

## ISLAMIC MEDICINE ΙΣΛΑΜΙΚΗ ΙΑΤΡΙΚΗ

# Sha‘bān Shifā’ī of Ayash and his observations and suggestions for nephrological problems in children

**OBJECTIVE:** *Tadbīr al-Mawlūd* written in 1701 by Sha‘bān Shifā’ī of Ayash is considered as the first book written extensively on child health and diseases in the classical period of Ottoman medicine. The present study aimed to determine and evaluate the topics related to nephrological problems in children written in this book. **METHOD:** For this study, a copy of the manuscript of *Tadbīr al-Mawlūd* from Sha‘bān Shifā’ī of Ayash’s own handwriting was retrieved from İstanbul Süleymaniye Manuscript Library, Mihrişah Sultan Collection, nr. 344. Firstly, the nephrological sections of the manuscript were identified and Arabic texts were transliterated into contemporary Turkish alphabets. **RESULTS:** The subjects related to nephrology in the *Tadbīr al-Mawlūd* were discussed under the main heading of “Diseases of kidneys and bladder” with three subheadings: “Urinary tract stones in children”, “Urinary retention–voiding difficulties in children”, and “Bedwetting.” The causes and treatment options of kidney and bladder stones, urinary retention and voiding problems, and lastly the causes and treatment of enuresis in children have been discussed. It was noticed that Sha‘bān Shifā’ī of Ayash benefited from the works of Ibn Sīnā and Ibn al-Nafīs, who were prominent physicians during the Middle Ages. It can be deduced that the principles of humoral paradigm, which is an accepted medical understanding of that period, was valid in explaining the aetiology of nephrological diseases and their treatment. **CONCLUSIONS:** These documents are important in terms of being the first written work about the approach to paediatric nephrological diseases and urological problems in children, written in the Ottoman period.

### 1. INTRODUCTION

Sha‘bān Shifā’ī b. Ahmet was from Ayash; Shifā’ī was his nickname. He arrived to İstanbul at a young age and studied medicine at the Süleymaniye Madrasa. His teacher was Hayatizade Büyük Muştafa Feydi Efendi. In 1671, he served as the chief physician of the palace during the reign of Sultan Mehmed IV and also worked in Süleymaniye Hospital. He was a versatile man, who was interested in history, poetry, and medicine. He died in Ayash in 1705.<sup>1-3</sup>

Sha‘bān Shifā’ī wrote some valuable works in medicine and history, e.g., *Tadbīr al-Mawlūd* and *Shifa’iyye fi al-Tibb* or *Risala-i Shifa’iyye*. The latter consisted of three parts: minerals, animal originated poisons, and their properties.<sup>1-3</sup>

*Tadbīr al-Mawlūd* is considered as the first book written extensively on child health and diseases in the classical period of Ottoman medicine.<sup>1-3</sup> The present study aimed to

determine and evaluate the topics related to nephrological problems in children written in aforementioned book.

### 2. MATERIAL AND METHODS

For this study, the copy of manuscript of *Tadbīr al-Mawlūd* from Sha‘bān Shifā’ī of Ayash’s handwriting (autograph) was retrieved in İstanbul Süleymaniye Manuscript Library, Mihrişah Sultan Collection, nr. 344,<sup>4</sup> and reviewed. Firstly, the book sections related to nephrology were determined and subsequently the Turkish text written in Arabic letters was transliterated into the contemporary Turkish alphabets.

### 3. RESULTS

We observed that the subjects related to nephrology

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Ο Sha‘bān Shifā’ī του Ayash και οι παρατηρήσεις και προτάσεις του για τα νεφρολογικά προβλήματα σε παιδιά

Περίληψη στο τέλος του άρθρου

#### Key words

Bedwetting Ottoman medicine  
Children’s nephrological problems  
in Ottoman texts  
Sha‘bān Shifā’ī of Ayash  
*Tadbīr al-Mawlūd*

were discussed under the main heading “Diseases of kidneys and bladder” and its three subheadings: “Urinary tract stones in children”, “Urinary retention-voiding difficulties in children” and “Bedwetting”. These sections discuss causes and treatment options for kidney and bladder stones, urinary retention and voiding difficulties, and lastly the causes and treatment of enuresis in children.

