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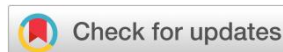
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Review Article

Comparative Pathophysiology of *Fawāq* (Hiccups): A Review of Unani and Modern Medical Concepts

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Abstract

Aim: To comparatively analyze the pathophysiology of *Fawāq* (hiccups) by examining classical Unani concepts alongside contemporary biomedical understanding and identifying areas of conceptual convergence.

Objectives: This review aimed to (i) evaluate the Unani concept of *Fawāq* with special reference to *Sū'i-Mizāj*, gastric and diaphragmatic dysfunction; (ii) summarize the current biomedical understanding of hiccup pathophysiology; and (iii) compare both systems to identify similarities and complementary interpretations.

Methods: A narrative comparative review was conducted using authoritative classical Unani texts, including *Al-Qānūn fī'l-Ṭibb*, *Kitāb al-Ḥāwī*, *Firdaus al-Ḥikmat*, *Zakhīra Khwārazm Shāhī*, *Akseer-e-A'zam*, and *Ṭibb-e-Akbar*, together with contemporary peer-reviewed biomedical literature. Data were analyzed through a theme-based comparative framework focusing on anatomical involvement, etiological factors, pathophysiological mechanisms, clinical manifestations, classification, and diagnostic principles.

Results: The comparative analysis demonstrated substantial conceptual concordance between the two medical systems. Unani medicine describes *Fawāq* as a consequence of *Sū'i-Mizāj* affecting the stomach (*Mi'da*), diaphragm (*Hijāb-e-Hājiz*), and associated organs, resulting in abnormal activation of *Quwwat Dāfi'a*. Modern medicine explains hiccups as a reflex-mediated neurophysiological disorder involving vagal and phrenic afferents, brainstem integration, and diaphragmatic contraction. The Unani classification of simple (*Sāda*) and material (*Māddī*) dystemperaments showed conceptual correspondence with gastrointestinal, neurological, metabolic, and pharmacological etiological factors recognized in modern medicine.

Conclusion: The findings indicate that classical Unani descriptions of *Fawāq* exhibit meaningful conceptual agreement with contemporary neurogastroenterological mechanisms despite differences in theoretical frameworks. Integrating these perspectives provides a more comprehensive understanding of hiccups by combining individualized temperament-based assessment with modern pathophysiological principles. This comparative approach supports the scientific relevance of Unani medicine and highlights its potential contribution to integrative gastroenterology and future interdisciplinary research.

Keywords: *Fawāq*, Hiccups, *Sū'i-Mizāj*, *Quwwat Dāfi'a*, *Mi'da*, *Hijāb-e-Hājiz*

1. Introduction

In Unani medicine, *Fawāq* is not viewed merely as an involuntary diaphragmatic spasm but as a functional disorder resulting from disturbances in the temperament (*Sū'i-Mizāj*) of the stomach (*Mi'da*), diaphragm (*Hijāb-e-Hājiz*), and related organs. Classical physicians, including *Ibn Sīnā*, *Rāzī*, *Jurjānī*, and *Arzānī*, described hiccups in relation to gastric dysfunction, abnormal accumulation of *riyāḥ* (gases), *bukharāt* (vapours), and excessive activation of *Quwwat Dāfi'a*. Their explanations emphasize the interaction between

organ temperament, humoral imbalance, and physiological function, reflecting a systematic approach to disease pathogenesis.^{1,2,3,4}

Fawāq (hiccups) is generally regarded as a transient and self-limiting physiological phenomenon. However, persistent or intractable hiccups may indicate significant gastrointestinal, neurological, metabolic, or systemic disorders and can adversely affect nutrition, sleep, and quality of life. Although modern medicine has extensively investigated the neurophysiological basis of hiccups, the condition continues to present diagnostic

and therapeutic challenges because of its diverse etiologies and complex reflex mechanisms. Modern medicine explains hiccups as a reflex-mediated neurophysiological event involving afferent vagal, phrenic, and sympathetic pathways, central integration within the brainstem, and efferent activation of the diaphragm and accessory respiratory muscles. Although expressed within different theoretical frameworks, both medical systems recognize hiccups as a response to irritation or dysfunction affecting the stomach–diaphragm axis.^{5,6,7}

Despite the availability of numerous reviews describing hiccups from either the biomedical or traditional medical perspective, comparative analyses integrating classical Unani concepts with contemporary neurogastroenterological mechanisms remain limited. Most existing publications present the two systems independently without examining their conceptual correspondence or potential complementary value.^{6,7-10}

Therefore, the present review aims to comparatively analyze the pathophysiology of *Fawāq* by correlating the Unani concept of *Sū'i-Mizāj* with current biomedical knowledge of hiccup reflex mechanisms. Through a theme-based comparison of anatomical involvement, etiological factors, pathophysiological mechanisms, clinical manifestations, and diagnostic principles, this review seeks to identify areas of conceptual convergence and demonstrate the contemporary relevance of Unani pathophysiology within an integrative medical framework.

2. Methodology

Study Design

This study was conducted as a narrative comparative review to critically examine the pathophysiology of *Fawāq* (hiccups) described in classical Unani medicine and compare it with contemporary biomedical concepts. The review was designed to identify conceptual similarities and differences rather than establish direct theoretical equivalence, with Unani medicine serving as the primary conceptual framework and modern medicine providing explanatory physiological correlations.

Literature Sources and Search Strategy

Classical Unani literature was reviewed using authoritative primary texts, including *Al-Qānūn fi'l-Ṭibb* (Ibn Sīnā), *Kitāb al-Ḥāwī* (Rāzī), *Firdaus al-Ḥikmat* ('Alī ibn Rabban Ṭabarī), *Zakhīra Khwārazm Shāhī* (Jurjānī), *Kitāb al-Taisīr*, *Akseer-e-A'zam*, and *Ṭibb-e-Akbar*. These texts were examined for information related to the definition, classification, etiopathogenesis, organ involvement, symptomatology, and diagnostic principles of *Fawāq*.

