagnosed with a particular condition. Therefore, percentages given in this article are only approximate and tentative. In order to offer a wider, more lively view of disorders encountered by medieval Islamic physicians in tenth-century Middle East and a glimpse of disease conceptualization in al-Rāzī's Casebook, figures are usually followed by a more detailed description of complaints.⁶⁹

Migraine: 0,6 %

Only five individuals complain of migraine (*shaqīqah*), of which four are female patients and one male. In one instance it is accompanied by tinnitus in the left ear as well as by vomit; in another one, by constipation, abdominal noises and lack of menstruation; in the case of the man, it occurs along with intense fever and constipation.

Headache: 1,5 %

Headache (*sudā'*) is the first –or the main— symptom in 30 patients (of which only 12 are male patients), but it rarely occurs as a disorder by itself since, even in the chapter devoted to this condition, headaches usually appear combined with a cough, constipation or diarrhoea, vomiting, earache, a bitter taste in the mouth, nosebleed, nasal mucosity, apnoea, fever, heat in the face or the head, hair loss, and in the case of women, lack of menstruation. In one instance, headache can be interpreted as a hangover.

Dizziness: 1,15 %

Dizziness (*dawarān*) and dullness (*thiqal*) in the head –accompanied either by weakness, somnolence, heaviness all over the body, a bitter taste in the mouth, fainting or excessive salivation— is the main complaint in ten cases.

⁶⁹ The population studied consists of eight hundred and sixty-five individuals, of which five hundred and sixteen cases concern male patients, two hundred and seventy concern women – gender is not specified in about seventy entries. The male population in the sample can be divided into the following categories: adult men (362), young men (47), old men (39), slaves (34) and boys (34). Female population predominantly consists of adult women, since there are only about fourteen girls (from 3 up to 14 or 15 years old), four 'young' women, six 'old' women, five pregnant women and one slave. Eleven cases concern lactant babies.

Epilepsy: 0,8 %

Epilepsy or epileptic fits (*ṣar'*) are mentioned only seven times throughout the work, although in one instance it is interpreted as suffocation of the womb, in another as a premenstrual syndrome, and in one case –diagnosed as swelling of the diaphragm— the episode is said to occur when pressure is applied on the upper part of the spleen.

Mental disorders: 0,5 %

With regard to mental disorders (included in the chapter devoted to melancholy and madness), four patients present some kind of madness, either because they speak nonsense and laugh, get angry without reason, behave in a strange manner such as a man pulling out his beard or, as in the case of a slave looking startled, his eyes fixed, does not speak or reply when addressed, and keeps moving his head from side to side, all accompanied by constipation for the previous five days and involuntary urination at night.

Emotional disorders: 2 %

As for emotional disorders –which are mainly included in the chapter devoted to heart conditions— there are nearly a dozen patients (for the most part, women) presenting pensiveness (*fikrah*), desolation (*waḥshah*), delusions (*waswās*), panic attacks, heart constriction (*ḍīq al-qalb*), grief for the loss of a loved one, or anxiety (*tafāzzu'*). Nevertheless, throughout the work, sadness (*ghamm*) is also often mentioned.

Brain and nerve disorders: 5 %

In the chapter devoted to brain and nerve disorders, there are nine patients affected by hemiplegia (*fālij*), in some instances accompanied either by fever, laxity, heaviness in the tongue, or tongue paralysis. Three patients are said to suffer from meningitis (*sirsām*), one of them accompanied by pleurisy (*shawṣa*) and another one by hiccup. Although mentioned as a symptom in other sections, eight individuals complain of lethargy (*inkisār*) either in an extremity (in one instance, as a result of injury to a nerve by bloodletting six times in a year) and all over the body; the latter includes a male slave who fell down and hit his head and the young man in example 1 exhausted by sexual intercourse; another patient (included in the chapter on disorders of the oral cavity) also presents dryness in the mouth, backache and an intense heaviness at night apparently without fever; in one instance in which lethargy is accompanied by a yellowish skin and tingling in the hands, the patient is diagnosed a cardiac disorder. Three patients complain of numbness (*khadar*) in the hands. Another five individuals