### 3.1. Diseases of the kidneys and bladder

In this section, it is noted that: “Various diseases, each of which is written and described in medical books, even affect the kidneys and bladder”. Conditions in which calculi are formed and voiding dysfunction in children are explained in this section.<sup>4</sup>

**3.1.1. Urinary tract stones in children.** Sha‘bān Shifā’ī of Ayash states in the book that small stones appear in the human body in five distinct places according to the former physicians: kidneys, bladder, intestines, liver, and lungs, but they also tend to develop in the stomach. However, in children, urinary tract stones occur primarily in the bladder, whereas in young adults, middle-aged, and elderly people, they occur in the kidneys.<sup>4</sup>

Furthermore, he states that there are two principal reasons that cause stone formation. First is material cause, i.e., formation of sticky, thick phlegm, pus (from ulcerated wound), or thickened blood. The second cause (efficient cause) is heat. Heat diminishes moisture, and density of that substance increases. If this condition lasts for longer, stones appear as seen in children working in the hammam.<sup>4</sup>

The characteristics of stones are different in young and old individuals because of the lower or excessive amounts of accumulating substances. The location of stones can be identified by the respective symptoms.<sup>4</sup>

He notes that this condition is commonly observed in children who consume excessive food and move a lot when their stomachs are full. This causes the formation of dense humors due to insufficient digestion; however, this can also be attributed to hereditary factors.<sup>3</sup>

In addition, he notes that wherever stones occur, treatment is difficult (particularly in case of bladder stones). It may be necessary to remove some of the bladder stones by shattering them with a sharp-headed tool. However, the principal treatment method in treating stones is to dissolve the substances causing stone formation by some drugs and subsequently remove them from the body by vomiting or diarrhoea. Interestingly, he recommends use of a fixer (such as plum or *prunus*) to prolong the effect of

calculi-dissolving drug used together with diuretics, and stresses that each drug functions on its own.<sup>4</sup>

He emphasizes that the drugs used in bladder stones should be stronger because the bladder is further away from the kidney. Regarding that topic, he cites the treatment knowledge from *al-Mūjaz fī al-Ṭibb* text written by Ibn al-Nafīs (1210–1288 AD) selected from the *al-Qānūn fī al-Ṭibb* by Ibn Sīnā (980-1037 AD). More specifically, he mentions the drugs against urinary tract stones recommended by Ibn Sīnā as well as Ibn al-Nafīs (tab. 1).<sup>4</sup> He explains two drugs in detail that could be very useful. The first drug was named as “the hand of God” probably because of its effectiveness. A 4-year old goat should be sacrificed at the time a speckle of darker colour starts appearing on the skin of ripening grapes. After pouring the first blood, the middle blood is taken to a container and it is stored after fully drying in sun. This when given with radish or celery juices was suggested to be very effective in removing kidney and bladder stones.<sup>4</sup>

The second drug he mentions is the meat, either raw or cooked, of a “special kind of sparrow,” which should be consumed after salting. He explains the features of this bird (*Motacilla flava*) in detail. Its name is “Ṭarāghūlidaytūs” in Greek (Aṭrāghūliaytūs in *al-Mūjaz*), “Ṣafrāghiyūn” in Latin (Ṣafrāghūn in *al-Mūjaz*), and “Kuyruk sallayan” in Turkish.

**Table 1.** Drugs that break calculi (Lithontriptics) as quoted from *al-Mūjaz fī al-Ṭibb* by Ibn al-Nafīs.<sup>4</sup>

| Turkish                 | English                        |
|-------------------------|--------------------------------|
| <i>Herbal medicines</i> |                                |
| Altun oti               | The fern hart’s-tongue         |
| Baldırı qara            | The maiden-hair fern           |
| Ḥarshaf                 | The artichoke                  |
| Ḥasak                   | The plant caltrop              |
| Qusṭ                    | Arabian costus                 |
| Belesānuñ chubughı      | The wood of the balsam tree    |
| Belesānuñ ḥabbı         | The berries of the balsam tree |
| Belesānuñ yağhı         | Balm                           |
| Yanmış lahana yaprağı   | Burnt leaf of cabbage          |
| <i>Animal medicines</i> |                                |
| ‘Aqrebūñ yanmış küli    | Ash of the scorpion            |
| ‘Aqrebūñ yağhı          | Oil of the scorpion            |
| Serchenūñ küli          | Ash of sparrow                 |
| Ṭavshan küli            | Ash of the hare                |
| Yumurṭa qabughınuñ küli | Ash of eggshell                |

He states that its colour is slightly yellow, and it is very commonly found around Ankara.<sup>4</sup>

