iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** VII **Month of publication:** July 2024

DOI: https://doi.org/10.22214/ijraset.2024.63764

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue VII July 2024- Available at www.ijraset.com

Methods of Early Diagnosis and Treatment of Pathology of the Nose and Nasopharynx in Diseases of the Blood System

Jurayev Khamid Khaidarovich[1], Khujamurodov Shokhrukhbek Oromjanovich[2], Madasheva Anajan Gazkhanovna[3]
[1]*Ordinator of the ENT department, Samarkand regional multi-network medical center*
[2]*Surgeon of the ENT Department, Samarkand regional multi-network medical center*
[3]*PhD of the Department of Hematology, Samarkand State Medical University*

Abstract: ***In the article, the methods of early diagnosis and treatment of pathology of the nose and nasopharynx in diseases of the blood system are studied. The article provides an overview of the most modern methods of diagnosing diseases of the nasal cavity, paranasal sinuses and nasopharynx. It was also discussed about the appointment of additional examinations for various pathologies. Methods of laboratory diagnostics and methods of collecting material for microbiological examination of pathogens are considered. Methods of functional diagnosis of nasal breathing disorders are described.***
Keywords: Nasopharynx, nasal cavity, blood system, innovative treatment methods, clinical situations, neurodegenerative.

I. INTRODUCTION

An accurate diagnosis in rhinology is based on medical history, examination and additional examinations. Today, there are many types of examinations to clarify the diagnosis. The need to prescribe each of them depends on the patient's condition. Some types of examinations are already outdated and unclaimed, others are needed in certain clinical situations; There are also examinations that are required in clinical trials.

It should be noted that some diseases manifest themselves with symptoms of inflammation of the upper respiratory tract. These are not only acute respiratory infections, but also severe systemic pathological conditions, such as granulomatosis or vasculitis. Therefore, the sooner an accurate diagnosis is made, the higher the patient's chances of successful treatment of the underlying disease. Sometimes complaints and symptoms revealed during examination are so scarce that the correct diagnosis and choice of treatment directly depend on additional examination methods. Also, using special techniques, it is possible to evaluate symptoms that are not directly related to the state of nasal breathing, but may indicate other pathologies, in particular a neurodegenerative condition (for example, decreased sense of smell in Alzheimer's disease). Finally, today there are objective methods for assessing the effectiveness of surgical intervention, which may be important for assessing the quality of medical care provided.

II. LITERATURE REVIEW

In recent years, there has been significant progress in the development of methods for the functional diagnosis of nasal breathing disorders. To analyze and objectify the respiratory function of the nose, new methods have been proposed that allow a more complete understanding of the functions of the nose, especially when these methods are used in combination [1].

Considering the importance of various examination methods in clarifying the diagnosis, it should be remembered that not all techniques known at this stage of development of rhinology are necessary for each patient. However, both otorhinolaryngologists and doctors of other specialties must know and put into practice modern diagnostic capabilities when examining patients.

III. CLINICAL EXAMINATION

As with any other pathology, the examination of a patient with an upper respiratory tract disease begins with collecting an anamnesis. Difficulty in nasal breathing and nasal congestion are the most common rhinological symptoms, reported by up to 80% of patients. Nasal discharge (rhinorrhea) is the second most common complaint, with many patients describing so-called "postnasal drip" (a feeling of mucus draining from the nose into the throat). Nasal discharge may be clear and watery, as is commonly seen with rhinitis, although unilateral watery rhinorrhea should raise suspicion for CSF leak.

©IJRASET: All Rights are Reserved

Pressure or pain in the facial area may be associated with rhinosinusitis, especially exacerbations of chronic sinus pathology, which is more common in adults than in children. But the cause of the so-called “sinus headaches” is not always a purulent process in the paranasal sinuses. For example, facial pain and pulsating headaches, as well as photophobia, are not typical for rhinosinusitis [2].