suffer from muscular contracture or spasms either in the hand after washing with cold water, in the fingers of the hand, under the knee, in hands and feet due to excessive intestinal evacuation, and in the jaw after a strong haemorrhage. Additionally, a young man presents paralysis in the leg, and a woman had been affected by trembling in her body and diarrhoea for two years. Throughout the work (mainly in the chapter devoted to the oral cavity), six patients present atrophy or paralysis of the tongue; in an old man it is accompanied by heaviness and numbness in the right arm and excessive perspiration; two children affected by tongue atrophy which makes pronunciation difficult or even breathing and swallowing, perhaps suffer from congenital malformations.

Eye conditions: 6 %

Ophthalmic complaints include seven cases of dullness of vision (*zulmah*) in the eye, for the most part probably caused by cataract, although in one instance it is associated with diabetes and in another with the excessive smelling of musk. There are five cases of ophthalmia (*ramad*), four of trachoma (*jarab*), four of excessive lachrymation (*dam'ah*), and six of nightblindness (*'ashā*, *'ashāwah*); pain in the eye, symblepharon or adhesion of the eyelids (*iltiṣāq*) as well as discharge affect only two patients each; there are also single cases of pterygium (*zafarah*), cancer (*saraṭān*), incipient cataract, burning (*iltihāb*), and swelling (*waram*). Another patient presents a swollen eye, as large as an aubergine in size, which left the pupil hidden; a patient complains of trembling in one eye accompanied by redness, traces of blood and fever. Other patients complain of heaviness, thickness, swelling, engorgement, greenish stains or a growing black spot on different parts of the eyelid. Finally, there is the case of a woman with an extended protuberance of a violet colour which conceals the pupil in one of the eyes.⁷⁰

⁷⁰ For a more detailed description of ophthalmic complaints in al-Rāzī's Casebook, its treatment and a comparison between theory and practice in tenth-century Middle East, see Álvarez Millán, "Practice versus Theory", note 3 above, pp. 300-306. On Islamic ophthalmology, see E. Savage-Smith, "The Perfected Book on Ophthalmology and His Treatment of Thrachoma and Its Sequelae", *Journal for the History of Arabic Science*, 4 (1980), pp. 147-206, and by the same author, "Oftalmologia", in *Storia della scienza*, ed. S. Petruccioli, 10 vols., Rome: Istituto della Enciclopedia Italiana, 2001-2, vol. III: *La Civiltà Islamica*, ed. by U. Weisser and R. Rashed (2002), pp. 800-809; and "Galen's Lost Ophthalmology and the Summaria Alexandrinorum", in V. Nutton (ed.) *The Unknown Galen. Suppl. of Bulletin of the Institute of Classical Studies*, 77 (2002), pp. 121-138.

Ear disorders: 1,4 %

Twelve cases are recorded throughout the work, consisting of swelling, discharge, pain, hearing deterioration, and twinges. Deafness has not been found.

Nose disorders: 1,3 %

Nose conditions affect eleven patients, including three cases of runny nose (*nazlah*) and two of catarrh (*zūkām*). Four patients complain of nosebleed (*ru'āf*) for a period between eight months and one year. A patient presenting an ulcer inside and outside the nose turns out to be a cancer, and a little girl presents a foreign body inside the nose.

Mouth and teeth disorders: 2,3 %

Interestingly, dental decay occurs only once and, only in ten cases, toothache is the main complaint, in one instance accompanied by blisters in the mouth and in another by bleeding. Other complaints in the mouth are swelling or bleeding of the gums (in one and two instances, respectively), blisters in the mouth, a swollen and painful upper lip during one year, one case of cracked lips, and a swollen jaw.

Throat disorders: 1,5 %

Throat conditions—mainly affecting male patients—consist of pain, soreness, hoarseness, swelling or difficulty to swallow. In three instances, patients present a type of severe swelling of the larynx (*khunāq*), and a fourth one presents constriction of the throat (*dīq al-halq*) and headache after suffering pleurisy and measles. A child presents a fallen uvula.