For the biomedical perspective, a literature search was performed in PubMed, Scopus, and Google Scholar for publications available up to 2025 using combinations of the keywords hiccups, singultus, persistent hiccups, hiccup reflex arc, diaphragm, phrenic nerve, vagus nerve, neurogastroenterology, and hiccup

pathophysiology. Standard medical textbooks were also consulted to support established physiological concepts.

Eligibility Criteria

Classical Unani references were included if they contained explicit descriptions of *Fawāq* or discussed related gastric, diaphragmatic, or humoral disturbances. Biomedical literature was included if it addressed the epidemiology, classification, pathophysiology, etiological mechanisms, clinical manifestations, or diagnosis of hiccups. Articles focusing exclusively on therapeutic interventions without discussing disease mechanisms were excluded.

Data Extraction and Comparative Analysis

Relevant information from both Unani and biomedical sources was extracted and organized into predefined thematic domains, including:

- anatomical structures involved,
- classification,
- etiological factors,
- pathophysiological mechanisms,
- clinical manifestations,
- diagnostic approach.

A theme-based comparative analysis was then performed to evaluate conceptual correspondence between the two medical systems. Unani concepts such as *Sū'i-Mizāj*, *Riyāḥ*, *Bukharāt*, and *Quwwat Dāfi'a* were interpreted within their original philosophical context and compared with modern concepts including gastric irritation, diaphragmatic dysfunction, vagal and phrenic nerve stimulation, and hiccup reflex arc hyperexcitability. Comparative tables and schematic flowcharts were subsequently developed to summarize areas of convergence between the two frameworks.

Interpretation

The comparison emphasized conceptual correspondence rather than terminological equivalence. Modern biomedical mechanisms were used to facilitate scientific interpretation of classical Unani concepts without replacing or reinterpreting their original theoretical foundations. This approach enabled a structured and balanced comparison while preserving the independent conceptual integrity of both medical systems. Since this study is based exclusively on published literature and does not involve human participants, ethical approval and informed consent were not required.

3. Definition and Classification

3.1 Definition of *Fawāq* (Hiccups)

Classical Unani literature consistently describes *Fawāq* (hiccups) as an involuntary movement involving the stomach (*Mi'da*) and diaphragm (*Hijāb-e-Hājiz*), resulting from disturbances in gastric function rather than an isolated respiratory event. Unani scholars attributed its occurrence to abnormal accumulation of *riyāḥ* (gas), *bukharāt* (vapours), irritation of the gastric

region, or derangement of the gastric temperament (*Sū'i-Mizāj*), which excessively stimulates the expulsive faculty (*Quwwat Dāfi'a*) and produces repetitive spasmodic movements.^{1,2,3,11,12} Although individual scholars differed in emphasis, they unanimously regarded *Fawāq* as a manifestation of underlying humoral and functional imbalance involving the stomach, diaphragm, and occasionally the nervous system, rather than merely a transient symptom.^{1,2,3,4}

In modern medicine, hiccups (*singultus*) are defined as sudden, involuntary spasmodic contractions of the diaphragm and inspiratory intercostal muscles followed by abrupt closure of the glottis, producing the characteristic "hic" sound.^{5, 13} This phenomenon is mediated through a reflex arc comprising afferent vagal, phrenic, and sympathetic pathways, a central brainstem integrator, and efferent diaphragmatic innervations.^{5,6, 7, 14} While transient hiccups are generally physiological, persistent or intractable episodes often indicate underlying gastrointestinal, neurological, metabolic, or pharmacological disorders.^{6, 7, 9, 10, 14, 15}

Although these definitions arise from different theoretical frameworks, both systems recognize hiccups as a consequence of disturbed stomach–diaphragm function. The Unani concept of abnormal gastric temperament and excessive activation of *Quwwat Dāfi'a* corresponds conceptually to the modern understanding of reflex arc hyperexcitability initiated by gastric or neural irritation.^{2,3,4,6,7,16}

3.2 Classification of *Fawāq* in Unani Medicine

Classical Unani texts do not present a formal classification of *Fawāq*; however, systematic analysis of authoritative sources permits its classification according to anatomical location, clinical severity, and etiology.^{1,2, 3, 4}

A. Classification According to Anatomical Involvement

Descriptions in *Kitāb al-Hāwī*, *Al-Qānūn fī'l-Ṭibb*, and *Zakhīra Khwārazm Shāhī* indicate that *Fawāq* may originate predominantly from disturbances involving the stomach (*Mi'da*), diaphragm (*Hijāb-e-Hājiz*), or brain (*Dimāgh*), depending on the underlying humoral derangement.^{1, 2, 3, 17,18} These observations permit the inference of gastric, diaphragmatic, and neurogenic forms of *Fawāq*.

B. Classification According to Severity

Classical scholars recognized variations in clinical severity based on persistence and associated systemic manifestations. Mild episodes were generally linked to dietary indiscretion or transient gastric disturbances, whereas prolonged hiccups were associated with complications such as insomnia, dyspnea, exhaustion, and occasionally loss of consciousness.^{1, 2, 3,18, 19, 20} Accordingly, *Fawāq* may be categorized as mild, moderate, or severe according to its duration and clinical impact.

C. Classification According to Etiology

Unani physicians attributed *Fawāq* primarily to *Sū'i-Mizāj*, digestive dysfunction, accumulation of abnormal humours, unsuitable dietary habits, emotional disturbances, and diseases affecting adjacent organs. Secondary causes included fever, pneumonia, and cerebral disorders.^{2, 3, 17, 19} From these descriptions, *Fawāq* may be classified into primary (idiopathic) and secondary (symptomatic) forms and further categorized according to the predominant humour involved.