Changes in the sense of smell may be described as decreased (hyposmia) or absent (anosmia). Associated nasal congestion may indicate conductive loss, such as with nasal polyps, but previous traumatic brain injury, infection, and pathological neurological conditions must also be considered. Smell disorders can be idiopathic, but pathology of the nasal cavity must be excluded first. Hyposmia is characteristic of chronic rhinosinusitis, but is rare in rhinitis [3, 4].

Nasal congestion, sneezing, and nasal discharge are often signs of allergic rhinitis. It is important to identify the frequency and duration of allergic rhinitis symptoms and their impact on daily life, as this allows the diagnosis to be classified as intermittent or persistent allergic rhinitis and the severity of the disease (mild, moderate or severe) to be determined according to ARIA guidelines (Allergic Rhinitis). and its Impact on Asthma) [5].

For each specific nosology, a certain set of studies is required to confirm an accurate diagnosis. For example, according to the European Position Paper on Rhinosinusitis and Nasal Polyps, the diagnosis of rhinosinusitis is determined based on clinical symptoms, endoscopic signs and/or computed tomography (CT) findings [6]. Symptoms of rhinosinusitis include:

- nasal congestion;
- nasal discharge;
- pain/pressure in the area of projection of the paranasal sinuses;
- decreased or loss of sense of smell.

For a preliminary diagnosis, it is enough to identify two or more symptoms. Acute rhinosinusitis is defined as a condition characterized by symptoms for less than 12 weeks, while chronic rhinosinusitis persists for more than 12 weeks. Thus, having collected only anamnesis, we can confidently assume the diagnosis of “rhinosinusitis”. Additional examination methods confirm an accurate diagnosis.

A thorough examination of the head and neck is considered “gold standard” for all patients with complaints of nasal breathing disorders. During examination, it is important to evaluate the following symptoms:

- difficulty in nasal breathing (mouth breathing);
- dynamic collapse of the lateral walls of the nose;

deformations of the external nose, which can cause functional and/or cosmetic problems.

Anterior rhinoscopy allows you to evaluate the anterior sections of the nasal cavity as a whole, the anterior sections of the nasal septum, and the anterior ends of the inferior and middle turbinates. A deformed anterior nasal septum is more likely to be associated with nasal congestion and difficulty breathing through the nose than a posterior deviated septum. Large nasal polyps are easily visualized during anterior rhinoscopy.

As shown in earlier studies, the diagnostic accuracy of anterior rhinoscopy for chronic rhinosinusitis in combination with medical history ranges from 66 to 77% [8]. However, it is generally accepted that anterior rhinoscopy is useful, but in many cases it is not a definitive diagnostic technique.

Endoscopy allows for a more comprehensive examination of the nasal cavity, middle meatus, sphenoethmoidal recess and postnasal space and is currently an integral part of the rhinological examination [9]. Endoscopy can also be used to assess the response to both medical and surgical treatment and allows photo and video documentation of detected changes. Endoscopy improves diagnostic accuracy compared to anterior rhinoscopy alone by up to 85%.

Several studies have reported diagnostic specificity of endoscopy of up to 95% [9]. In pediatric practice, endoscopy is the safest and most informative tool for diagnosing nasopharyngeal pathology. At the moment, endoscopy has practically replaced radiography of the nasopharynx as a diagnostic method in children.

Posterior rhinoscopy, digital examination of the nasopharynx and diaphanoscopy are not used at the present stage of development of rhinological research, as they have been replaced by endoscopy and radiation imaging methods. Therefore, a thorough history should be used in conjunction with a complete rhinological examination, of which endoscopy is the most important part. This allows a systematic approach to be used both for differential diagnosis and in discussing the need for further research and planning appropriate patient management in each specific case.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