Gastrointestinal disorders: 24,5 %

Gastrointestinal disorders, in general, seem by far to have been the most widespread condition in the tenth-century Middle East. Stomach disorders include weakness of the stomach, swelling, pain (often accompanied either by constipation, looseness of bowels and diarrhoea; in several instances, pain spreads towards the shoulders, the back or elsewhere), burning, heaviness, nausea, difficulty to digest food (or food turning acidic in the stomach), vomit after eating, lack of appetite, and flatulence. More particular cases include one patient with cancer who is given a short-life expectancy. Another one is a woman who complains of stomach-ache and presents a brownish urine, and who previously had pustules on her face which, once cured, left the skin darkened. Another woman complains of nausea at night, cold sweating, heart nervousness, and intestinal noises. Two cases may point to some kind of food allergies, in one

instance the patient being affected by hoarseness after the intake of milk, and in the other, the patient not being able to digest barley water.

Around thirty cases consist of various types of colic (*qūlanj*, *maghaṣ*, *‘illāwus*), often described as “pain in the belly”. Constipation and diarrhoea also appear as disorders on their own, the latter being the main symptom in twenty-one patients within the chapter devoted to that condition (some of them having been affected by it over several years). Dysentery (*saḥaj*, *zaḥīr*) is the diagnosis for at least twenty-eight cases. Additionally, seven patients (five included in the chapter on the anus) seem to have been affected by bleeding not associated to haemorrhoids. Also within this chapter, two patients are said to suffer from intestinal ulcers, and one patient is affected by an abdominal *dubayla*. In the chapter on disorders of the anus, a young man complains of gases escaping his body unwillingly. Strikingly, only two patients appear to suffer from intestinal worms throughout the work.

Respiratory and thorax disorders: 9 %

With regard to lung conditions, the chapter devoted to them contains seventy-one patients affected by different types of respiratory disorders, but many other scattered throughout the work must be added. One of them is, for instance, a patient affected by pleurisy included in the chapter on pain in the joints, and described as a man complaining of pain in the left side of his thorax, below the chest and expanding towards the stomach and the back; the pain increases when lying down on that side and he has no difficulty breathing.

The most frequent complaint is cough, a dry one as much as accompanied by different types of sputum. At least nine cases concern asthma (*rabw*). Additionally, throughout the work four cases are diagnosed as hectic fever (*diqq*, *sill al-diqq*), and another four patients are said to suffer from a withering condition (*sill*), whose symptoms included what today would perhaps be identified as pulmonary tuberculosis. As for pleurisy (usually *shawṣah*, and in one instance *dhāt al-ḡanb*), ten individuals are explicitly said to be affected by it (some of them without fever), although it is likely that more cases would be identified according to symptoms. Additionally, four patients are associated with the condition named *birsām*, which in this work seems also to correspond to pleurisy despite the fact that it is usually interpreted as a synonym of *sirsām* (meningitis or phrenitis).⁷¹ Amongst less common cases, an interesting one is

⁷¹ According to one of the manuscripts employed in the edition of al-Rāzī’s work *Taqāsīm al-‘ilal*, (note 55 above, p. 206), *birsām* is a synonym of *dhāt al-ḡanb*, the usual term for pleurisy (interestingly, the term *shawṣah* does not occur in that work). However, see D. Jacquart, “Les

that of an old man with an ongoing cough over the last ten years, along with stomach-ache, pain in the right hip, constipation and fever when in pain, all of which is diagnosed as pulmonary obstruction. There is also the case of a young man who, after having been affected by cough during one month, had suddenly vomited a large amount of blood; at the time of the consultation, blood was accompanied by foamy pus, but he had no difficulty to breath. According to al-Rāzī, a pulmonary vein had broken and the condition was turning into the consumptive condition named *sill*. As a last example of an uncommon combination of symptoms, it may be worth mentioning the case of a woman affected by cough for the last seven months accompanied by white sputum, whose feet had swollen and who felt apnoea when lying down.

