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ORIGINAL ARTICLE

CLINICAL CHARACTERISTICS AND THERAPEUTIC MANAGEMENT OF VASOMOTOR RHINITIS IN FEMALE PATIENTS

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Abstract

Vasomotor rhinitis is a chronic non-allergic inflammatory disorder of the nasal mucosa characterized by dysregulation of autonomic neurovascular control mechanisms leading to persistent nasal congestion, rhinorrhea, sneezing, mucosal edema, and respiratory discomfort in the absence of infectious or allergic etiological factors. Female patients demonstrate increased susceptibility to vasomotor rhinitis due to hormonal fluctuations, autonomic nervous system instability, vascular hypersensitivity, endocrine influences, emotional stress, and environmental triggers affecting nasal vascular regulation. The disease significantly influences respiratory comfort, sleep quality, emotional well-being, occupational performance, and overall quality of life. Pathophysiological mechanisms involve neurogenic inflammation, parasympathetic hyperactivity, vascular dilation, mucosal hyperreactivity, epithelial dysfunction, and impaired nasal airflow regulation. Common provoking factors include temperature changes, strong odors, tobacco smoke, air pollution, hormonal imbalance, psychological stress, spicy foods, cosmetic products, and environmental irritants. Clinical manifestations frequently include persistent nasal obstruction, watery nasal discharge, episodic sneezing, headache, facial pressure, reduced concentration, sleep disturbance, fatigue, and chronic mucosal irritation. The present study investigates clinical characteristics, hormonal and neurovascular influences, diagnostic features, therapeutic approaches, and long-term management strategies of vasomotor rhinitis in female patients. Modern diagnostic methods including rhinoscopy, nasal endoscopy, autonomic assessment, hormonal evaluation, allergy exclusion testing, and rhinomanometry significantly improve diagnostic accuracy and facilitate individualized treatment planning. Contemporary therapeutic management increasingly incorporates intranasal corticosteroids, antihistamines, anticholinergic therapy, saline irrigation, physiotherapy, stress reduction, hormonal stabilization, lifestyle modification, and minimally invasive surgical interventions aimed at improving nasal function and reducing chronic symptoms. Clinical observations demonstrate that comprehensive individualized treatment significantly improves respiratory function, symptom control, and quality of life among female patients with vasomotor rhinitis.

Keywords: Vasomotor rhinitis, female patients, chronic rhinitis, nasal obstruction, autonomic dysfunction, hormonal imbalance, non-allergic rhinitis, neurogenic inflammation, respiratory disorders, therapeutic management

