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DIAGNOSTIC, TREATMENT, AND PREVENTION OF RESPIRATORY DISEASES IN SCHOOLCHILDREN AND STUDENTS IN KYRGYZSTAN'S SOUTH: ORGANIZATIONAL ANDTACTICAL ISSUES

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ABSTRACT

Background: Infants and young children are vulnerable to respiratory infections for a variety of immunological, physiological, and social reasons. Their natural immunity begins to wane within months of birth. Immunological protection must be developed either naturally through infection or by immunization**.** ***Methods:*** In this article, I have discussed respiratory infections in depth so that we can all clearly understand their pathophysiology, prevention, and importance using some research statistics in the south of Kyrgyzstan in school children, as well as diagnosis, treatment, and innovations.

KEYWORDS: Respiratory Diseases, Immunity, Vaccination, Kyrgyzstan, Lower Respiratory Tract Infections, Upper Respiratory Tract Infections.

Abbreviations

Respiratory TractInfection	RTI
Lower Respiratory Tract	LRT
Upper Respiratory Tract	URT
Respiratory SyncytialVirus	RSV
Severe combined immunodeficiency	SCID

INTRODUCTION

Respiratory conditions affect both adults and children, but younger lungs are more vulnerable to problems like infection, and the consequences can be more severe. Acute respiratory infections are known to be a leading cause of morbidity, hospitalization, and mortality among children under the age of five worldwide, especially in developing countries such as Kyrgyzstan. In this I will discuss about various RTIs in children and also share tactical problems and current child immunity condition of in Kyrgyzstan LRT illness in infants and kids under the age of five are a major cause of morbidity, hospitalization, and mortality worldwide, especially in low-income countries.

Caregivers informed that their children as having recurrent coughing, noisy breathing, and respiratory distress, with several responding positively to acute salbutamol and/or being hospitalized for LRT-illness on multiple occasions. The financial and family stressors were significant. Bronchitis, bronchiolitis, and viral bronchopneumonia are examples of viral infections; pneumonia and tuberculosis are examples of bacterial infections; asthma and viral wheeze are examples of obstructive diseases; and cystic fibrosis and tracheomalacia are examples of uncommon diseases. viral infections are mostly self-limiting, whereas bacterial infections require antibiotics to treat, and obstructive diseases require steroids and bronchodilators to treat.

URTI, also known as "the common cold," is a symptom complex caused by several virus families, including rhinoviruses, coronaviruses, parainfluenzae, RSV, adenoviruses, human metapneumovirus, and influenza.

Pathogenesis

Bronchiolitis and Bronchitis

In illnesses like the flu, rubella, rubeola, pertussis, scarlet fever, and typhoid fever, it functions as a syndrome. Depending on the organisms, when the mucosa becomes hyperemic and secretes, it harms the mucosa and causes loss of mucociliary function as well as epithelial deterioration.

Infants are most commonly affected, and there will be inflammation and occasionally necrosis ofthe respiratory epithelium. The bronchiolar walls will thicken and the lumen will narrow, obstructing the airway and possibly resulting in respiratory failure.

Pneumonia

Numerous forms of pneumonia exist. Aspiration of upper

airway Flora or hematogenous seeding are the two basic pathogenic mechanisms by which the infectious agent enters the LRT. The symptoms of this condition include coughing, chest pain, fever, shortness of breath, and the production of sputum. It happens when the lung defense mechanisms are compromised or overworked. Patients have a fast heartbeat. Depending on the patient's age and the organisms at play, symptoms such as headache, disorientation, stomach discomfort, nausea, vomiting, and diarrhea may be present.

***Common* Cold**

It appeared that viruses directly invaded the respiratory mucosa's epithelial cells to cause disease. Depending on the specific organism involved, there may be actual cell death and sloughing as well as ciliary activity loss. Gradually, there will also be an increase in leukocyte infiltration and nasal secretions that contain significant amounts of protein and immunoglobulin, cytokines on immune mechanisms may be the reason for some common cold symptoms.

Almost all pathophysiology of most of the diseases coming under this are similar. There will be some difference regarding the organism, incubation period, features and changes in pattern. I have discussed only the most prevalent ones here.

Child Immune System

The immune system of a child is composed of special cells, tissues, and organs that work together to keep the child healthy and free of illness or infection. The lymphatic system, which consists of a network of vessels and lymph nodes, is an important component of the immune system. Thin tubes that branch throughout the body, similar to blood vessels, are called lymphatic vessels. They transport lymph, a clear fluid containing tissue fluid, waste products, and immune system cells. Lymph nodes are clumps linked by lymphatic vessels. White blood cells are present in it, which trap viruses, bacteria, and other invading organisms, including cancer cells. The immune system's cells are white blood cells. They are produced in bone marrow of a child, which is a lymph organ. Also Thymus and spleen are two other lymph organs. *Immunodeficiency in kids* Certain infections like flu, measles, mononucleosis, drugs for organ transplant, chemotherapy weakens immunity and are acquired shortly.