Joint and bone disorders: 5 %

Abundant cases are found in this category, although a few patients included in the chapter with pain in the joints –particularly in the hip or the ribs— appear to be associated with conditions such as colic, a swelling in the abdomen, pleurisy, a spleen disorder, or an ulcer in the kidney. Otherwise, we find patients complaining of pain in one foot which improves walking, pain in all the body joints, pain on hands, knees or shoulders –usually hot at touch— which improves with the application of heat, weakness in the shoulders accompanied by numbness and tingling in the fingers of the hand, pain on the upper or lower back, or pain in the ankles which spreads to the palm of the patient's feet. Five patients are said to suffer from gout (*niqrīs*); a woman suffering from sciatica (*'irq al-nasā'*) also presents a turbid reddish urine; a young man had felt pain in all the joints for a month and two days before the consultation, he had developed heaviness in his right hand to the extent of not being able to move it or to get it out from his clothes' pocket (he had also fainted and needed more sleep than usual). There is also the case of an old man presenting lameness due to the atrophy of a knee tendon.

Heart disorders: 1,4 %

For the most part, heart disorders are represented by palpitations (*khafaqān*), sometimes accompanied by other symptoms such as cold sweats, apnoea or dysentery (*zahīr*), the latter case in a patient affected by a hernia. Often, heart palpitations are linked –as a cause mentioned in the clinical account— to weakness of the stomach, phthisis, anal bleeding (as well as haemorrhage after

avatars de la phrénitis chez Avicenne et Rhazès”, note 44 above, pp. 181-192, and M. Ullmann, *Islamic Medicine*, note 13 above, pp. 28-30.

labour or bloodletting), and amenorrhea in the case of women.⁷² The first case included in the chapter on heart conditions is that of a woman affected by heat rising from her viscera to her head, followed by the swelling of the jugular vein and fainting —diagnosed as “excessive heat in her heart” which eventually reaches her brain. The second case concerns a man suffering —according to the diagnosis provided in the text— from “heart obstruction”, whatever that may mean, due to undernourishment. Whether these two patients actually suffered any kind of heart disorder is difficult to tell. Likewise, no single case seems to correspond to *angina pectoris* or coronary heart disease, a rather common condition in our time. Nevertheless, although patients suffering a heart attack would have died before reaching al-Rāzī, individuals perhaps affected by a non-lethal variant of that condition or, more likely, by heart failure might be present amongst cases included in other chapters (in particular, several cases with dropsy or *hydropisis* may have in fact suffered from heart failure).

Liver and spleen conditions: 5,7 %

A few liver conditions are described as heat, pain, swelling and hardness in that organ. Various types of dropsy (*istisqāʿ*) —dealt with in a separate section— are suffered by nearly twenty individuals throughout the work. Jaundice (*yarqān*) presents a similar incidence. Therefore, the approximate rate of liver conditions would affect 4,5 % of the sample. A particularly rare combination of symptoms is the case of an old man suffering from incipient dropsy who is said to panic at night, along with insomnia, hydrophobia when immersed in water and an introverted conduct, to whom violet oil causes headache. At least ten patients also present swelling or pain in the spleen (1,2 %).

Kidney and bladder disorders: 4,5 %

Kidney and bladder disorders are for the most part described as burning sensation in the bladder or when passing water accompanied by purulent discharge through the penis, blood in urine or fever. Other complaints are pain in the bladder, difficulty in passing water (in some instances, over several months), passing water drop by drop, excessive urination, haematuria, and pain caused by ulcers or stones. One of the few cases in which the outcome is mentioned concerns an old man complaining of pain in the kidney, an intense burning sensation in his penis and reddish urine; seized by dysentery while affected by the above mentioned symptoms, the man passed away ten days later. A case

⁷² Heart palpitations associated with emotional disorders have not been taken into consideration within this category.

worth mentioning in detail is that of a young man suffering since his infancy from fits of pain in the bladder which go along with a purulent discharge and urinary incontinence; he also complains of difficulty in passing water as well as of the amount of sperm and movement [flexibility of his penis?] having decreased.