1. Introduction

Vasomotor rhinitis represents one of the most common chronic non-allergic nasal disorders affecting adults worldwide and is characterized by functional dysregulation of nasal vascular tone and autonomic nervous system activity resulting in recurrent or persistent nasal symptoms without evidence of infectious or allergic pathology. The condition is particularly prevalent among female patients due to complex interactions between hormonal fluctuations, autonomic instability, vascular hypersensitivity, neurogenic inflammatory mechanisms, and psychosocial factors. Estrogen and progesterone influence vascular permeability, mucosal blood flow, glandular secretion, and autonomic regulation within nasal tissues, thereby contributing to increased nasal hyperreactivity and chronic mucosal dysfunction. Female patients frequently experience worsening of symptoms during hormonal transitions including menstruation, pregnancy, menopause, endocrine disorders, and prolonged hormonal therapy. Chronic vasomotor rhinitis significantly affects respiratory physiology and quality of life by impairing nasal airflow, sleep quality, concentration, emotional stability, and daily functional activity. Persistent nasal congestion and mucosal edema contribute to chronic fatigue, headache, irritability, reduced cognitive performance, and psychosocial distress. Environmental triggers including tobacco smoke, industrial pollutants, temperature fluctuations, strong odors, emotional stress, chemical irritants, cosmetic substances, and dietary factors additionally aggravate neurovascular dysregulation and intensify clinical manifestations. Modern pathophysiological understanding emphasizes the role of autonomic nervous system imbalance, parasympathetic hyperactivity, sensory nerve stimulation, neuropeptide release, vascular dilation, epithelial barrier dysfunction, and chronic neurogenic inflammation in development of vasomotor rhinitis. Increased cholinergic activity and abnormal vascular responsiveness result in excessive mucosal swelling, hypersecretion, and impaired nasal physiological regulation. Accurate diagnosis requires careful differentiation from allergic rhinitis, infectious rhinitis, chronic sinus disease, medication-induced rhinitis, and structural nasal abnormalities. Comprehensive diagnostic evaluation includes clinical assessment, rhinoscopy, nasal endoscopy, allergy testing, hormonal analysis, rhinomanometry, cytological examination, and assessment of autonomic nervous system function. Advances in otolaryngology, neuroimmunology, endocrinology, and respiratory medicine have significantly improved understanding of chronic non-allergic rhinitis and facilitated development of individualized therapeutic strategies. Contemporary management increasingly emphasizes multimodal treatment involving pharmacological therapy, environmental control, hormonal regulation, stress reduction, physiotherapy, nasal irrigation, and minimally invasive interventions aimed at restoring nasal physiological balance and improving long-term respiratory outcomes. Effective treatment therefore requires multidisciplinary cooperation between otolaryngologists, endocrinologists, neurologists, allergologists, and rehabilitation specialists. Vasomotor rhinitis remains one of the most prevalent chronic non-allergic nasal disorders affecting adult populations worldwide and represents an important medical and social problem due to its chronic recurrent course and substantial negative influence on respiratory physiology and quality of life. The condition is characterized by abnormal regulation of nasal vascular tone and autonomic nervous system activity leading to recurrent or persistent nasal congestion, rhinorrhea, mucosal edema, sneezing, and respiratory discomfort in the absence of infectious or allergic inflammatory processes. Female patients demonstrate increased prevalence and severity of vasomotor rhinitis because hormonal fluctuations strongly influence vascular permeability, glandular secretion, mucosal blood circulation, autonomic balance, and neurovascular responsiveness within nasal tissues. Estrogen and progesterone significantly affect nasal physiological regulation, and endocrine instability associated with menstruation, pregnancy, menopause, thyroid dysfunction, and hormonal therapy frequently contributes to worsening of chronic nasal symptoms. Emotional stress and psychosocial factors additionally influence autonomic nervous system activity and may intensify neurovascular dysregulation and chronic respiratory discomfort. Persistent nasal obstruction and mucosal swelling significantly impair sleep quality, cognitive concentration, emotional well-being, occupational productivity, and daily social functioning. Environmental triggers including cigarette smoke, industrial pollutants, sudden temperature changes, strong perfumes, household chemicals, cosmetic substances, humidity fluctuations, and dietary irritants further aggravate chronic nasal hyperreactivity. Modern pathophysiological understanding emphasizes the important role of autonomic nervous system imbalance, parasympathetic hyperactivity, neurogenic inflammation, sensory nerve activation, inflammatory neuropeptide release, vascular instability, epithelial barrier dysfunction, and chronic mucosal hypersensitivity in

development of vasomotor rhinitis. Increased cholinergic stimulation contributes to excessive glandular secretion, vascular dilation, and persistent mucosal edema resulting in impaired nasal airflow and chronic respiratory symptoms. Differential diagnosis remains critically important because clinical manifestations may resemble allergic rhinitis, infectious rhinitis, chronic sinus disease, medication-induced rhinitis, and structural nasal abnormalities. Comprehensive diagnostic evaluation therefore requires detailed clinical assessment, rhinoscopy, nasal endoscopy, allergy testing, hormonal investigation, rhinomanometry, cytological examination, and assessment of autonomic nervous system function. Advances in otolaryngology, endocrinology, neuroimmunology, and respiratory medicine have significantly improved understanding of chronic non-allergic nasal disorders and facilitated development of modern individualized therapeutic strategies. Contemporary treatment approaches increasingly emphasize multimodal management involving pharmacological therapy, environmental control, hormonal stabilization, stress reduction, physiotherapy, nasal irrigation, and minimally invasive interventions aimed at restoring physiological nasal function and improving long-term quality of life. Effective management consequently requires multidisciplinary cooperation between otolaryngologists, endocrinologists, neurologists, allergologists, psychologists, and rehabilitation specialists.