### 3.1.2. Urinary retention: voiding difficulties in children.

He states that there may be several reasons that facilitate urinary retention and/or voiding difficulties. These reasons include renal and bladder insufficiencies, swelling of the bladder neck and urethra, or diseases of other organs. Sometimes there is blood clotting, pus, or accumulation of flatus (from the body) that do not dissolve easily on urine flow paths. When the temperament of bladder is cold, has a thick/strong body and distorted shape (described as bent), urinary retention may occur if the abdominal muscles are not used. Sometimes, it can also be caused by alternating hot and cold conditions or trauma. However, all these causes can be distinguished from each other by their symptoms. Occasionally, flesh formation in the urinary tract prevents normal urine flow. Provided that this obstruction is identified by the respective symptoms, it may be controlled through the insertion of a catheter into the penis. He describes the catheter in detail and highlights that this should be performed by an experienced person.<sup>4</sup>

Furthermore, Sha'bān Shifā'ī emphasizes that the underlying causes of retention or difficulty in urination should first be thoroughly investigated. If the reason for this obstruction is pus/thick humor, it can be treated by medicines (strong diuretics) that remove the obstruction and eliminating the causative substances (tab. 2).<sup>4</sup> For breastfed children, he recommends that their mother should consume cooked radish or black chickpeas, to eliminate this problem.<sup>4</sup>

He mentions that laxatives and diuretics are important in the treatment process, and drugs used in the treatment of kidney and bladder stones are also effective in this condi-

tion as stated by Ibn Sinā. Because urinary retention may be caused by blocking of the urinary tract by substances such as blood and pus, the drugs (particularly the radish and its leaves) will eliminate these substances.<sup>4</sup>

In case of severe bladder outlet obstruction, he recommends the insertion of a catheter through the penis as described by previous physicians.<sup>3</sup> If the catheter is not helpful and the problem is located above the urethra, he recommends other herbal treatments and sitting baths; he warns that urinary retention in children is very painful and it should be resolved within an hour.<sup>4</sup>

He mentions that some ointments and oils can be applied to the groin and sitting bath can be prepared from the certain plants to relieve the pain. These include chamomile oil, goose oil, or substances that have the ability to relax the tissues, and plants with pain-relieving properties such as tall grass.<sup>3</sup>

Although he mentions putting a layer of saffron on the penis or sending a louse (*Pediculus corporis/Pediculus capitis*) through the urethra (to facilitate urination), as explained in *al-Mūjaz*, he emphasizes his own prescription, claimed to show effect within an hour. This prescription includes radish extract, ten dirhams of butter, and five dirhams of plant sugar.<sup>4</sup>

3.1.3. *Bedwetting*. Sha'bān Shifā'ī of Ayash says that the main reason for bedwetting is the relaxation of the muscles surrounding the outlet of the bladder. Because of the high humidity in their temperament, they have extremely deep sleep pattern; hence, their bladder is weak. When the urine flows at night, the bladder is unable to control or prevent the driving force of urine, and the child may urinate in bed without waking up. Some of these children see a place to pee while sleeping, and pee as if they are awake. Therefore, Sha'bān Shifā'ī recommends that these children should avoid eating and drinking excessively prior to sleep and they should urinate before bedtime. He suggests that children peeing while dreaming is an issue that can be rebuked, or children may control themselves during sleep thinking that they have polluted the respected places like mosques and cemeteries. Hence, he mentions various herbal (Frankincense, the root of alpinia galangal, the inner bark of the nut-gall oak, flowers of the wild pomegranate, etc.) and animal products (pigeon droppings, rabbit kidney) in detail that may control enuresis. He says that urine output regulating methods, and enema are profoundly beneficial.<sup>4</sup>

He highlights that senior physicians recommend no treatment because this condition eventually improves during puberty.<sup>4</sup>

**Table 2.** Strong diuretics and medicines for urinary retention-voiding difficulties.<sup>4</sup>

| Turkish                  | English                  |
|--------------------------|--------------------------|
| <i>Herbal medicines</i>  |                          |
| Dūqū                     | Seed of wild carrot      |
| Fuṭrasāliyyūn            | Rock-parsley             |
| Qusṭ                     | Arabian costus           |
| Sisāliyyūs               | Assafoetida              |
| Turpuñ cirmi ve yaprağı  | Body and leaf of radish  |
| Egir                     | The sweet flag; or orris |
| <i>Animal medicines</i>  |                          |
| Gelincik methānesi       | Bladder of the weasel    |
| Ṭatlı şu yengecinün küli | Ash of the cray-fish     |