IV. LABORATORY DIAGNOSTICS

Most patients with diseases of the nasal cavity and paranasal sinuses do not need additional laboratory diagnostic methods, since examination, endoscopy and imaging are sufficient to assess the clinical picture of the pathological condition. However, laboratory tests are very useful for some conditions. For example, patients diagnosed with granulomatosis with polyangiitis (Wegener's granulomatosis) experience frequent nosebleeds, crusting that impedes nasal breathing, and in some cases, perforation of the nasal septum. Such clinical manifestations are sometimes the first symptoms of this systemic disease. In this situation, confirmation of the diagnosis is required not only through a biopsy (which in some cases is insufficient), but also based on the results of laboratory diagnostic methods. In particular, determination of the level of antineutrophil cytoplasmic antibodies (ANCA) confirms the diagnosis and reflects the severity of the disease [10]. The combination of clinical signs, positive serology, necrotizing vasculitis, and granulomatous inflammation on biopsy confirms a definitive diagnosis.

V. RADIATION METHODS OF DIAGNOSTICS

Diagnostic radiology accurately visualizes those areas that cannot be assessed during routine examination and is used to provide an accurate assessment of anatomy, confirmation of clinical symptoms, endoscopic results, and contributes to an objective assessment of pathology in terms of both diagnosis and severity of the disease [6]. However, how and when the scan is performed affects the results of the examination.

Standard radiographic examinations of the paranasal sinuses in the occipitomental view (Water view) and the occipitofrontal view (Caldwell view) are still routinely used, especially in cases of acute inflammation and for the diagnosis of facial fractures. But recently, the importance of radiography in rhinology has been decreasing due to the effect of superposition of the studied structures and the emergence of other, more accurate, methods of radiation visualization. At the moment in the development of modern rhinology, the use of radiography and ultrasound examination methods as visualization methods is not recommended due to their low information content.

Computed tomography (CT) and magnetic resonance imaging (MRI) are among the most important diagnostic tools. If a definitive diagnosis is not possible based on CT or MRI findings, then at a minimum a differential diagnosis is provided. In addition, MRI allows characterization of soft tissues. Preoperative CT is mandatory for sinus surgery in most countries and should be available to the surgeon in the operating room. This became the standard of care with the advent of endoscopic sinus surgery. Besides diagnosis, imaging also plays an important role in follow-up to monitor disease recurrence.

Technologies and processing capabilities of computer research continue to develop and improve. When examining, there is a need to use not only highly informative, but also safe research methods, especially when examining children. Attempts are being made to reduce radiation dose, reduce scanning time, and use post-processing techniques while maintaining image quality [9]. One example of such a study is cone beam CT. Traditionally, this imaging modality has been used in dentistry, but more recently, cone beam CT has been used in rhinology to provide high-resolution images. Another advantage of cone beam CT is the ability to create 3D images. Disadvantages of cone beam CT include longer scanning times, potential for patient movement, and lack of soft tissue differentiation. MRI is used to visualize soft tissues in patients with complicated inflammatory diseases of the paranasal sinuses and is the method of choice in patients with suspected neoplasm. In case of anosmia/hyposmia, the olfactory pathway is visualized using MRI, the size of the olfactory bulbs is measured, and an intracranial cause of the smell disorder is excluded. There are some contraindications to MRI, such as the presence of a pacemaker, clipped aneurysm, certain cochlear implants and prostheses.

VI. OBJECTIVE METHODS

Nasal obstruction is a common complaint in many nasal diseases and affects quality of life, so its objective measurement is very important. In the lower respiratory tract, symptoms are assessed and monitored using pulmonary function tests. Many authors believe that similarly, assessment of nasal obstruction using objective methods should become part of routine clinical testing [11]. From a functional point of view, an accurate diagnosis of the degree and location of the stenosis causing nasal airway obstruction and the distinction between “physiological” and “pathological” deviated nasal septum are required.

