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Review Article

Developments in the Understanding of Bronchial Asthma and Contribution of Greeco-Arab Physicians

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I N F O

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A B S T R A C T

Unani Medicine, being one of the oldest systems of medicine has very vast literature and has played an important role in the understanding of the diseases and their management and still provides some remarkable solutions to the different diseases, Bronchial Asthma is one of them. Asthma is one of the most chronic prevalent diseases in children as well as in adults. The clinical description of Asthma dates back to ancient times and, over this long period, multiple paradigms for asthma pathogenesis have been proposed and revised. Even though significant and remarkable progress in our understanding of bronchial Asthma over the past few decades, it remains frequently encountered condition challenging to the physicians. Going through a popular historic text adds to our knowledge of the developments in the area of respiratory medicine at any peace of time.

Keywords: Asthma, Rabu, Warem-e Riya, Unani Medicine

Introduction

Asthma is one of the most chronic prevalent diseases in children (affecting an estimated 4.8 million children) as well as in adults.[1-6] From antiquity to the 1920s, the frequency of Asthma, especially death from Asthma was considered to be rare; In fact, Asthma was not considered a significant cause of death during the early year of 20th century.[7] Although much progress has been made in our understanding of Bronchial Asthma, it remains frequently encountered condition challenging to physician.[1] There has been a change in the epidemiology and clinical spectrum of Asthma with an apparent increase in the overall prevalence along with a rise in the incidence of 'difficult to treat' cases. The prevalence of Asthma is increasing with growing urbanization; there may be an additional 100 million people with Asthma by 2025.[8]

Understanding of Rabu in Greeco-Arab Literature

Asthma is a very common disorder of the respiratory system that primarily involves the airways. The clinicians have long recognized Asthma by breathlessness and cough. The actual term "Asthma" is a Greek word that is derived from the verb "Aazein", meaning to exhale with open mouth and to pant.[9]

The first incidence of Asthma or Asthma-like symptoms is recorded in the Egyptian manuscript called "Ebrus Piprus."[10-13] The fifty-fifth column on the Pipprus Ebrus (1550 BC) lists a series of remedies that Ebell translates as meaning "To eradicate Asthma."[11,12]

First written record of the word Asthma appears about 2700 years ago in the Iliad of Homer. Its meaning in this Homeric epic is that of a short-drawn breath, a hard breath, or panting.[11,13]

Hippocrates described panting, as Asthma and according to him, it develops as consequent to the cacochymia (Disequilibrium) of the houmors. The lungs would ultimately be blocked due to an excess of catarrh.[11]

By any account, the best clinical description of Asthma in antiquity is given by Aretaeus, a Greek physician about 500 years after the Hippocratic time. Aretaeus shared the Hippocratic spirit and methodology but in contrast with the Hippocrates dealt with Asthma as an autonomous clinical entity and not as a symptom.[11]

The Roman encyclopaedist Aulus Aurelius Cornelius Celsus (first century BC), the first medical historian, described Asthma in Book Four of his "De Medicina" as the inability to breathe without making noise and gasping. As a treatment, Celsus suggested bleeding, purgatives, hot wet compresses, emetics, and diuretics.[11]

The numerous mentions of "Asthma" in the extensive writing of Galen (130-200 AD) appear to be in general agreement with Hippocratic text and to some extent with the statement of Aretaeus.[11]

Among Arab physicians, Ali bin Rabban Tabri (810-895 AD) was the first physician who described different types of Asthma in his famous book "Firdousul-Hikmat" and thus he gave a classification of Asthma for the first time. According to him, breathlessness is due to the accumulated viscid matter in the airways.[14]

Abu Bakr Muhammad ibn Zakarya ar-Razi, known in Europe as Rhazes, (c. 865.932) was a Persian who wrote in the Arabic language. Among his medical tomes was A dissertation on the cause of the Coryza which occurs in the spring when the roses give forth their scent, the first description of seasonal allergic rhinitis, or what was then referred to as rose fever.[15]

Razi gave the first description of Status Asthmaticus. He described the most severe form of Asthma as Intisabun-Nafs; According to him, breathlessness occurs due to the accumulation of viscid humours in the airways or due to the Insebab-e-Nazla towards the lung.[16]

Asthma Exacerbation is also mentioned in Classical literature, according to it the cause of stimulation of nervous center i.e. dust, fume, and coldness also causes asthma.[17] These causes may be included in the causes of hyperresponsiveness of airways and cause asthma exacerbation.