3.3 Classification of Hiccups in Modern Medicine

Modern medicine classifies hiccups according to duration, etiology, and pathophysiological mechanism, reflecting current understanding of the hiccup reflex arc.^{5, 6, 7, 10, 14.}

Classification According to Duration

Type	Duration	Common Causes
Acute (Transient)	Less than 48 hours	Gastric distension, overeating, carbonated beverages, alcohol intake, emotional stress ^{5, 6, 10, 14}
Persistent	More than 48 hours but less than 1 month	Gastroesophageal reflux disease, infections, metabolic disorders, central nervous system disease ^{6,13,14,15}
Intractable	More than 1 month	Stroke, brain tumors, chronic renal failure, malignancy, phrenic nerve irritation ^{6, 9, 14, 15}

Classification According to Etiology

Category	Representative Causes
Gastrointestinal	GERD, gastritis, peptic ulcer disease, gastric distension ^{6, 7, 10, 21}
Neurological	Stroke, brain tumors, encephalitis, multiple sclerosis ^{5, 6, 16, 22}
Metabolic/Systemic	Uremia, hyponatremia, hypocalcemia, diabetes mellitus ^{6, 7, 10, 14}
Psychogenic	Anxiety, emotional stress, functional disorders ^{6, 10, 14}
Drug-induced	Corticosteroids, benzodiazepines, chemotherapeutic agents, anesthetics ^{7, 10, 14, 15}

Classification According to Pathophysiology

Modern physiology considers hiccups a reflex-mediated event consisting of three principal components:

Reflex Component	Major Structures
Afferent limb	Vagus nerve, phrenic nerve, sympathetic fibers
Central integration	Medullary reticular formation (brainstem)
Efferent limb	Phrenic nerve and accessory respiratory muscles

Disruption or irritation at any point within this reflex pathway may initiate involuntary diaphragmatic contractions resulting in hiccups.^{5,6,7,14}

3.4 Comparative Perspective

Although Unani and modern medicine classify hiccups using different conceptual frameworks, notable similarities are evident. The Unani distinction between *Sū'i-Mizāj Sāda* and *Sū'i-Mizāj Māddī* broadly corresponds to functional and organic etiologies recognized in contemporary medicine.^{2,3,4,6,7} Likewise, the inferred Unani classification according to gastric,

diaphragmatic, and cerebral involvement closely parallels the modern localization of pathology within the gastrointestinal tract, diaphragm, and central nervous system.^{1, 2, 3, 5, 6, 7} These conceptual correspondences indicate that classical Unani physicians recognized the multisystem nature of *Fawāq*, although they interpreted it through the principles of temperament and humoral pathology rather than neurophysiology.^{2,3,4,6,7,10}

Table 1: Comparative Classification of *Fawāq* (Hiccups) in Unani and Modern Medicine

Basis	Unani Medicine	Modern Medicine	Conceptual Correlation
Definition	Functional disturbance due to <i>Sū'i-Mizāj</i>	Reflex-mediated diaphragmatic contraction	Functional disorder of the stomach–diaphragm axis
Duration	Mild, moderate, severe (inferred)	Acute, persistent, intractable	Severity-based classification
Etiology	<i>Sū'i-Mizāj Sāda</i> , <i>Sū'i-Mizāj Māddī</i> , humoral imbalance	Functional, gastrointestinal, neurological, metabolic, drug-induced	Functional versus organic causes
Organ involvement	<i>Mi'da</i> , <i>Hijāb-e-Hājiz</i> , <i>Dimāgh</i> , <i>Jigar</i>	Gastrointestinal tract, diaphragm, central nervous system	Comparable anatomical localization
Mechanism	Excessive activation of <i>Quwwat Dāfi'a</i>	Hyperexcitability of the hiccup reflex arc	Dysregulated protective physiological response

Compiled and interpreted from classical Unani literature and contemporary biomedical literature^{1,2,4,5,6,7,10,14}

4. Etiopathogenesis of *Fawāq* (Hiccups)

The etiopathogenesis of *Fawāq* (hiccups) reflects a functional disturbance involving the stomach diaphragm axis in both Unani and modern medicine, although the underlying mechanisms are explained through different theoretical frameworks.^{2, 3, 4, 5, 6, 7} Classical Unani physicians considered *Fawāq* to arise from derangement of the gastric temperament (*Sū'i-Mizāj*), leading to abnormal production of *Riyāh* (gas) and *Bukharāt* (vapours) that irritate the stomach (*Mi'da*), diaphragm (*Hijāb-e-Hājiz*), and adjacent structures.^{1, 2, 3, 4,12} In response to this irritation, the expulsive faculty (*Quwwat Dāfi'a*) becomes excessively activated, producing repetitive spasmodic movements that manifest clinically as hiccups.^{2, 3, 4} In contrast, modern medicine attributes hiccups to hyperexcitability of a neurophysiological reflex arc composed of vagal, phrenic, and sympathetic afferent pathways, a central brainstem integrator, and efferent fibres supplying the diaphragm and inspiratory muscles.^{5,6,7,14} Despite their distinct theoretical foundations, both systems recognize

gastric irritation as the principal initiating event and diaphragmatic contraction as the final common pathway.^{2,4,6,7,21}

This conceptual relationship is summarized in Table 2, where disturbance of *Mizāj* corresponds to irritation of the hiccup reflex arc, abnormal *Riyāh* and *Bukharāt* parallel gastric distension and reflux, excessive activation of *Quwwat Dāfi'a* corresponds to reflex arc hyperexcitability, and the protective expulsive action of *Tabī'at* resembles the transient defensive reflex recognized in modern physiology. These similarities suggest that the Unani explanation represents a functional interpretation of mechanisms now understood in neurogastroenterology.^{2,3,4,6,7,16,21}

4.1 Extrinsic (External) Etiological Factors

Classical Unani scholars describe several external factors capable of disturbing the normal temperament of the stomach and precipitating *Fawāq*. These include excessive consumption of hot, cold, or dry foods, overeating, rapid eating, inhalation of cold air, sudden

postural changes, and medications possessing a hot and dry temperament.^{1, 2, 3, 4, 18, 23, 24} These factors alter gastric equilibrium, resulting in excessive production of *Riyāḥ* and irritation of the diaphragm.