#### 4. DISCUSSION

*Tadbīr al-Mawlūd* (written in 1701) is an important book because it presents and registers early written work and approaches regarding paediatric diseases and nephrological problems in the classical period of Ottoman Medicine.<sup>1-3</sup>

Sha'bān Shifā'ī of Ayash identified and underlined three essential issues related to the urinary system problems in children and he provided detailed information, particularly on the means with which they can be treated. Although he refers to the works of Ibn Sīnā and Ibn al-Nafīs, he has also provided recommendations that are based on his own observations, particularly for children with voiding difficulties.

When investigating urinary tract stones in this book, it becomes evident that he has not provided many details on the causes and particularly the symptoms of urolithiasis in children. Instead, he roughly emphasizes the presence and development of different types of stones. Although the incidence of bladder stones in children has been gradually decreasing, and it is now primarily related to low socio-economic levels,<sup>5</sup> his observation of distinguishing the locations of these stones according to the respective age groups was valid at that time.

His explanation of the stone formation is consistent with the Aristotle's Theory of Causality because he mentions that "four causes together bring a complete view of the object under consideration": its formal cause, material cause, efficient cause, and the final cause.<sup>6</sup> In this case, Sha'bān Shifā'ī of Ayash states that material cause was sticky thick phlegm or pus, or perhaps thickened blood, whereas efficient cause was heat.

His recommendation to breastfeeding mothers to prevent voiding problems in infancy is interesting. Although he does not address the reasons that propel the manifestation of voiding problems in this age group, it has been long known that crystalluria/microcalculi/ stones may cause voiding difficulties in infants. Epidemiological data have demonstrated that stone formation during the first few days or weeks of after birth may be related to the frequent intake of carbohydrates leading to a relative dietary phosphates deficiency and the formation of insoluble urinary salts.<sup>7</sup> Considering that breast milk content may facilitate crystalluria and or stone formation in infants, his recommendations (cooked radish or black chickpea, which are rich in minerals) may be of utmost importance.

His note regarding the increased incidence of stones in children with excessive food consumption is interestingly consistent with current knowledge because the majority of studies underline the high incidence of developing stones

in obese children. One of these recent studies demonstrated that overweight and obese children with urolithiasis have decreased urine citrate, phosphate, and magnesium levels and increased incidence of hypercalciuria compared with children with normal body mass indexes.<sup>8</sup>

It is hard to comment on the definition provided under the subheading of "voiding difficulties" that "if the temperament of bladder is cold, has a thick body and too much bent, urinary retention may occur if the abdominal muscles are not used." It may be attributed to a neuropathic bladder. However, we are unaware of whether he meant *too many contractions* or *impaired function of bladder* while describing "bent."

He also mentions a rare reason of urinary obstruction, i.e., "the flesh formation in the urinary tract." However, it is unclear whether this refers to the posterior urethral valve or to a mass.

Although Sha'bān Shifā'ī of Ayash mainly highlights the previous prominent authors' recommendations on urinary tract diseases, he also shares his own experiences in this book. His own method, claimed to show effect within an hour for voiding difficulties, is interesting and it includes extract of radish, butter, and plant sugar. A recent study demonstrated anti-inflammatory and antitumor activities of 4-Methylthio-butanyl derivatives obtained from the seeds of *Raphanus sativus*.<sup>9</sup> The healing effect, which was observed within one hour, is probably connected to the anti-inflammatory effects of the drug under investigation. However, it seems difficult to fully explain his empirical observations based on recent scientific data.

The role of deep sleep in enuresis is well known.<sup>10</sup> Although his recommendations to avoid eating and drinking too much prior to sleeping and to urinate before bedtime are valid, his other suggestions such as "rebuke and/or felt guilty" are far from acceptable now. Instead, positive motivation may have a prominent effect on the subsequent treatment.

It is important to mention the genetic basis of enuresis because it is inherited in the majority of cases, despite the fact that there is a wide spectrum between genotype and phenotype.<sup>2</sup> In the light of current knowledge, enuresis has not been accepted as a psychiatric disorder; hence, somatic factors such as vasopressin deficiency, nocturnal detrusor overactivity and high arousal thresholds can play a crucial role in the pathogenesis of this condition.<sup>11</sup>

His emphasizes that "therapies regulating the urine output, and enema are undoubtedly beneficial" for bedwetting children, which is likely to be consistent with today's

knowledge and treatment processes regarding bladder-bowel dysfunction.