Ibn-e-Sena has described Asthma in his famous book Al-Qanoon in very detail. According to him, it occurs due to the inflammation of the lung (Warem-e-Riya) and the accumulation of viscid houmour in the lung. He has also described many differents variants of bronchial asthma.[17] The idea that Asthma is an inflammatory disease of the airway is not new, Ibnesena and Ismail Jurjani described the cause of Rabu (Bronchial Asthma) that narrowing of the bronchial tree due to inflammation and accumulation of houmour, i.e. thick mucoid phlegm.[17,18]

Moses Maimonides (1135-1204), a Spanish physician and personal doctor of Sultan Saladin wrote the first book of Asthma titled "Tractus Contra Passionem Asthmatis". According to him, treatment involves a copious amount of chicken soup and sexual abstinence and including rest, good personal hygiene, environmental hygiene.[12,13]

Development in the Understanding of Rabu in Modern Times

In 1662, the Belgian physician Jean van Helmont, who had Asthma, provided a detailed account of the asthma phenotype and offered one of the first pathophysiologic mechanisms of Asthma: "the lungs are contracted or drawn together."[19,20]

In 1684, Thomas Willis proposed that Asthma was "stirr'd up by the default partly of the Lungs illfram'd and partly by default of the Nerves and nervous Fibers appertaining to the breathing parts." Although originally described in the seventeenth century, this neurogenic hypothesis did not gain much popularity until the descriptions by the English physician Henry Hyde Salter. Dr. Salter had Asthma after acquiring whooping cough in his infancy, and in 1868 he proposed that a "perverted nervous action" was the underlying pathophysiologic mechanism that caused the airways to constrict.[21]

By the early 1900s, the physiologic process of bronchial narrowing from constriction of airway smooth muscle had been experimentally documented.[21]

In 1903 the Austrian pediatrician Baron Clemens Von Perquet coined the terms "Allergy" and "Allergen" after observing the altered response of his patients to certain substances.[22]

Allergen immunotherapy is of the most novel and effective modality available to the physicians. Allergen immunotherapy was initiated by Noon in 1911.[23,24]

The terminology of extrinsic Asthma was first introduced by Rackeman in 1947 and referred to the triggering role of allergens in Asthma.[25]

The term atopy was coined by Coca nearly 60 years ago to describe an immediate type of hypersensitivity to allergens[26] and was first defined in 1959 by an expert study group during the CIBA foundation guest symposium.[27]

In 1960, Dunhill reported that mucus obstruction of peripheral airways is an important pathologic finding in fatal Asthma.[28]

Studies in the late 1960s and early 1970s used culture techniques to show that viral infections, particularly

rhinovirus, influenza, and respiratory syncytial virus, were the causes of respiratory infections provoking Asthma, not bacteria.[29]

The first fully documented publication on the significance of house dust mites for allergic respiratory diseases was published in 1967.[30]

An important observation by Empey and colleagues showed that respiratory infection increased airway hyperresponsiveness.[31]

In 1977 Turner-Warwick used the term "Brittle asthma" for the first time to describe asthmatics whose PEF were "chaotic, i.e. followed no set pattern."[32]

With the use of polymerized chain reaction (PCR) technology, Jhonston and co-workers detected respiratory virus in over 80% of asthma exacerbation. Rhinovirus was the most frequent infectious cause of asthma exacerbation.[33]

Ulrik et al who followed up a cohort of allergic and non-allergic asthmatic for ten years and found a higher decline in lung function in the non-allergic group.[34]

A recent paper by Miles et al reported that patients with severe brittle Asthma are highly atopic when measured by either skin prick test or allergen-specific Immunoglobulin (IgE).[35]

The term severe acute Asthma was introduced by British physicians to differentiate severe exacerbation from chronic severe Asthma.[36]

A subpopulation fails to derive clinical benefit from systemic Glucocorticoid therapy (GC therapy), and these individuals have been termed "steroid-resistant" (SR). SR asthma was first described by Schwartz et al in 1968.[37,38]

Carmichael et al., in 1981 defined SR asthma as a lack of improvement in the AM pre-bronchodilator FEV1 of greater than 15% after a seven-day course of 20 mg/day of prednisolone or its equivalents.[37,39]

According to Halonen et al (1982), a significant relationship between serum IgE level and eosinophilia in population presumed to be free of parasite where IgE presumably provides a better clue to atopy than do a skin test.[40]

Scheinmann et al., in 1983 discovered the relation between viral infection and Asthma.[41]

Ashok Shah observed that intense emotional stimuli during sexual intercourse could lead to an autonomic imbalance with parasympathetic over-reactivity, thereby causing the release of mast cell mediators that can provoke postcoital Asthma.[42]