Modern medicine provides comparable explanations. Overeating, gastric distension, carbonated beverages, alcohol consumption, sudden temperature changes, and several medications stimulate vagal afferents or directly irritate the diaphragm, thereby activating the hiccup reflex arc.^{5, 6-10, 15} Thus, dietary and environmental triggers recognized in both systems represent comparable initiating factors that disturb stomach-diaphragm coordination through different explanatory models.^{2, 3, 4, 6, 7, 21}

4.2 Intrinsic (Internal) Etiological Factors

Intrinsic causes originate within the body and primarily involve functional disturbances of the stomach, diaphragm, or nervous system. Unani medicine attributes these abnormalities to *Sū'-i-Mizāj*, which may occur either without abnormal humours (*Sū'-i-Mizāj Sāda* or with accumulation of morbid humours (*Sū'-i-Mizāj Māddī*). Contemporary medicine similarly recognizes intrinsic pathological processes affecting gastrointestinal, neurological, or metabolic function as major causes of persistent hiccups.

A. *Sū'-i-Mizāj Sāda* (Non-material Dystemperament)

In *Har Sāda*, excessive gastric heat promotes formation of irritating vapours (*Bukharāt*) that stimulate *Quwwat Dāfi'a*, producing recurrent hiccups.^{2, 4, 25} This closely resembles inflammatory gastric disorders, gastroesophageal reflux disease (GERD), and febrile conditions, where increased gastric acidity and mucosal inflammation activate vagal afferent pathways responsible for the hiccup reflex.^{6, 7, 10, 21}

Barid Sāda results from diminished gastric heat leading to impaired digestion, delayed gastric emptying, and accumulation of undigested material. Classical scholars explain that gastric weakness provokes compensatory activation of the expulsive faculty in an attempt to eliminate retained contents.^{2, 3, 4, 19} Modern medicine similarly recognizes gastric hypomotility and gastroparesis as important causes of gastric distension and diaphragmatic irritation, particularly among elderly individuals.^{6, 10, 14}

In *Ratab Sāda*, excessive gastric moisture impairs digestion and promotes accumulation of fluid and gas within the stomach, resulting in repeated stimulation of the diaphragm.^{4, 17, 25, 26}

Comparable mechanisms are observed in functional dyspepsia and gastric atony, where delayed gastric emptying and excessive secretions contribute to gastric distension and reflex-mediated hiccups.^{6, 7, 10}

Yābis Sāda develops due to excessive dryness, causing rigidity of gastric tissues and impairment of normal gastric motility.^{2, 4, 25, 27} From a biomedical perspective, dehydration, electrolyte imbalance, and catabolic states

increase neuromuscular excitability and diaphragmatic irritability, thereby predisposing to persistent hiccups.^{6, 10, 14, 22}

B. *Sū'-i-Mizāj Māddī* (Material Dystemperament)

Material dystemperament develops through accumulation of abnormal humours (*Akhlāt*) that interfere with gastric function.

In *Fawāq Safrāwī*, excessive *Safrā* irritates the gastric mucosa, producing burning sensation, bitterness of taste, restlessness, and recurrent hiccups.^{2, 3, 4, 17} This closely corresponds to bile reflux gastritis and acid-mediated gastric inflammation recognized in modern medicine.^{6, 7, 21}

Fawāq Balghamī is associated with predominance of *Balgham*, resulting in sluggish digestion, gas retention, abdominal distension, and pressure on the diaphragm.^{2, 3, 4, 17} These manifestations parallel functional dyspepsia and gastric bloating, both of which are well-established triggers of the hiccup reflex.^{6, 7, 10}