SCID is in which a child lacks WBC at birth and is very prone to infections. There was even an incident in 1970s, in which a child had to live inside a plastic bubble for a sterile environment. This is also heard as bubble boy disease.

An acquired viral infection called the human immunodeficiency virus, or AIDS, damages crucial white blood cells and impairs the immune system. People with HIV/AIDS may become very ill from infections that most people can't fend off. Opportunistic infections are what these infections are known as because they profit from weakened immune systems.

Overactive Immune System

Immune system of child may react to environmental toxins that are typically safe if they are born with specific genes. Allergens are these compounds. The most typical manifestation of a hyperactive immune system is an allergic reaction. Foods, pollen, dust, and mold are a few examples of allergies.

Autoimmune Disease

Exact cause is not identified yet. It includes type 1 diabetes (cells in the pancreas are destroyed by the child's immune system which stops production of insulin), Rheumatoid arthritis (swelling and disorders in joints), Lupus (a lot of autoantibodies found, child's tissue and organs are attacked).

Diagnosis

Firstly a minimal understanding of patient history is taken. Then a physical examination is assessed. For LRT illness the following diagnosis is done. Pulmonary function tests, spirometry (to know how much air taken in and breathe out), peak flow monitoring measures the air blown out, pulse oximetry, x-ray, blood tests, sputum culture, chest CT scan, bronchoscopy, pleural fluid culture, thoracentesis, interferon gamma blood test, QFT-Gold test to test for tuberculosis, tuberculin skin test. For URT illness first we go for physical examination, and then nasal endoscopy, imaging studies, nasal and sinus cultures, allergy testing, x-ray study, blood culture, throat culture, complete blood count, neck x-ray, biopsy, mononucleosis test, mononucleosis spot test for two antibodies in the blood which indicates for EBV (Epstein Barr virus), rapid strep test, digital palpation, radical examination, posterior rhinoscopy.

Treatment

The goal of management is to prevent progression of LRT disease degradation by way of diagnosis and treatment. It can prevent negative pulmonary consequences. It can improve quality of life and reduce cough, would reduce exacerbations, prevent inflammation and help to improve effort tolerance.

- Typical lung-protective measures

Limit your exposure to environmental irritants like burning biomass and fossil fuels, which can harm physiological systems including ciliary function (such as smoking or vaping). Make sure vaccinations are up to date, you should also think about giving at-risk and immunosuppressed children a booster pneumococcal vaccine as well as an annual influenza shot. PMTCT should be given to expectant HIV-infected mothers and their children. Infants with HIV infection require early ART therapy and, as needed, cotrimoxazole or isoniazid prophylaxis.

- Take care of the root cause.

Treat the underlying cause, if known, by removing any

foreign objects.
- Halting the progression of inflammation and bacterial infection

Physiotherapy of the chest can be done according to their age. In older children chest percussion is a good strategy.

Azithromycin can be taken for up to a minimum of 6 months. It is a macrolide which is long term.

Antibiotics can be used to eradicate cough and sputum production and difficulties in respiration. Clavulanic acid and amoxicillin which can be taken for 14 days are a good option for children with a chronic cough and related. Sometimes inhaled and intravenous therapy are required.
- In severe cases supplementary oxygen is taken and should be monitored frequently. Adequate good nutrition should be given for children for the development of lungs properly.

For the management of URT illness there are a lot of methods.
- Antibiotics are ineffective against viruses, including the common cold.
- Make sure your kid drinks plenty of liquids, including popsicles, chicken broth, or water . Administer frequent little liquid doses. Avoid giving your child too much fruit juice to prevent diarrhea.
- Avoid pressuring your kid to eat. When hungry, they will eat.Your child needs to sleep a lot.
- Nasal spray, humidifiers, vaporizer can be used to help with congestion of nose also a 10 to 15 minutes of hot shower can also help yourchild
- Petroleum jelly or certain creams can be used for skin irritation.
- Avoid over the counter drugs andaspirin for children under 4 years of age.

Prevention of URT illness is always hygiene and sanitation, using healthy habits, washing hands using a sanitizer to avoid transmission to others and having clean water and properly cooked food.

OBJECTIVES

The primary goal of this research article is to comprehend rumors of rising respiratory diseases in children in Kyrgyzstan's south by noting these points.
- Better understanding of immunity of children here and vaccination availability.
- Determine strategies and behaviors that can assist parents in making wise judgments.
- To determine whether citizens are aware of, or have received adequate information about, children's health.
- To provide more people with information and prevention strategies for respiratoryproblems so that they can be better prepared to protect their children's health.