2. Materials and Methods

This study was conducted using clinical, otolaryngological, hormonal, and functional assessment of female patients diagnosed with vasomotor rhinitis between 2021 and 2025. Comprehensive evaluation included analysis of symptom duration, hormonal status, environmental triggers, occupational exposure, emotional stress, sleep disturbances, and quality-of-life indicators. Physical examination focused on nasal obstruction, mucosal edema, rhinorrhea, vascular changes, respiratory discomfort, and associated upper airway abnormalities. Diagnostic procedures included anterior rhinoscopy, nasal endoscopy, allergy exclusion testing, rhinomanometry, cytological analysis of nasal secretions, hormonal evaluation, autonomic nervous system assessment, and radiological imaging when clinically indicated. Patients were categorized according to symptom severity, hormonal status, and duration of disease. Comparative evaluation of therapeutic interventions including intranasal corticosteroids, antihistamines, anticholinergic medications, saline irrigation, physiotherapy, stress management, hormonal correction, and minimally invasive procedures was performed to determine treatment effectiveness and long-term clinical outcomes.

3. Results

Clinical evaluation demonstrated that female patients with vasomotor rhinitis most frequently presented with persistent nasal congestion, watery rhinorrhea, episodic sneezing, mucosal swelling, facial pressure, headache, sleep disturbance, chronic fatigue, and impaired concentration. Symptoms were commonly aggravated by temperature changes, emotional stress, strong odors, hormonal fluctuations, cosmetic substances, cigarette smoke, and environmental irritants. Patients with hormonal imbalance and chronic psychological stress demonstrated significantly greater severity of nasal obstruction and respiratory discomfort compared with individuals without endocrine or emotional disturbances. Rhinoscopic and endoscopic examination revealed edematous pale mucosa, vascular dilation, excessive nasal secretion, and intermittent mucosal hyperemia without signs of allergic inflammation or infectious pathology. Rhinomanometry demonstrated impaired nasal airflow and increased nasal resistance among patients with severe autonomic dysfunction. Cytological analysis showed absence of eosinophilic allergic inflammation and predominance of nonspecific inflammatory changes associated with neurovascular dysregulation. Hormonal assessment identified endocrine instability including menstrual irregularities, menopausal changes, and estrogen-related vascular hypersensitivity in a significant proportion of female patients. Therapeutic interventions involving intranasal corticosteroids, saline irrigation, anticholinergic therapy, stress reduction, and hormonal stabilization significantly reduced nasal obstruction, rhinorrhea, mucosal edema, and sleep disturbances. Patients receiving комплексное individualized therapy demonstrated substantial improvement in respiratory comfort, emotional stability, and quality-of-life indicators during long-term follow-up observation. Clinical evaluation demonstrated that female patients with vasomotor rhinitis most frequently experienced persistent nasal congestion, watery rhinorrhea, recurrent sneezing episodes, mucosal swelling, facial pressure, headache, sleep disturbances, chronic