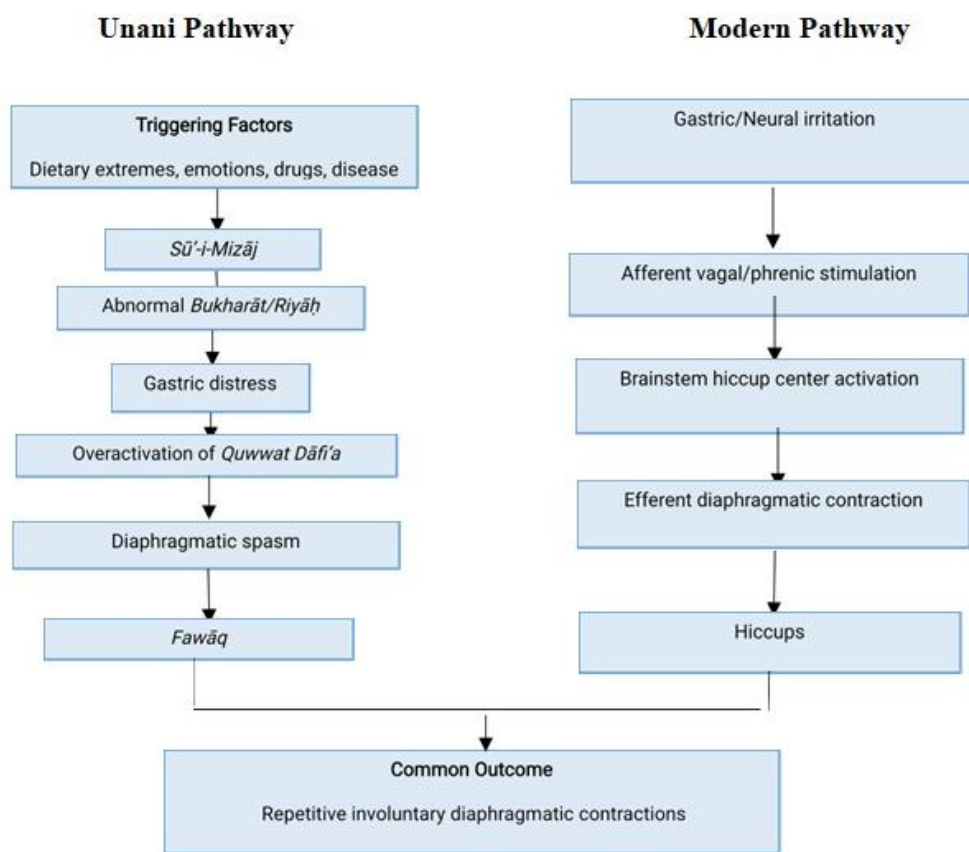
In *Fawāq Sawdāwī*, accumulation of thick, dry *Sawdā* produces chronic rigidity of gastric tissues and persistent hiccups accompanied by constipation, anxiety, and epigastric discomfort.^{2, 4, 24, 27} Modern correlates include chronic gastrointestinal disease, metabolic disorders, and central nervous system pathology, all of which are recognized causes of refractory hiccups.^{6, 10, 14, 15, 22}

4.3 Combined Involvement of the Stomach and Liver

Classical Unani literature also recognizes that *Fawāq* may result from simultaneous involvement of the stomach and liver. Inflammatory swelling of the liver (*Waram-e-Jigar*) or traction exerted by hepatic ligaments is believed to affect the diaphragm (*Ḥijāb-e-Ḥājiz*), leading to dyspnoea (*Ḍīq al-Nafas*) and compensatory activation of *Quwwat Dāfi'a*, ultimately producing hiccups.^{2, 4, 28}

Modern medicine similarly acknowledges that hepatic enlargement, subphrenic abscess, hepatic tumours, and inflammatory diseases involving structures adjacent to the diaphragm may stimulate the phrenic nerve and provoke persistent hiccups. This represents another important area of conceptual convergence between Unani and contemporary biomedical understanding.^{5, 6, 7, 9, 14}

Overall, both medical systems identify gastric dysfunction as the principal initiating event and diaphragmatic irritation as the immediate cause of hiccups.^{2, 3, 4, 6, 7, 21} While Unani medicine explains these changes through disturbances of temperament, humoral imbalance, and excessive activation of *Quwwat Dāfi'a*, modern medicine interprets the same phenomenon in terms of neurophysiological hyperexcitability of the hiccup reflex arc.^{2, 4, 5, 6, 7, 16} These complementary perspectives support a unified understanding of *Fawāq* that integrates functional, neurogastroenterological, and systemic mechanisms.^{2, 3, 4, 6, 7, 10, 14}

Flowchart 1: Comparative Pathogenesis of Hiccups (*Fawāq*)

5. Mechanism of Mechanism of *Fawāq* (Hiccups)

The mechanism of *Fawāq* (hiccups) described in classical Unani literature reflects a functional disturbance involving the coordinated activity of the stomach (*Mi'da*), diaphragm (*Hijāb-e-Hājiz*), and the body's natural expulsive faculty (*Quwwat Dāfi'a*). According to Unani scholars, hiccups originate when disturbances in gastric temperament (*Sū-i-Mizāj*), accumulation of abnormal vapours (*Bukharāt*), or excessive wind (*Riyāh*) irritate the stomach and diaphragm. In response to this irritation, *Tabī'at* activates *Quwwat Dāfi'a* to expel the offending material, producing sudden spasmodic movements recognized clinically as *Fawāq*. *Ibn Sīnā* considered hiccups a consequence of excessive activity of the stomach's expulsive faculty, whereas *Tibb-e-Akbar* describes the event as a rapid sequence of contraction (*Inqibād*) and relaxation (*Inbisāt*) of the diaphragm and respiratory muscles accompanied by the upward movement of gaseous material from the stomach toward the oesophagus, producing the characteristic sound. Clinically, these episodes are frequently associated with epigastric discomfort, nausea, belching, and gastric pain, emphasizing the central role of gastric dysfunction in the development of hiccups.^{2,4}

Modern medicine explains the same phenomenon as a reflex-mediated neurophysiological event involving a well-defined hiccup reflex arc. The afferent limb consists primarily of the vagus nerve, phrenic nerve, and sympathetic fibres arising from the thoracic segments, which transmit stimuli generated by gastric distension, gastroesophageal reflux, inflammation, metabolic abnormalities, or diaphragmatic irritation. These

impulses are integrated within the medullary brainstem, after which the efferent limb activates the diaphragm and accessory inspiratory muscles, resulting in sudden involuntary diaphragmatic contraction followed immediately by reflex closure of the glottis, thereby producing the characteristic "hic" sound.^{5,6,7,14}

