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Asthma Case Study: A Female Patient of Seven Years

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Introduction

Your airways become swollen and restricted due to asthma, which is a disorder that causes your lungs to create more mucus. As an outcome, sneezing, wheezing as you breathe out, and breathlessness might transpire due to this disorder. Asthma might be a minor inconvenience for some individuals. Asthma attacks may be life-threatening for some people, so it's important to know what to look out for. This case study will present a case of chronic asthma in a seven year-old girl.

General Causes of Asthma

Although it isn't apparent why some people become asthmatic and others do not, the mix of genetic and environmental variables is likely to be the cause of this. Asthma symptoms and signs may be triggered by encounters with numerous irritants and allergens (Ahmed & Turner, 2019). Airborne irritants include pollen, dust, spores, excrement, respiratory problems, cold air, harmful emissions, and irritants like cigarette smoke, emotional reactions, anxiety, sulfites, and p-phenylenediamine. When stomach acids flow into your esophagus, it's known as gastroesophageal reflux disease.

Signs and Symptoms

Children with asthma have a wide range of symptoms. Acute asthma episodes may occur just a few times a year; they may also arise exclusively at particular periods, such as while you're exercising. Children who have asthma often have symptoms such as difficulty of breath, wheezing while exhaling, difficulty sleeping, wheezing bouts, and coughing that are worsened by a respiratory disease, such as the cold or flu. All of these are indications and symptoms of Asthma (Beasley & Asthma, 2014). Increasing demand for a quick-relief inhaler is another clue that your asthma may be becoming worse. As assessed by the peak flow meter, asthma symptoms become more frequent and severe, increasing difficulty breathing. Those with exercise-induced asthma, for example, may have more severe symptoms when the air is chilly and dry. Asthma in the workplace is brought on by exposure to airborne irritants such as chemical vapors, gasses, or dust particles (Beasley et al., 2015). Pollen, mold spores, cockroach dung, or skin and dried saliva produced by dogs are common allergens that cause asthma attacks.

Case Study Presentation

This case study is about a young female patient of seven years with asthma who were taking Ventolin and Flixotide daily and saw her condition deteriorating. A chronic inflammatory illness, asthma affects children, adolescents, and adults. More than 20 million kids have been asthmatic in the United States alone. Asthma is caused by inflammation, irritation, and narrowing of the airways that transport air into and out of the lungs. Muscles around airways constrict, and mucus production inside airways rises beyond the ordinary. The respiratory and immunological systems fail to develop properly, resulting in this condition (Bush & Saglani, 2010). Breathing heavily, coughing, breathlessness, and chest tightening are symptoms. There is no treatment for asthma; however, medicines and lifestyle adjustments may help alleviate symptoms. Asthma may be diagnosed by medical history or a physical examination. Up to one third of kids with this condition get rid of it by reaching early adulthood, despite being more common in youngsters.

Risk Factors Associated with Asthma

Environmental allergens, viral infections, air pollution, cigarette smoke, and obesity are all risk factors for asthma. Asthma may be prevented by avoiding allergies, modifying one's diet, and increasing exposure to microbes. Once identified, a doctor will devise a treatment strategy to alleviate symptoms and reduce the risk of asthma attacks (Bush et al., 2017). Short-acting beta2-agonists (SABAs) inhaled into the lungs quickly relax the tight muscles surrounding the airways because there is no cure for this disease and reduce the body's inflammatory response by controlling medicines such as corticosteroids. Although this disease can be treated with medications, novel treatments are being investigated. Asthma treatment options that don't rely only on prescription.

Literature Review of the Case Study

Dyspnea, medication dependency, and a lack of social integration are just a few asthmatic children who face problems. Human health-related quality of life (HRQL) encompasses a wide range of subjective experiences linked to a person's physical and mental well-being and their capacity to cope with illness, disability, and impairment (Dharmage et al., 2019). When developing a questionnaire, the content validity is affected by the item selection method utilized. Although some published articles may imply differently, this knowledge is still insufficient when determining children's thoughts on HRQL via the focus group technique. Asthma-specific HRQL components were identified via in-depth focus group interviews with children in elementary school, which were used to gather data for this article. Individualized HRQL instruments for pediatric asthma will be developed using the components. Individualized devices are meant to identify and offer meaningful information for the specific needs of each person (Gans & Gavrilova, 2020). Asthma-specific HRQL tools are primarily used for research and cannot yet be used in therapeutic settings.