Since monosymptomatic nocturnal enuresis improves spontaneously with age and, consequently, no treatment is needed in most cases, his note that “senior physicians recommend no treatment because this condition eventually improves in puberty” is consistent with current knowledge.

## 5. CONCLUSIONS

Sha'bān Shifā'ī of Ayash benefited from the works of Ibn Sīnā and Ibn al-Nafīs, who are considered to be prominent physicians during the Middle Ages. It can be deduced that the principles of humoral theory, which was an accepted medical understanding of that period, was valid

in explaining the aetiology of nephrological diseases and their underlying treatment processes. Although most of the recommendations are rational, the effectiveness of some of these methods is difficult to explain with current knowledge. These documents are important in terms of being the first written works on paediatric diseases and nephrological problems and treatment approaches in children during the Ottoman period.

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## ΠΕΡΙΛΗΨΗ

### Ο Sha'bān Shifā'ī του Ayash και οι παρατηρήσεις και προτάσεις του για τα νεφρολογικά προβλήματα σε παιδιά

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**ΣΚΟΠΟΣ:** Το *Tadbīr al-Mawlūd* που γράφτηκε το 1701 από τον Sha'bān Shifā'ī του Ayash θεωρείται το πρώτο βιβλίο που εξετάζει εκτενώς την υγεία και τις ασθένειες των παιδιών κατά την κλασική περίοδο της οθωμανικής ιατρικής. Η παρούσα μελέτη στοχεύει να προσδιορίσει και να αξιολογήσει τα θέματα που σχετίζονται με τα νεφρολογικά προβλήματα στα παιδιά που παρουσιάζονται σε αυτό το βιβλίο. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ:** Για αυτή τη μελέτη, ανακτήθηκε από τη Βιβλιοθήκη Χειρογράφων İstanbul Süleymaniye, Συλλογή Mihrizah Sultan, αρ. 344 ένα αντίγραφο του χειρόγραφου του *Tadbīr al-Mawlūd*, γραμμένο από τον Sha'bān Shifā'ī του Ayash. Αρχικά, εντοπίστηκαν τα τμήματα του χειρόγραφου με νεφρολογικό ενδιαφέρον και τα αραβικά κείμενα μεταγράφηκαν στο σύγχρονο τουρκικό αλφάβητο. Αποτελέσματα: Τα θέματα που σχετίζονται με τη νεφρολογία στο *Tadbīr al-Mawlūd* εξετάζονται υπό τον κύριο τίτλο «Ασθένειες των νεφρών και της ουροδόχου κύστης», σε τρία υποκεφάλαια: «Λίθοι του ουροποιητικού συστήματος σε παιδιά», «Κατακράτηση ούρων-δυσκολίες στη διούρηση», και «Νυκτερινή Ενούρηση». Εξετάστηκαν οι αιτίες και οι επιλογές θεραπείας των λίθων της νεφρικής και της ουροδόχου κύστης, και, τέλος, οι αιτίες και η θεραπεία της ενούρησης στα παιδιά. Διαπιστώθηκε ότι ο Sha'bān Shifā'ī του Ayash επωφελήθηκε από τα έργα των Ibn Sīnā και Ibn al-Nafīs, που ήταν διακεκριμένοι ιατροί κατά τη διάρκεια του Μεσαίωνα. Συνάγεται ότι οι αρχές του χυμικού μοντέλου, που ήταν η αποδεκτή ιατρική γνώση αυτής της περιόδου, εξηγούσαν έγκυρα την αιτιολογία των νεφρολογικών ασθενειών και την υποκείμενη θεραπεία τους. **ΣΥΜΠΕΡΑΣΜΑΤΑ:** Αυτά τα έγγραφα είναι σημαντικά διότι είναι το πρώτο γραπτό έργο σχετικά με την προσέγγιση των παιδιατρικών νεφρολογικών ασθενειών και των ουρολογικών προβλημάτων στα παιδιά, που γράφτηκε στην οθωμανική περίοδο.

**Λέξεις ευρητηρίου:** Νεφρολογικά προβλήματα παιδιών αραβική Ιατρική, Νυκτερινή ενούρηση αραβική Ιατρική, Sha'bān Shifā'ī του Ayash, *Tadbīr al-Mawlūd*

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