Bertrand et al., in 1985 showed that the incidence of bronchial hyper-responsiveness is about five times higher in the first-degree relative of premature babies than in control families.[41]

In 1988 Ashok Shah observed condom-induced Asthma due to allergy to latex or chemicals that are used for lubrication.[43]

Redline & Weiss in 1989 discovered environmental pollutants as aggravating factors but not as a causative factor.[41]

Strahan introduced the hygiene hypothesis in 1989. It is based on his observation that with decreasing family size and improved living conditions, allergic conditions increase.[22]

In 1990 Sommerhoff and colleagues showed that purified neutrophil elastase is an extremely potent secretagogue in airway submucosal glands and goblet cells.[44]

Busse et al., observed that experimental rhinovirus infection causes airway hyperresponsiveness, promotes the development of the late asthmatic response to inhaled antigen enhance the recruitment of eosinophils to the airway and promotes mucosal airway inflammation during an acute infection.[45]

Paggiaro et al., in 1994 observed that as expected, removal from occupational exposure leads to complete recovery from occupational Asthma, this favorable prognosis can be observed in a small percentage of patients, whereas in most of the symptoms persist although often a decreased level.[46]

According to Friedman et al., (1994), there is emerging evidence that stress can play a role in precipitating asthma exacerbation.[47]

Shaheen et al., in 1996 discovered that natural measles infection is protective for asthma.[48]

In 1998, Kemp JP et al., observed that the addition of long-acting bronchodilator to the management of Asthma with inhaled steroid can give symptomatic patients greater improvement in their quality of life without any new safety risks.[49]

Stenius-Aarniala et al. observed that for obese people with Asthma, losing weight could improve lung function, asthma symptoms, and quality of life.[50]

Bara et al., observed that caffeine was mildly effective in improving airway function however they conclude that there is not enough evidence to determine if this improvement in lung function will reflect in improvement in asthma symptoms and quality of life.[51]

In 2000 Jadad et al suggested that the asthma treatment taken during the first three months of pregnancy does not increase the risk of birth defects.[52]

In 2000 SV Joshi et al., observed that specific IgE for house dust mite and total serum IgE play an important role in triggering exercise-induced Asthma.[53]

Some recent studies concluded an inverse relation between high fish consumption, which provides long-chain Omega-3 fatty acids, and the prevalence of Asthma.[54-58]

In 2003 Hienrich observed that the prevalence of non-allergic respiratory illness associated with sulphur dioxide and total suspended particles, improves, as air quality gets better.

Recent studies show that sibs ship size has a protective factor for allergy in both children and adults. This phenomenon is described as the "sibling effect" that was first described by Golding and Peter in a cross-sectional study.[54,60]

Di Lorenzo et al., (1997) reported that there is an interrelationship of the allergen type, total serum IgE, eosinophil, and bronchial hyperresponsiveness suggesting that all three may play a role in the development of bronchial Asthma in rhinitis patient.[61]

In 2001 Alic Verghese et al., showed a significantly raised serum IgE level in all asthmatic groups. Increased in the total IgE level are secondary to other changes in the inflammatory pathway.[62]

Lewis et al., in 2001 suggested that the provocative dose of Methacholine, causing a 20% fall in forced expiratory volume in 1 second provide the best non-questionnaire diagnostic measurement of Asthma.[63]

In 2002 Stefano et al., concluded that rhinitis is a significant risk factor for adult-onset Asthma in both atopic and nonatopic subjects.[64]

In 2003, Koskela et al., showed that the new indirect bronchial provocation test, mannitol challenge, is far more sensitive than the older indirect test, cold air challenge. Histamine challenge, a direct test, seemed to be more sensitive than both Mannitol and cold air.[65]

Altmuller et al., in 2005 concluded that a polygenic model of inheritance mode of Asthma with minor effects by single gene could explain the highly diverse association and linkage results.[66]

Conclusion

In current Medicine, texts space limitations dictate that the wealth of important, new information takes precedence over the historical perspective; yet a historical perspective on the specialty is invaluable and must not be lost. Unani Medicine, being one of the oldest systems of Medicines it has a very important role in understanding the diseases and finally, its management and some breakthrough in the understanding of bronchial Asthma is made during the recent years, it was due to developments in the knowledge of basic sciences and instrumentation. The rationale for this paper is obviously going through a popular historic text that adds to our knowledge of the developments in the area of respiratory medicine at any peace of time.

Conflict of Interest: None

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