fatigue, irritability, and reduced concentration capacity. Symptoms were commonly aggravated by emotional stress, hormonal fluctuations, sudden temperature changes, tobacco smoke exposure, strong odors, cosmetic substances, environmental pollution, and dietary irritants. Patients presenting endocrine instability including menstrual irregularities, menopausal hormonal changes, and thyroid dysfunction demonstrated significantly greater severity of nasal obstruction and chronic respiratory discomfort compared with individuals without hormonal disturbances. Rhinoscopic and endoscopic examinations revealed pale edematous mucosa, vascular dilation, excessive nasal secretions, intermittent hyperemia, and pronounced mucosal swelling without evidence of infectious or allergic inflammatory pathology. Rhinomanometric assessment demonstrated increased nasal airway resistance and impaired respiratory airflow among patients with severe autonomic dysregulation. Cytological investigation showed absence of eosinophilic allergic inflammation and predominance of nonspecific inflammatory and neurovascular changes associated with chronic mucosal hyperreactivity. Autonomic nervous system evaluation identified increased parasympathetic activity and neurovascular instability in a substantial proportion of patients with severe chronic symptoms. Psychological assessment demonstrated strong association between chronic emotional stress, anxiety, sleep disturbances, and worsening of respiratory manifestations. Therapeutic interventions involving intranasal corticosteroids, anticholinergic medications, saline irrigation, hormonal stabilization, physiotherapy, stress reduction programs, and lifestyle modification significantly reduced nasal congestion, rhinorrhea, mucosal edema, and sleep-related complaints. Patients receiving comprehensive individualized therapy demonstrated considerable improvement in respiratory comfort, emotional stability, social functioning, and overall quality-of-life indicators during long-term follow-up observation.

4. Discussion

The findings confirm that vasomotor rhinitis in female patients represents a multifactorial chronic respiratory disorder strongly associated with autonomic nervous system dysregulation, hormonal influences, vascular hypersensitivity, and neurogenic inflammatory mechanisms. Female hormonal fluctuations substantially influence nasal vascular tone, mucosal permeability, glandular secretion, and autonomic balance thereby increasing susceptibility to chronic nasal hyperreactivity. The study additionally demonstrates that emotional stress, environmental irritants, endocrine instability, and neurovascular dysfunction significantly aggravate severity of respiratory symptoms and negatively affect quality of life. Parasympathetic hyperactivity and excessive cholinergic stimulation appear to play major roles in development of persistent mucosal edema, rhinorrhea, and impaired nasal airflow. Neurogenic inflammation involving sensory nerve activation and release of inflammatory neuropeptides further contributes to chronic vascular instability and mucosal hyperresponsiveness. The findings emphasize the importance of comprehensive differential diagnosis to distinguish vasomotor rhinitis from allergic, infectious, structural, and medication-induced nasal disorders. Modern diagnostic technologies significantly improve identification of autonomic and hormonal factors contributing to chronic nasal dysfunction and facilitate individualized therapeutic planning. Intranasal corticosteroids, saline irrigation, anticholinergic therapy, physiotherapy, hormonal correction, and stress reduction remain highly effective components of long-term management. Lifestyle modification and environmental trigger avoidance additionally contribute to stabilization of neurovascular regulation and improvement of respiratory comfort. Despite significant advances in treatment, several clinical challenges persist including chronic symptom recurrence, delayed diagnosis, endocrine instability, emotional stress-related exacerbations, and incomplete therapeutic response in severe cases. Future scientific investigations increasingly focus on molecular neuroimmunological mechanisms, autonomic nervous system modulation, precision hormonal therapy, regenerative mucosal treatment, and minimally invasive neuromodulatory interventions aimed at improving long-term control of chronic vasomotor rhinitis. Multidisciplinary integration of otolaryngology, endocrinology, neurology, allergology, and rehabilitation medicine therefore remains essential for effective management of female patients with chronic non-allergic nasal dysfunction. The findings confirm that vasomotor rhinitis in female patients represents a complex multifactorial respiratory disorder strongly associated with autonomic nervous system dysfunction, hormonal influences, neurovascular instability, and chronic mucosal hypersensitivity. Female hormonal fluctuations substantially affect vascular permeability, mucosal blood circulation, glandular secretion, and autonomic regulation thereby increasing susceptibility to persistent nasal hyperreactivity and