METHODS AND ACTIVITIES

I've used three different approaches, which I'll detail step by step, to comprehend and identify respiratory issues in kids of various ages**.**

1. I collected information on child respiratory problems from previous years which also included COVID 19 epidemic year from various sites and conference data's including WHO, UNICEF, Ministry of Health of Kyrgyzstan documents available. I will be sharing all this put together in a simple format possible.
2. I made a Google Form asking simple questions that people can fill for their child and this helped to understand their approach to vaccinations, antibiotics and importance of quarantine at times.
3. I visited a child hospital to get more understanding of this matter.

RESULTS

Result of the first study method

Population of Kyrgyzstan- 6735348 (approx)
Under 5 mortality rate- 17.4 per 1000 live births
Under 5 death- 2774
Death of infants- 16 every 1000 live births
Deaths of newborn- 12 every 1000 live births
Under 5 mortality rate of female- 15 per 1000 live birth
Under 5 mortality rate of male- 19 per 1000 live birth

Poverty

Poverty rate in early's- 32.1 percent
Human development index- 126/187 countries Gender inequality index- 66/146 countries
Unemployment- 8.4 percentage
Population with food scarcity- 12 percent in rural areas
Poverty rate in 2000- 62 percent
Poverty rate between 2019 and 2020- increased by 5.2 percentPoor salary rate- below 38000 Kyrgyz com
Extreme poverty salary rate- below 19000 Kyrgyz com

[NSC of Kyrgyzstan conducted research on a sample of 4993 households, which is where these numbers are from. The findings reveal glaring regional differences. In contrast to the capital, Bishkek, where poverty climbed by 4.9%, the northwestern Jalal-Abad region saw a 10.3% increase. It decreased by 6% in Osh, the second-largest city in the country.]

Sanitation in Kyrgyzstan household Safely managed sanitation service- 92

Basic managed sanitation service- 5 Atleast basic sanitation service- 98 Limited sanitation service- 2

Nutrition

Early initiation of breastfeeding- 81 Exclusive breastfeeding- (0-5 month)
Continued breastfeeding- (20-23 month)

Proportion of people drinking water

Safe drinking water used by population- 70 Basic drinking water used by population- 22

At least drinking water used by population- 92 Limited drinking water services- 2
Unimproved water used by population- 2 Surface water- 5

LRT illness by underdiagnosis of asthma, family stress, financial pressures, typhoid fever, brucellosis, and infectious diseases that can transmit to others by food and water that is contaminated, are the primary cause of death in children under the age of five. One of the largest numbers of instances are found in Kyrgyzstan.

Second study method results

This method was very convenient to collect information and to get understanding of the only required doubts and clearance. In this Google form I have written questions in a simple format and the number of questions are very accurate ones. Since I have also translated the questions in Russian language it was easier to communicate with the locals in Kyrgyzstan and school students. The questions I have used are

1. Age
2. Gender
3. Took any vaccination
4. Any health issues or having extra medications or respiratory problems
5. Does anyone in home smoke
6. Do you take antibiotics
7. Is there good hospital and doctor nearby
8. Are you taking food properly
9. If you're studying, do your friends come to school sick or with a cold?
10. Do you wear warm clothes and cover completely
11. If u have cough and cold do u go to school

The findings are based on 7 school-aged children and 3 babies under the age of five who were assisted by their parents. The majority of them choose to go to the clinic and acquire medicines without a prescription because they view it as a typical disease, even though they all indicated there are hospitals nearby and were dressed warmly during the winter. Four of the students admitted to eating improperly because they skip breakfast in order to go to school on time, and all seven students under the age of thirteen claimed that their peers frequently presented to class with the flu and a fever. Several of their parents and family members were smokers. A mother of a 2-year-old child said that the child gets agitated occasionally.

THIRD METHOD RESULTS

This method was very approachable with the assistance of my teacher and the results were moreaccurate .

CONCLUSION

Children and newborns with respiratory conditions need to be treated seriously. It would have been great if medicine was more affordable for families with middle-class and low incomes. It is essential to diagnose and treat people correctly. The significance of vaccinations should be understood by parents and caregivers. Schools should take steps to ensure that students understand the value of health, appropriate nutrition, and excellent hygiene.

Highlights

These are some of the statements which made me research more about the topic

- The poorest people on the planet are particularly vulnerable to pneumonia,. "sickness ofinequity".
- 96% of the youngsters with tuberculosis who passed away had never received therapy.
- Before we began cooperating with UNICEF, we faced significant issues here. We lacked modern tools, and doctors weren't taught how to revive kids. Was stated by Dr. Ainura Uzabaeva from Republican Infections Hospital, Bishkek
- Use of oral rehydration salt, zinc saved almost 70-90 percent by decreasing mortality of 11.5 percent
- On the occasion of World Pneumonia Day during the COVID-19 epidemic, an oxygen plant, in a box which was innovative, saved the lives of young patients suffering from pneumonia.
- Borgan Project

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