Male genitalia: 1,8 %

With regard to male genitalia, patients complain of swelling and/or pain in the testicles, as well as of a burning sensation in the urethra, sometimes accompanied by blood or by a yellowish discharge. In one instance, the swelling of the testicles is said to be cold at touch; in the case of a child who has expelled a stone, the consultation is carried out on account of his subsequent touching and scratching his testicles; there is also a man who five months earlier had retained his urine an entire day during a trip and since then he had difficulty in passing water, burning in his prepuce and colic flatulence; another one complains of intense pain in the testicles, and when he rubs them, they feel moist and consequently a thick scab forms.

As for sexual disorders or conditions associated with sexual activity, in addition to the young man in example 1 above to be found in the chapter on brain disorders and who became ill by excessive intercourse, elsewhere there is another patient who feels very weak for the same reason, although in this instance it is said to have caused a swelling in the anus and a sort of dysentery. Within the chapter on kidney and bladder conditions, one man complains of having lost his sexual appetite, and –presented as a consequence of a bladder disorder— in addition to the patient described in the previous section whose semen has decreased, another one suffers from excessive urination (*idrār al-bawl*) accompanied by sexual impotence.

Female genitalia: 3 %

Complaints related to female disorders are more numerous and diverse than those regarding male genitalia. A frequent complaint is hypermenorrhea, but for the most part, the disorder consists of a burning sensation, pain, and ulcers in the vagina or the uterus. Several cases concern complications during or after labour (in one case, miscarriage) such as haemorrhage, or a woman who has not expelled the placenta. Three female patients complain of an abnormal discharge, in one instance looking like urine (diagnosed as dropsy in the womb), looking sometimes like bile in a woman who bleeds in between menses, or like a yellowish watery blood in a woman diagnosed of an abscess in the womb. There are also two curious cases of premenstrual syndrome, such as that of a woman

who appears to become epileptic and mad, and another one who faints when she is about to menstruate. As for the case concerning suffocation of the womb – located in the chapter of heart disorders— twice or three times a month, a woman whose menstruation has stopped is first affected by an itchy sensation of ants crawling all over her body, from her feet up to her head; then she feels a hot flush and a burning sensation ascending from the back of her neck towards her head, followed by palpitations, pain in her nerves and, finally, by an epileptic attack accompanied by contraction of the hands and feet. Since female patients are usually inquired about their menstruation for the purpose of diagnosis — whatever the complaint is— an interesting information seems to concern menopause. Although we do not know much about women's eating habits and life expectancy in this period as to estimate the usual age for climacteric –and although it is actually impossible to know whether menstruation has disappeared definitely or not in all cases in which this information is mentioned— in a number of instances the lack of menstruation suggests the occurrence of this biological phenomenon. However, there is also the case of an old woman affected by fever for seven days along with pain in her legs, constipation and dark urine, who is said to present no sign of jaundice 'nor retention of the menses'. Gynecological conditions also include the patient diagnosed with breast cancer mentioned earlier in this paper, a swollen breast accompanied by burning and heat, and a complaint described as heaviness and tingling in one breast in a woman whose menstruation had ceased after having had several children, all of them included in the chapter devoted to respiratory and thorax conditions.

Skin disorders: 8,5 %

Skin disorders appear in two separate chapters, the 26th on varied conditions such as pustules, scabies, abscesses, warts and itching, and the 28th devoted to vitiligo and disorders associated with leprosy. Amongst the first group of dermatological complaints, these consist in pustules (*buthūr*), scabies (*jarab*), itching (*hikkah*), urticaria (or a skin eruption named *sharā*), abscesses (*khurāj*) on the skin, a type of ulcer (*sa'fah*), scrofula (*khanāzir*), boils in the face (*damāmīl*), and warts (*thu'lūl*, *damāmīl*). A number of patients are affected by swelling (*waram*) in varied parts of the body (lips, under the ear, face, shoulder, thigh, leg, ankle, feet and/or hands), often described as hard or reddish. Four patients suffer from the abscess called *dubayla*. There is also the case of a woman who manifested blackened tips of the fingers of her right hand, along with swelling in the palm of her hand. Amongst the second group of skin lesions, nearly ten cases concern black vitiligo (*bahaq aswad*), leprosy (*baraṣ*),

and the ulcerative skin condition named *qūbā'* or *quwabā'*. This chapter also includes two cases of hair loss affecting a woman and a young man, as well as one case of baldness affecting a young man.