The airways and lungs of youngsters with asthma are easily inflamed when subjected to certain stimuli, such as cold or pollen or other breathing disorders. Adults who have asthma may find it challenging to participate in sports, schoolwork, and sleep. An asthma episode in a kid with uncontrolled asthma may be life-threatening (Guilbert et al., 2014). Even though asthma in children isn't different from asthma in adults, treating it may be particularly challenging. Emergency room visits, hospitalizations, and lost school days are linked to the disease. Unfortunately, there is no treatment for childhood asthma, and it may persist until adulthood. Your child's symptoms may be controlled, and lung damage can be avoided with proper therapy. You may see your child's chest and sides constricting as they try to breathe in the most severe instances (Feng et al., 2020). A rapid heartbeat, excessive perspiration, and tightness in the chest are all possible symptoms your kid is experiencing. It is best to seek immediate medical attention for any youngster who must stop mid-sentence in hopes of catching their breath and inhaling through the abdomen.

Diagnosis of the Case Study

Your kid may need the following tests to determine the health of the lungs (spirometry). Adult-specific tests are utilized to detect asthma in children. Spirometry evaluates how fast and how considerable air they can breathe out into a child's lungs. Lung examinations may be done during relaxation, after exercise, and while consuming asthma medication. Bronchoprovocation is another lung examination. A spirometry assessment shows how your lungs respond to various stimuli, including workouts or chilly air. Test for nitric

oxide exhaled (Kuiper et al., 2005). The number of nitric oxides in an expelled breath sample from your kid may be measured by your doctor if the identification of asthma is questionable following lung function testing. Whether your kid has asthma, nitric oxide testing may help you evaluate if steroid therapy is the best course of action. However, the current asthma tests aren't reliable for children under five. Your pediatrician will use the information you and your kid offer concerning symptoms if your child is under eighteen. After months or even years of watching signs, a diagnosis may not be possible.

Discussion on the Case Study

Asthma control is now the primary aim of worldwide recommendations for asthma care. Inhaled steroids are an effective treatment for most asthma patients. However, some people are still unable to get their symptoms under control despite receiving proper asthma treatments. Nearly half of asthmatic children in the United States were uncontrolled in a multicenter study. A systematic assessment should be performed when treating children with uncontrolled Asthma (Maciag & Phipatanakul, 2020). This evaluation must involve first reconfirming the appropriateness of an asthma diagnosis and then assessing for any concomitant disorders that may impact one's ability to manage asthma. An asthma diagnosis might be tricky. Your kid's doctor will consider the frequency and severity of your child's symptoms and any prior medical conditions. Investigations to rule out other diseases and determine the most probable cause of the symptoms may be required for your kid. A variety of juvenile illnesses might generate similar symptoms to asthma. To make matters more complex, these ailments are often associated with asthma. Your kid's doctor will have to figure out whether your child is experiencing the result of asthma, something unrelated to asthma, or the combined effects of asthma and something else. Children with severe asthma may benefit from using Anti-IgE, a medication that works by lowering levels of the antibody IgE in the blood (Nakagome & Nagata, 2020). The efficacy of this chemical in treating asthma has been established in several published research. To open swollen airways, quick-relief medicines are available. In the event of an asthma attack, or if your kid's doctor advises it, quick-relief drugs may be administered to provide immediate, short-term relief of symptoms. Short-acting beta-agonists are examples of quick-relief medicines. An asthma attack may be quickly alleviated using these inhaled bronchodilators—both orally and intravenously (Pijnenburg & Fleming, 2020). People living with asthma may use these drugs to reduce the inflammation of their airways. Prednisone and methylprednisolone are two examples. Because of the potential for significant side effects, these medications are only prescribed for the short-term treatment of severe asthma symptoms.

Create an asthma action plan with your child's doctor. If your kid has severe asthma, this may be a vital element of their therapy. An asthma plan of action might be a valuable tool to assist you and your kid identify when long-term medication adjustments are necessary. Acquaint yourself with the warning symptoms of an asthma attack, and know what to do if one arises. A hand-held gadget may be used by youngsters who have sufficient coordination and knowledge to test their breathing ability (Pijnenburg et al., 2015). When peak flow measures exceed a certain threshold, having an asthma action plan in writing might help you and your kid recall what to do next. For example, the action plan may employ peak flow data and symptoms to identify your kid's asthma in various levels of severity. Each of the three zones corresponds to a different management level of symptoms. At first, you may not be able to pinpoint precisely what's bothering your kid. Signs should be closely monitored, and your doctor should coordinate medication adjustments.

Treatment of Asthma

A proprietary mix of one drop was prescribed, with two in the morning and two at night. After a few weeks, she began experiencing daytime mucus flow from her nose, and her parents noticed some mucus in her feces, despite their regular consistency. She started coughing up more mucus during the night after they upped her dosage from 2 to 3 drops twice a day. For a week or two, I went through these episodes. Parents were told to reduce their daughter's medication dosage, but at the same time, her condition improved. Her feces returned to normal, free of mucus, and she began sleeping better (Rabe et al., 2004). There was no longer any wheezing noted. During the following two months, she saw an improvement in her sleep and general function, and she no longer required Ventolin. Her pulmonologist also reduced her inhalation corticosteroid dosage to the bare minimum.