Objective measurements such as acoustic rhinometry, rhinoresistometry and rhinomanometry are the most commonly used methods, showing good correlation with each other [12]. The results of these studies help in diagnosing nasal breathing disorders, as well as in monitoring the response to treatment, both medical and surgical. Acoustic rhinometry is an easy-to-use, non-invasive and reliable technique that is well accepted by patients. The method is based on computer analysis of sound reflection from intranasal structures. Sound impulses are created and directed into the nasal cavity using a nasal adapter. The geometric shape of the nasal cavity creates a specific pattern of sound reflections.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

A microphone at the nostril records the spectrum of reflected sounds. A special computer program calculates cross-sectional areas for various distances from the nostril based on the amplitude of changes in the sound spectrum. This method allows you to obtain an objective picture of the intranasal geometry. Measurements are taken before and after removing congestion by irrigating the nasal mucosa with a decongestant solution. The availability of the technique ensures that this study can be carried out in children.

The measurement technique and examination scheme for rhinoresistometry are similar to rhinomanometry. Rhinoresistometry not only objectively assesses the degree of obstruction of the nasal passages, but also provides initial information about the causes of increased resistance, such as, for example, narrowing of the air channel, high levels of turbulence, and inspiratory collapse of the nasal valve. The hydraulic diameter is used as a parameter for the inside width of the nose. This parameter can be used to reliably and objectively assess changes in edema, for example, during endonasal allergy tests. The physical basis of rhinomanometry is the objective simultaneous measurement of air flow velocity and the pressure difference between the external pressure up to the nasal bone and at the posterior edge of the nasal cavity (at the choanae). Nasal resistance has been found to decrease with age and is lower for girls than for boys [12]. The main purpose of rhinomanometry today is to objectively assess the degree of obstruction of the nasal passages.

Rhinomanometry has a number of advantages. Firstly, the study requires minimal cooperation between the patient and the doctor, so rhinomanometry can be performed in children. Secondly, the study is safe and easily reproducible, which is important for repeated measurements. All three tests can be used to objectively assess nasal congestion associated with chronic rhinosinusitis, allergic rhinitis, or nasal septal deformity. Testing before and after elimination of swelling of the nasal mucosa makes it possible to differentiate the causes of nasal congestion (edema of the mucous membrane or fixed structural deformation). This may be useful in choosing the appropriate surgical procedure, as well as in assessing the results of drug therapy or surgery in the nasal cavity [11].

VII. CONCLUSION

Considering the value of additional methods for examining patients with various pathologies of the nasal cavity, paranasal sinuses and nasopharynx, it is necessary to take a rational approach to their use. This is especially important in pediatric practice. It is recommended to use diagnostic methods that have the following advantages:

- High information content;
- Safety;
- Opportunity to document changes identified during the examination.

This allows you to make an accurate diagnosis, prescribe adequate therapy or choose the most appropriate method and extent of surgical intervention. Monitoring patients during follow-up also requires a careful approach to prescribing the necessary examination methods. Thus, the use of modern diagnostic tools when examining patients with diseases of the nasal cavity, nasopharynx and paranasal sinuses makes it possible to choose optimal treatment tactics, reduces the risks of complications and relapse of diseases, thereby increasing the level of medical care, and opens up new prospects in the study of previously unexplored problems.