Fever: 10,5 %

Fever appears to have been one of the most frequent conditions, since, apart from being often mentioned as a symptom throughout the work, it is the main complaint in about eighty patients (of which fifty-four are men, nineteen are women, and five children). The different types of fever appearing in the chapter devoted to this condition range from continuous fever to light fever, acute fever, quartan fever, fever only at night, fever during the day and again at night, or fever twice or three times every day; there is also a man said to have been affected by different types of fever during three years. Fever –without further specification— is often accompanied by an additional symptom –or a combination of several ones— such as cough, perspiration, constipation, diarrhoea, an abnormal type of urine, shivering (*qusha'rīrah*) or shuddering (*nāfiḍ*); occasionally it runs with headache, a bitter taste in the mouth, spasms, heaviness, pain in the legs, and lethargy (*inkisār*); the latter also occurs thirteen times as the main symptom. In one case, fever is accompanied by nose bleeding, vomit and cough; in another, by anal haemorrhage, heart palpitations and buzzing (*bishbish*) in the ears; and a female patient presents acute fever, looseness of the bowels, pain in one rib, palpitations in the right hand and pain in the womb. Four patients are eventually diagnosed as suffering from phthisis (*diqq*), meningitis (*sirsām*) or dropsy, and a fifth one –presenting fever, redness in the face, itching in the nose and no pain in the back— is diagnosed as a case of measles.

Injuries to the body: 1,7 %

Whereas there is a chapter specifically devoted to falls and blows, actually patients only complain of swelling, pain, or being confused and startled. Alternatively, although the alleged cause-effect relationship may seem absurd from a modern medical point of view, other cases consist of difficulty in passing water after falling down a well or after a blow in the head, diabetes as a consequence of a fall and a blow in the kidneys, or an ear infection because the man fell on his back.⁷³ As for injuries or accidents –a number of them included in the last chapter on clinical descriptions, devoted to unusual complaints—

⁷³ Al-Rāzī, *Kitāb al-Tajārīb*, Istanbul, Topkapı Saray Library, Col. Ahmed III, MS. 1975, fol. 116a-117b (Chapter 29, On falls and blows).

there is only one case of burning by fire, the actual complaint consisting in the area having remained swollen; one case reports a broken hip, but again, the fracture had been reduced (*injabara*) and the patient complains of pain having remained; another case concerns a man hit by an arrow in the thigh, sometime before the consultation, who complains of an intense pain, and like the man of the broken hip, also feels temporary relief when applying heat to it; there is also a man with a cut on his face caused by a sword which did not heal.

Other conditions

Haemorrhoids (1,7 %), named in Arabic *bawāsīr*, is the main complaint in around fifteen patients –with the exception of a pregnant woman, all of them adult men. There is a man suffering from anal fistula (*nāṣūr fī l-maq'ada*) and another one from an ulcer (*qarḥ*) which bleeds as if a vein had opened; also, two individuals present anal fissures (*shiqāq*), in one instance along with itching, and in another one only when the patient is constipated.

Diabetes (0,7 %) is diagnosed in six cases, both in the chapter devoted to kidney conditions and throughout the work, either as the final cause of other complaints or as an additional condition suffered by given patients. Perhaps two more patients may have also been affected by it according to symptoms, such as a thin eight year old girl who was losing weight without reducing the intake of food, was very thirsty and passed water while sleeping.