The intensity of your child's asthma dictates the first course of therapy. Controlling your child's asthma symptoms such that they are minimal or non-existent is the ultimate objective of asthma therapy. To achieve these goals, people with asthma must learn to manage their symptoms and treat an asthma attack while it is still in the process while minimizing the usage of quick-relief inhalers like albuterol and dealing with minimum or no adverse effects from the drugs they are taking. Asthma medications are tailored to each kid based on their age, symptoms, asthma triggers, and what works best to keep their condition in check (Ramratnam et al., 2017). Asthma symptoms in children under the age of 3 may warrant a wait-and-see attitude by the doctor. This is because the long period influences of asthma treatment on newborns and young children are not known. A newborn or toddler with severe wheezing may be given a medicine to test if it helps alleviate their symptoms.

Swelling in your child's airways is reduced with long-term, preventative treatments. For the most part, these drugs must be taken daily. The following are examples of long-term pain management medications: Fluticasone, budesonide, beclomethasone, and other inhaled corticosteroids are examples of this class. It may take a few days to a few weeks for these drugs to fully affect your youngster. The effects of long-term usage of these drugs on children's development are modest, although they have been reported. Controlling asthma in most circumstances is more beneficial than risking adverse effects. These include zileuton and other drugs taken orally (Schneider et al., 2017). For up to 24 hours, they may help alleviate symptoms of asthma. Inhalers that combine two or more medications. Corticosteroids and long-acting beta agonists are included in these drugs. Fluticasone and salmeterol, budesonide and formoterol, and fluticasone and vilanterol are a few of the medications in this class. Asthma episodes have been connected to long-acting beta-agonists in some instances. Therefore, LABA drugs should always be administered to a youngster with a corticosteroid inhaler. Only severe cases of asthma that have not responded adequately to previous treatments should be treated with these combo inhalers.

Preventive Measures against Severe and Uncontrolled Asthma

It's essential to limit your child's contact with asthma allergens as much as possible if she has the condition. They must identify the triggers that cause you to cough, gasp, and struggle for air. There is no treatment for asthma, but there are ways to keep it under control and avoid an attack. To begin, you must determine what causes the child's asthma symptoms to flare up since specific asthma triggers may start a chain reaction of symptoms. Allergens, air pollution, and chilly air are among them (Teach et al., 2015). For many weeks, keep a journal of your child's asthma symptoms. Describe how both physical and psychological factors impact their asthma. When they have an asthma episode, go back over your journal to identify what may have caused it. Molds and cockroaches, two major asthma causes, may not be readily apparent. Consult with an asthma expert to learn about allergy testing options. Avoid them at all costs.

To avoid an asthma attack while exercising in cold, humid, or dry air, children need to take precautions. Take your asthma medication as prescribed by your physician regularly by utilizing an asthma inhaler, including albuterol, before exercising. Allergens (items you're allergic to) should be avoided if you suffer from allergies or asthma. For a short time, exposure to allergens might cause your airways to become inflamed, rendering an asthma attack more probable (Toskala & Kennedy, 2015). Ensure that you are not exposed to smoke, including cigarettes, perfume or lamps, fires, or fireworks. Stay away from public areas that allow smoking, and don't smoke in your own house or automobile! Seek assistance if you want to stop smoking. Asthma is usually worsened by smoking.

The flu virus may worsen your asthma symptoms for days or weeks, so get vaccinated every year. Asthma increases your risk of flu-related hospitalization and comorbidities, such as pneumonia. Immunotherapy (allergy injections) may avert allergy symptoms and keep asthma from worsening if your doctor detects that you have allergies (Mutius & Smits, 2020). Allergy shots are injections of allergens into the skin that a doctor gives regularly.

Conclusion

This girl's case illustrates the need for a thorough differential diagnosis before determining that asthma is the root cause. Doctors should be alerted to the potential of additional airway obstructions if their patient's asthma is not responding to therapy. Because of this, we strongly advocate the idea of verifying a patient's diagnosis before attempting more costly treatments for uncontrolled asthma. Severe asthma might be challenging to control. Several medicines are now available to assist people with this illness, and ex-

perimental drugs are constantly being developed. Understanding the alternatives available and taking into account a patient's specific circumstances is essential to managing severe asthma. Both the disease pattern and individual choice must be taken into account. Bronchial thermoplasty was chosen as a treatment option for this patient because he indicated a strong preference not to add any other drugs to his current asthma regimen. For each patient, individualized therapy demands determining which of the current or forthcoming choices the most excellent fit.

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