When interpreted comparatively, both medical systems describe hiccups as a coordinated protective response initiated by irritation arising predominantly from the stomach–diaphragm axis. Although Unani medicine explains this process through disturbances of *Mizāj*, abnormal *Riyāh* and *Bukharāt*, and excessive activation of *Quwwat Dāfi'a*, while modern medicine attributes it to hyperexcitability of the hiccup reflex arc, both ultimately describe the same sequence of events: gastric or diaphragmatic irritation leading to involuntary diaphragmatic contraction. The Unani concept of an exaggerated expulsive response closely parallels the biomedical concept of reflex arc hyperexcitability, whereas the roles of *Riyāh* and *Bukharāt* correspond to gastric distension, gaseous accumulation, and inflammatory stimuli that activate vagal and phrenic afferents. Thus, despite differences in theoretical framework and terminology, both systems converge in recognizing hiccups as a dysregulated protective reflex arising from disturbed stomach–diaphragm coordination. This remarkable conceptual concordance supports the relevance of classical Unani physiology in the contemporary understanding of hiccups and provides a scientific basis for integrative neurogastroenterological research.^{2,4,6,7,10,14}

6. Clinical Manifestations (Symptoms) of *Fawāq* (Hiccups)

The clinical manifestations of *Fawāq* (hiccups) vary according to the underlying pathophysiological disturbance in both Unani and modern medicine. Classical Unani scholars emphasized that *Fawāq* is not a uniform clinical entity but presents with different symptom complexes depending on the type of *Sū'-i-Mizāj* affecting the stomach (*Mi'da*) and related organs. Similarly, contemporary medicine recognizes that hiccups are a clinical manifestation rather than an independent disease, and the associated symptoms largely reflect the underlying gastrointestinal, neurological, metabolic, or systemic disorder responsible for activation of the hiccup reflex arc.^{6,10,14} Thus, both systems interpret the clinical presentation as an expression of the underlying pathological process rather than merely repetitive diaphragmatic contractions.

6.1 Simple Dystemperament (*Sū'-i-Mizāj Sāda*)

Hot Dystemperament (*Sū'-i-Mizāj Ḥār*)

According to Unani literature, excessive heat within the stomach produces frequent hiccups accompanied by epigastric burning, excessive thirst, dryness of the mouth, restlessness, and a desire for cold food and drinks. Symptoms are aggravated by the consumption of hot and spicy foods.^{17,25,28} These manifestations closely resemble inflammatory gastrointestinal conditions recognized in modern medicine, particularly gastritis, gastroesophageal reflux disease (GERD), and febrile illnesses, in which increased gastric acidity and mucosal inflammation stimulate vagal afferents and precipitate recurrent hiccups.^{6,10,21}

Cold Dystemperament (*Sū'-i-Mizāj Bārid*)

Patients with cold dystemperament typically complain of gastric coldness, weak digestion, reduced thirst, abdominal heaviness, lethargy, and relief after consuming warm foods. Hiccups commonly occur in children and elderly individuals because of diminished digestive heat.^{4,28} A similar clinical picture is observed in delayed gastric emptying, gastric hypomotility, and functional dyspepsia, where gastric stasis and accumulation of gas irritate the diaphragm and activate the hiccup reflex.^{6,10,13}

Moist Dystemperament (*Sū'-i-Mizāj Ratab*)

Excessive gastric moisture is associated with recurrent hiccups accompanied by nausea, excessive salivation, abdominal fullness, bloating, sluggish digestion, and a sensation of fluid movement within the stomach.^{4,17,28} Comparable manifestations occur in functional dyspepsia, gastric atony, and excessive gastric secretions, where gastric distension serves as an important stimulus for activation of the hiccup reflex arc.^{6,7,14}

Dry Dystemperament (*Sū'-i-Mizāj Yābis*)

Classical Unani scholars describe this form as developing after prolonged illness, chronic constipation, severe dehydration, or excessive diarrhoea. Patients

often present with persistent hiccups together with dryness of the mouth, high fever (*Ḥummā*), faintness (*Ghashī*), and signs of gastric and hepatic inflammation.²⁷ Modern medicine similarly recognizes dehydration, electrolyte disturbances, and catabolic states as important causes of neuromuscular hyperexcitability and persistent hiccups, demonstrating close correspondence with the Unani concept of dryness-induced dysfunction.^{16,22}

6.2 Material Dystemperament (*Sū'-i-Mizāj Māddī*)

Material dystemperament develops because of the accumulation of abnormal humours (*Madda*), particularly *Safrā* and *Sawdā*, producing distinct clinical presentations.

In *Fawāq Safrāwī*, patients experience recurrent hiccups associated with intense epigastric burning, bitter taste, restlessness, yellowish vomitus, and preference for cold food and beverages.^{4,28} These findings closely resemble acid reflux, bile gastritis, and chemical irritation of the gastric mucosa, where inflammatory mediators and bile reflux stimulate vagal afferents and perpetuate the hiccup reflex.^{6,10,21}

In *Fawāq Sawdāwī*, hiccups are usually persistent or chronic and are accompanied by constipation, foul-smelling or sour breath, blackish vomitus, gastric burning, and a sensation of rigidity or constriction in the epigastric region.^{4,28} Similar manifestations are encountered in chronic gastrointestinal disorders, metabolic abnormalities, and central nervous system diseases, where prolonged visceral or neurological irritation contributes to refractory hiccups.^{9,14,22}

6.3 Clinical Presentation in Modern Medicine

Modern medicine classifies the clinical manifestations of hiccups according to their duration and underlying cause rather than temperament. Acute hiccups, lasting less than 48 hours, are generally benign and are commonly associated with gastric distension, overeating, carbonated beverages, alcohol consumption, emotional stress, or sudden temperature changes. These episodes may be accompanied by transient epigastric fullness, mild abdominal discomfort, and reflux symptoms.^{6,7,10,14}

In contrast, persistent and intractable hiccups usually indicate underlying pathology. Gastrointestinal disorders frequently present with heartburn, acid regurgitation, nausea, vomiting, abdominal bloating, and epigastric pain. Neurological disorders may be associated with headache, vertigo, dysphagia, limb weakness, or other focal neurological deficits, whereas metabolic disorders often manifest with fatigue, confusion, uraemia, or electrolyte imbalance.^{9,10,13,14,21}