Hernia (*fatq*) (0,6 %), whose surgical treatment is described in medieval Islamic medical literature, appears on five occasions, for the most part in patients who suffer from other conditions or complain of a different disorder. In the case of a lactant baby and in that of a man presenting symptoms of diabetes, the location is not specified. A man affected by a heart condition also suffers from an inguinal hernia. There is a woman diagnosed with abdominal hernia (in the navel), as well as a man presenting a protuberance (*natū*) in his belly which decreases its pressure and makes noises (*qarqara*) when he lays on his back.⁷⁴

Measles (*ḥaṣbah*) (0,7 %) occurs in two patients, but there are another four individuals throughout the work who have suffered from it.

⁷⁴ Not being sure whether or not it can be classified in the category of this specific disorder, example 28 above –the child diagnosed a sort of intestinal prolapse in his testicles— has not been included in the percentage.

Cancer (0,8 %), in Arabic *saratān*, is mentioned seven times throughout the work. Having been discussed earlier in this paper, I will just mention here that it is said to affect the stomach, throat, breast, neck, and thigh in female patients, and the eye, the nose and the face in three male patients.

Unusual disorders also deserve a particular commentary. Whether unusual, curious, or anecdotal, one cannot avoid mentioning the case of a traveller who swallowed some coins to avoid being robbed and who could not excrete them. Apart from that, it is interesting to mention a rather curious condition affecting two adult males consisting in fetid perspiration in the armpits (0,2 %). In this respect, it is worth pointing out that the incidence of this condition in a population of more than eight hundred individuals appears to be the same as that of people suffering from intestinal worms.

Iatrogenic disorders: 2 %

An interesting aspect provided by this collection of case histories is the presence of disorders of iatrogenic nature, that is, broadly speaking, caused by medical actions such as bloodletting as well as a mistaken or inappropriate pharmacological treatment, either prescribed by a physician or taken at the patient's own initiative. A particularly interesting case is that of a woman suffering from lethargy (*istirkhā*) in one hand who had been bled six times in one year, and according to al-Rāzī's view, the scalpel had eventually injured a nerve.

As a final conclusion, in addition to nosographical and lexicographical difficulties discussed in the second part of this article, as a whole, the fact of dealing with clinical descriptions and symptoms appear to raise as many complexities and questions as if dealing with theoretical classifications of diseases or nosological tables. Retrospective diagnosis of patients in al-Rāzī's Casebook indeed is a virtually impossible task in many instances. Also, for a large number of cases, al-Rāzī's patients can only be classified according to basic pathological categories, and when dealing with some specific conditions we have to trust the physician's diagnosis and to assume that the disorder, more or less, corresponds to the biological reality under the same name today. Therefore, we can only envisage a pathocenosis in terms of medieval Islamic 'morbid species' and a fragmentary map of prevalent diseases in terms of modern medical theory. The absence of some diseases which must have occurred and the percentage of certain conditions such as intestinal worms should also led us to question the documentary value of al-Rāzī's Casebook and the actual occurrence of some disorders.

Nevertheless, this particular source gives us a lively glimpse of disease and health concerns in the tenth-century Middle East. Even if an exact identification is impossible, the diversity of pathological conditions found in this work also gives us a clue about the most prevalent diseases which actually appear to coincide with climatic and hygienic factors associated with those kinds of disorders. As for the balance to be found between prevalent conditions and the mass of other morbid disorders which never or rarely occur, percentages show a clear breach between many conditions proportionally affecting few individuals and those of four categories (skin ailments, respiratory conditions, fever and gastrointestinal disorders) affecting a large number of patients. Along with the identification of modern equivalents for nosographical theoretical descriptions, an interdisciplinary study of single cases in this particular source and their analysis through a data-base would indeed result in a more detailed –although always fragmentary— picture of conditions suffered by al-Rāzī's patients. Perhaps, this will not be sufficient evidence either to determine the exact pathological panorama in tenth-century Iran and Irak or its pathocenosis. Nonetheless, it would certainly be an enriching contribution to our knowledge of disease in the past, to the history of medicine in general, and particularly with regard to medieval Islam.