chronic respiratory dysfunction. The study additionally demonstrates that emotional stress, endocrine instability, environmental irritants, and neurogenic inflammatory mechanisms significantly aggravate severity of clinical manifestations and negatively influence psychosocial well-being and quality of life. Parasympathetic hyperactivity and abnormal cholinergic stimulation appear to play fundamental roles in development of chronic mucosal edema, rhinorrhea, and impaired nasal airflow. Neurogenic inflammation involving sensory nerve activation and release of inflammatory neuropeptides further contributes to chronic vascular instability and exaggerated mucosal responsiveness. The findings emphasize the importance of comprehensive differential diagnosis for exclusion of allergic, infectious, structural, and medication-related nasal pathology. Modern diagnostic technologies significantly improve identification of autonomic and hormonal factors contributing to chronic nasal dysfunction and facilitate development of individualized therapeutic strategies. Intranasal corticosteroids, saline irrigation, anticholinergic therapy, hormonal correction, physiotherapy, psychological stabilization, and lifestyle modification remain highly effective components of long-term disease management. Environmental trigger avoidance and stress reduction additionally contribute to stabilization of neurovascular regulation and improvement of respiratory comfort. Despite advances in treatment approaches, several important clinical challenges remain including chronic symptom recurrence, delayed diagnosis, hormonal instability, emotional stress-related exacerbations, and incomplete therapeutic response in severe cases. Future scientific investigations increasingly focus on molecular neuroimmunological mechanisms, autonomic nervous system modulation, regenerative mucosal therapy, precision hormonal management, and minimally invasive neuromodulatory interventions aimed at improving long-term control of chronic vasomotor rhinitis. Multidisciplinary integration of otolaryngology, endocrinology, neurology, allergology, psychology, and rehabilitation medicine therefore remains essential for effective management of female patients with chronic non-allergic respiratory dysfunction.

5. Conclusion

Vasomotor rhinitis in female patients is a chronic multifactorial respiratory disorder associated with autonomic dysregulation, hormonal instability, vascular hypersensitivity, and neurogenic inflammatory mechanisms. Persistent nasal congestion, rhinorrhea, mucosal edema, sleep disturbance, and respiratory discomfort significantly impair quality of life and daily functional activity. Hormonal fluctuations, emotional stress, and environmental irritants substantially influence severity and progression of clinical manifestations. Comprehensive diagnostic evaluation and individualized multimodal treatment significantly improve respiratory function, symptom control, emotional well-being, and long-term clinical outcomes. Contemporary therapeutic approaches including intranasal corticosteroids, saline irrigation, anticholinergic therapy, hormonal stabilization, stress management, and minimally invasive interventions effectively reduce chronic symptoms and restore nasal physiological balance. Continued advances in neuroimmunology, endocrinology, otolaryngology, and respiratory medicine will further improve understanding and management of vasomotor rhinitis among female patients. Vasomotor rhinitis in female patients is a chronic multifactorial respiratory disorder associated with autonomic dysregulation, hormonal instability, neurovascular hypersensitivity, and chronic mucosal dysfunction. Persistent nasal congestion, rhinorrhea, mucosal edema, sleep disturbances, emotional instability, and respiratory discomfort significantly impair quality of life and daily functional activity. Hormonal fluctuations, psychological stress, environmental irritants, and autonomic nervous system imbalance substantially influence severity and progression of clinical manifestations. Comprehensive diagnostic evaluation and individualized multimodal treatment significantly improve respiratory function, symptom control, emotional well-being, and long-term therapeutic outcomes. Contemporary management approaches including intranasal corticosteroids, saline irrigation, anticholinergic therapy, hormonal stabilization, stress reduction, physiotherapy, and minimally invasive interventions effectively reduce chronic symptoms and restore physiological nasal balance. Continued advances in neuroimmunology, endocrinology, otolaryngology, and respiratory medicine will further improve understanding and management of vasomotor rhinitis among female patients.

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