Prolonged hiccups may also produce secondary complications, including sleep disturbance, exhaustion, dehydration, malnutrition, weight loss, and psychological distress. In severe cases, aspiration and impaired postoperative wound healing have also been reported.^{6,9,10,13,14,15}

Comparative Perspective

Although Unani and modern medicine employ different theoretical frameworks, both recognize that hiccups represent a manifestation of underlying physiological or pathological disturbance rather than an isolated muscular event. The Unani classification of symptoms according to *Sū-i-Mizāj* corresponds closely with the modern approach of identifying symptoms based on gastrointestinal, neurological, and metabolic causes. This conceptual concordance demonstrates that classical Unani clinical reasoning emphasizes individualized assessment of the underlying cause, a principle that remains central to contemporary diagnostic practice and supports the integration of traditional and modern perspectives in the evaluation of patients with persistent hiccups.^{6, 10, 13, 14, 17}

7. Diagnosis

The diagnostic approach to *Fawāq* (hiccups) in both Unani and modern medicine extends beyond recognizing the characteristic involuntary diaphragmatic contractions and focuses on identifying the underlying cause responsible for the disorder. Although the two systems employ different theoretical frameworks, both emphasize determining the primary pathological process rather than merely treating hiccups as an isolated symptom.^{2, 5, 6}

In Unani medicine, diagnosis is primarily based on a comprehensive clinical assessment of the patient's *Mizāj* (temperament), gastrointestinal function, associated systemic manifestations, and the nature of the underlying humoral imbalance. Classical physicians regarded *Fawāq* as a consequence of disturbed gastric function and therefore carefully evaluated symptoms suggestive of *Sū-i-Mizāj* or *Māddī* involvement. Particular attention was given to features indicating gastric inflammation (*Waram-e-Mi'da*), excessive internal heat, impaired digestion (*Zou'f-e-Hazm*), vomiting, hematemesis (*Qai' al-Dam*), diarrhoea, anorexia, abnormal accumulation of *Safrā*, and the patient's dietary history. If evidence of excessive heat and inflammation was absent, alternative causes such as cold dyspepsia, digestive weakness, accumulation of morbid humours, or involvement of adjacent organs including the liver and diaphragm were systematically considered. Thus, diagnosis relied on

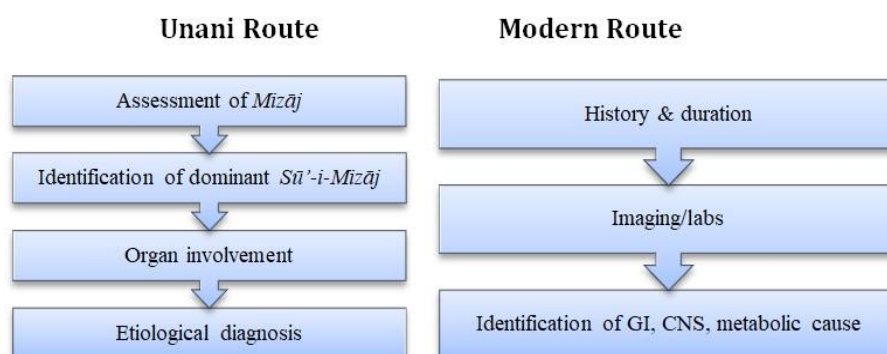
correlating clinical findings with disturbances in temperament and humoral balance to identify the principal etiological factor responsible for *Fawāq*.^{2, 3, 4, 11, 23}

Modern medicine similarly adopts an etiology-oriented diagnostic approach, particularly in patients with persistent or intractable hiccups, where prolonged symptoms frequently indicate underlying disease rather than a benign physiological event. Clinical evaluation begins with a detailed history focusing on the duration of hiccups, dietary habits, medication use, alcohol intake, recent surgical procedures, neurological symptoms, and associated gastrointestinal complaints such as reflux, nausea, vomiting, or abdominal pain. Physical examination is directed toward identifying gastrointestinal, neurological, thoracic, or metabolic abnormalities that may stimulate the hiccup reflex arc.^{5, 6, 10, 14}

Further investigations are guided by clinical suspicion and may include upper gastrointestinal endoscopy for gastroesophageal reflux disease or other gastric pathology, chest radiography or computed tomography to detect thoracic lesions, neuroimaging when central nervous system involvement is suspected, and laboratory investigations including renal function tests, liver function tests, serum electrolytes, blood glucose, and inflammatory markers to identify metabolic or systemic disorders.^{6, 9, 10, 14} These investigations aim to localize abnormalities affecting the afferent, central, or efferent components of the hiccup reflex pathway.

From a comparative perspective, both Unani and modern medicine share a common diagnostic objective: identification of the underlying cause rather than symptomatic suppression of hiccups. While Unani medicine achieves this through assessment of *Mizāj*, humoral imbalance, digestive function, and organ involvement, modern medicine employs clinical examination supported by laboratory and imaging investigations to identify structural, neurological, metabolic, or gastrointestinal pathology. Despite differences in diagnostic methodology, both systems adopt a systematic, cause-oriented approach that reinforces the importance of individualized evaluation and supports the integration of traditional clinical reasoning with contemporary diagnostic practices.^{2, 4, 5, 6, 14}

Patient with Persistent Hiccups



Flowchart 2. Comparative Diagnostic Approach for *Fawāq* (Hiccups)

8. Discussion

The present review demonstrates that although *Fawāq* (hiccups) is described using different theoretical frameworks in Unani and modern medicine, both systems recognize it as a manifestation of underlying physiological disturbance rather than an isolated clinical event. The comparative analysis reveals substantial conceptual overlap between the classical Unani understanding of disturbed *Mizāj*, abnormal *Riyāh* and *Bukharāt*, and excessive activation of *Quwwat Dāfi'a*, and the contemporary biomedical explanation based on irritation and hyperexcitability of the hiccup reflex arc. This concordance suggests that the two systems describe similar physiological processes using different conceptual models.^{2, 4, 5, 6, 7}