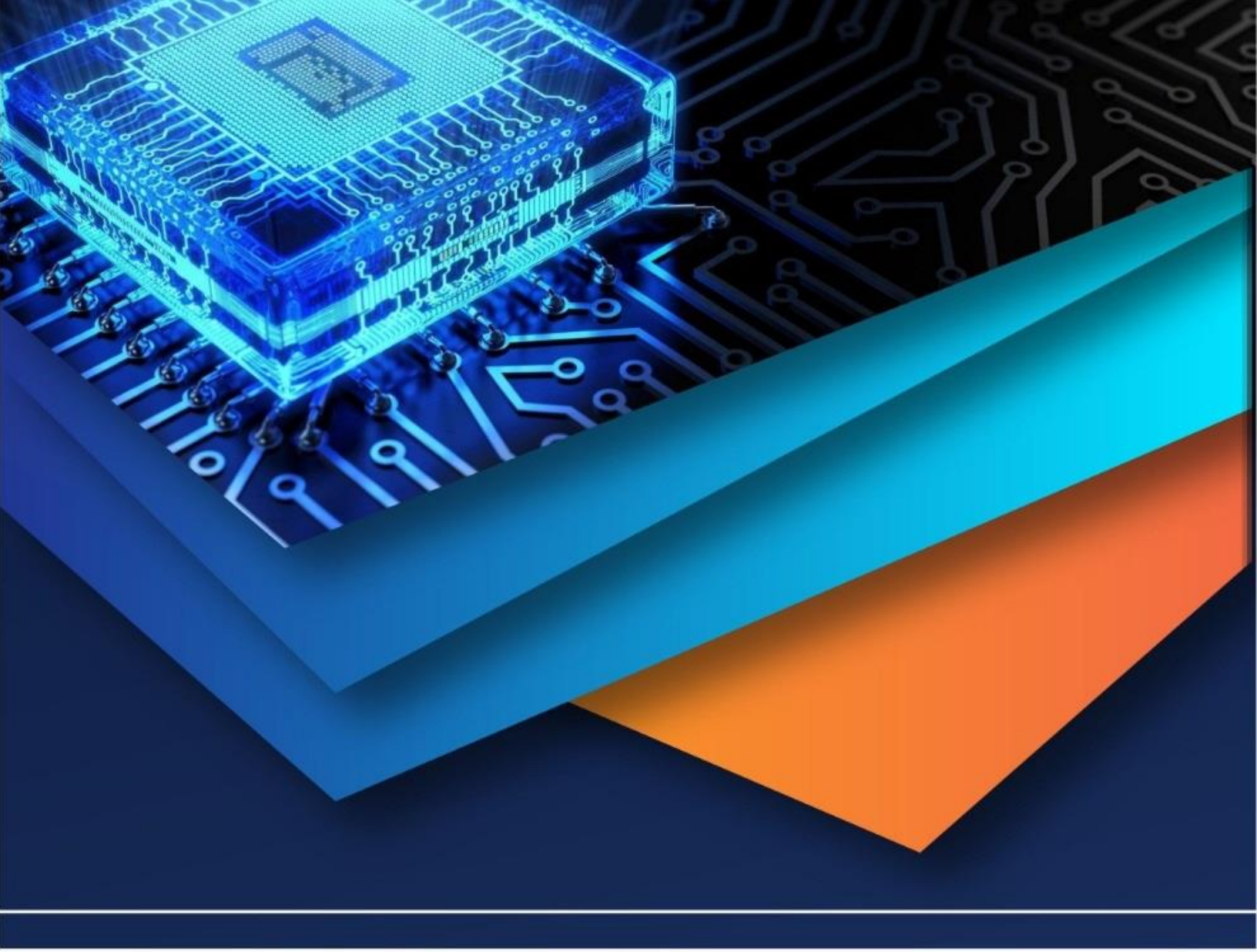
REFERENCES

[1] Gruetzenmacher S, Lang C, Mlynski G. The combination of acoustic rhinometry, rhinoresistometry and flow simulation in noses before and after turbinate surgery: a model study. ORL J Otolaryngol Relat Spec. 2003;65(6):341–347. doi: 10.1159/000076052.
[2] Jones NS. The prevalence of facial pain and purulent sinusitis. Curr Opin Otolaryngol Head Neck Surg. 2009;17(1):38–42. doi: 10.1097/MOO.0b013e32831b9e45.
[3] Philpott C, Wolstenholme C, Goodenough P, et al. Comparison of Subjective Perception with Objective Measurement of Olfaction. Otolaryngol Head Neck Surg. 2006;134(3):488–490. doi: 10.1016/j.otohns.2005.10.041.
[4] Hsueh WD, Conley DB, Kim H, et al. Identifying clinical symptoms for improving the symptomatic diagnosis of chronic rhinosinusitis. Int Forum Allergy Rhinol. 2013;3(4):307–314. doi: 10.1002/alr.21106.
[5] Bousquet J, Van Cauwenberge P, Khaltaev N, et al. Allergic Rhinitis and its Impact on Asthma. J Allergy Clin Immunol. 2001;108(5 Suppl):S147–S334. doi: 10.1067/mai.2001.118891.
[6] Fokkens WJ, Lund VJ, Hopkins C, et al. European Position Paper on Rhinosinusitis and Nasal Polyps 2012. Rhinology. 2012;58(Suppl S29):1–464. doi: 10.4193/Rhin20.600.
[7] Bhattacharyya N, Lee LN. Evaluating the diagnosis of chronic rhino-sinusitis based on clinical guidelines and endoscopy. Otolaryngol Neck Surg. 2010;143(1):147–151. doi: 10.1016/j.otohns.2010.04.012.
[8] Hughes RG, Jones NS. The role of nasal endoscopy in outpatient management. Clin Otolaryngol Allied Sci. 1998;23(3):224–226. doi: 10.1046/j.1365-2273.1998.00131.x.
[9] Shargorodsky J, Bhattacharyya N. What is the role of nasal endoscopy in the diagnosis of chronic rhinosinusitis? Laryngoscope. 2013;123(1):4–6. doi: 10.1002/lary.23385.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

[10] Greco A, Marinelli C, Fusconi M, et al. Clinical manifestations in granulomatosis with polyangiitis. Int J Immunopathol Pharmacol. 2016;29(2):151–159. doi: 10.1177/0394632015617063.
[11] Dubin MG, Ebert CS, Coffey CS, et al. Concordance of middle meatal swab and maxillary sinus aspirate in acute and chronic sinusitis: a meta-analysis. Am J Rhinol. 2005;19(5):462–470.
[12] Landis BN, Hummel T, Hugentobler M, et al. Ratings of over- all olfactory function. Chem Senses. 2003;28(8):691–694. doi: 10.1093/chemse/bjg061.
[13] Haxel BR, Bertz-Duffy S, Fruth K, et al. Comparison of subjective olfaction ratings in patients with and without olfactory dis- orders. J Laryngol Otol. 2012;126(07):692–697. doi: 10.1017/ S002221511200076X.
[14] Schriever VA, Agosin E, Altundag A, et al. Development of an International Odor Identification Test for Children: The Universal Sniff Test. J Pediatr. 2018;198:265–272.e3. doi: 10.1016/j.jpeds.2018.03.011.
[15] Kobal G. Elektrophysiologische Untersuchungen des menschlichen Geruchssinns. Thieme Verlag; 2001. pp. 1-161.
[16] Мадашева, А. Г. (2022). Коррекция диффузной алопеции при железодефицитной анемии. Science and Education, 3(12), 231-236.
[17] Мадашева, А. Г. (2022). Клинико-неврологические изменения у больных гемофилией с мышечными патологиями. Science and Education, 3(12), 175-181.
[18] Abdiyev, K., Maxmonov, L., Madasheva, A., & Mamatkulova, F. (2021). Business games in teaching hematology. Obshestvo i innovatsii, 2(6), 208-214.
[19] Gazkhanovna, M. A., Makhmatovich, A. K., & Utkirovich, D. U. (2022). Clinical efficacy of extracorporeal and intravascular hemocorrection methods in psoriasis. ACADEMICIA: An International Multidisciplinary Research Journal, 12(2), 313-318.
[20] Madasheva, A. G., Yusupova, D. M., & Abdullaeva, A. A. EARLY DIAGNOSIS OF HEMOPHILIA A IN A FAMILY POLYCLINIC AND THE ORGANIZATION OF MEDICAL CARE. УЧЕНЫЙ XXI ВЕКА, 37.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)