Classical Unani physicians consistently regarded the stomach (*Mi'da*) as the principal organ involved in the pathogenesis of *Fawāq*, with secondary participation of the diaphragm (*Hijāb-e-Hājiz*), liver (*Jigar*), and brain (*Dimāgh*) depending on the nature and severity of the disorder. Modern studies similarly identify gastric distension, gastroesophageal reflux, diaphragmatic irritation, and central nervous system abnormalities as major triggers of persistent hiccups. Thus, despite differences in terminology, both systems emphasize the importance of the stomach–diaphragm axis in the initiation of hiccups, supporting the anatomical and physiological relevance of classical Unani descriptions.^{1, 2, 3, 4, 6, 7, 10}

The comparison also highlights meaningful parallels between the Unani classification based on *Sū'i-Mizāj* and the biomedical classification based on underlying etiology. For example, *Sū'i-Mizāj Hār* closely resembles inflammatory gastric disorders such as gastritis and gastroesophageal reflux disease, whereas *Sū'i-Mizāj Bārid* corresponds to gastric hypomotility and delayed gastric emptying. Likewise, the accumulation of *Riyāh* described in Unani literature can be interpreted in light of gastric distension and gaseous retention, recognized triggers of vagal stimulation and diaphragmatic contraction in modern medicine. Similarly, *Sū'i-Mizāj Yābis* demonstrates conceptual similarity to dehydration and electrolyte imbalance, both of which increase neuromuscular excitability and may contribute to persistent hiccups. These observations indicate that many traditional Unani concepts possess plausible functional correlates within contemporary neurogastroenterology.^{2, 3, 6, 10, 11, 21}

Another important finding of this review is the close correspondence between the Unani concept of *Quwwat Dāfi'a* and the modern understanding of reflex arc hyperexcitability. In Unani medicine, excessive activation of the expulsive faculty represents the body's attempt to eliminate irritating substances from the stomach. Modern physiology similarly considers hiccups to result from exaggerated activation of a reflex pathway triggered by visceral irritation. Although the explanatory language differs, both systems ultimately describe hiccups as an exaggerated protective response that becomes pathological when physiological regulation fails.^{2, 4, 5, 6, 7, 16}

From a clinical perspective, the comparative framework presented in this review supports a more comprehensive understanding of patients with persistent or recurrent hiccups. Modern medicine provides precise anatomical localization, neurophysiological mechanisms, and evidence-based diagnostic investigations, whereas Unani medicine contributes a holistic framework based on temperament, humoral balance, digestive function, and individualized clinical assessment. Rather than competing paradigms, these approaches may be regarded as complementary perspectives that together facilitate a broader evaluation of disease mechanisms and may assist in developing integrative management strategies.^{4, 5, 6, 9, 10, 14}

Nevertheless, this review has certain limitations. The comparative correlations presented are based primarily on conceptual interpretation rather than direct experimental validation. Classical Unani terminology reflects a distinct philosophical framework and should not be considered equivalent to modern biomedical concepts. Instead, the similarities identified should be interpreted as functional analogies that may generate hypotheses for future translational and clinical research.

Overall, this review demonstrates that the traditional Unani understanding of *Fawāq* possesses considerable conceptual coherence when interpreted alongside contemporary neurogastroenterological knowledge. Establishing these correlations not only enhances scientific appreciation of classical medical literature but also provides a foundation for future interdisciplinary studies exploring the role of traditional medical concepts within evidence-based integrative healthcare.^{2, 4, 6, 7, 10, 14}

9. Conclusion

This comparative review demonstrates that *Fawāq* (hiccups) is understood in both Unani and modern medicine as more than a simple involuntary diaphragmatic contraction. Although the two systems are based on different theoretical foundations, they converge in recognizing hiccups as a manifestation of underlying physiological or pathological disturbance, particularly involving the stomach–diaphragm axis. Classical Unani scholars attributed *Fawāq* to disturbances in *Sū'i-Mizāj*, abnormal accumulation of *Riyāh* and *Bukharāt*, and excessive activation of *Quwwat Dāfi'a*, whereas modern medicine explains the condition through hyperexcitability of the hiccup reflex arc involving the vagus nerve, phrenic nerve, and central nervous system. The present review demonstrates that these apparently distinct explanatory frameworks exhibit substantial functional and conceptual correspondence.

The comparative analysis further reveals that several Unani concepts possess meaningful biomedical correlates. Disturbances of temperament and humoral imbalance closely parallel contemporary etiological factors such as gastric distension, gastroesophageal reflux, inflammatory disorders, metabolic abnormalities, and neurological diseases. Likewise, the Unani emphasis

on individualized assessment based on *Mizāj*, digestive function, and organ involvement complements the modern diagnostic approach, which focuses on identifying structural, neurological, and systemic causes of persistent hiccups. These similarities indicate that the two systems should be viewed as complementary rather than contradictory models for understanding the pathophysiology of *Fawāq*.

By integrating classical Unani concepts with contemporary neurogastroenterological knowledge, this review provides a broader and more comprehensive understanding of hiccups and highlights the continuing scientific relevance of Unani medicine. Such an integrative perspective may enhance clinical reasoning, promote individualized and cause-oriented patient evaluation, and facilitate dialogue between traditional and modern medical systems. Future experimental, translational, and clinical studies are warranted to validate these proposed conceptual correlations and to evaluate their potential contribution to evidence-based integrative approaches for the diagnosis and management of persistent hiccups

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