Review Article

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2024.59.009340

Pharyngitis Explained: What You Need to Know About this Common Condition

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ARTICLE INFO

Received: November 23, 2024

Published: November 29, 2024

Citation: Muhammad Akram, Fethi Ahmet Ozdemir, Gaweł Sołowski, Adonis Sfera, Eisa Yazeed Ghazwani, MESRATI Mohamed Amin, Isaac John Umaru, Agussalim, Vida Arzani, Mohsen Soleimani, Emmanuel Ifeanyi Obeagu, Justin N Kabera, Osaro Mgbere and Maghchiche Abdelhak. Pharyngitis Explained: What You Need to Know About this Common Condition. Biomed J Sci & Tech Res 59(4)-2024. BJSTR. MS.ID.009340.

ABSTRACT

An inflammation of the pharynx, pharyngitis, also known as a sore throat, can be caused by bacterial or viral infections, allergies or irritants. Swollen lymph nodes, fever, difficulty swallowing and sore throat are some of the symptoms that define this disease. Antibiotic treatment is necessary for bacterial causes such as *Streptococcus*, although viral pharyngitis is more common. Effective management requires an understanding of the underlying reasons, the ability to identify symptoms, and knowing when to seek medical attention. This summary helps people better understand this common health problem by offering crucial information about the different types, diagnoses, treatment options, and preventative techniques of pharyngitis.

Keywords: Pseudo Membrane; Diphtheria; Immunization; Diagnosis; Neuropathy

Introduction

Because of widespread immunization against the disease, diphtheria is incredibly rare in the United States and other wealthy nations. Nonetheless, significant rates of diphtheria are still seen in many nations with few access points to healthcare or vaccinations. Medication is a treatment option for diphtheria. However, as diphtheria progresses, it can harm the kidneys, heart, and neurological system. Diphtheria can be deadly even with therapy, particularly in young children. Diphtheria was a frequent infection in young children before the discovery of medicines. These days, there is a vaccination that can prevent the illness in addition to treating it. Usually, the whooping cough and tetanus vaccinations are given in addition to the diphtheria vaccine (Liang, et al. [1]). The diphtheria-tetanus-per t u s sis vaccine is the name given to this three-in-one vaccination. The most recent iteration of this vaccination is referred to as the dap vaccine for adults and adolescents and the vaccine for children (Loukas, et al. [2]). A thick, grayish membrane forms in the throat and n a so pharynx as a result of the dangerous bacterial illness known as diphtheria, which is brought on by Cory ne bacterium diphtheriae. It has historically been a leading cause of illness and mortality, especially in children, although its prevalence has dramatically decreased since immunization became widely available. The disease is mostly spread by respiratory droplets from sneezes and coughs, and, less commonly, by coming into touch with infected surfaces or items. The hallmark of diphtheria is pseudo membrane, which can clog the airways and cause severe respiratory distress.

Other symptoms that are present in the clinical presentation include fever, enlarged lymph nodes, and sore throat. Apart from its localized effects, the bacterial toxin has the ability to circulate throughout the circulation, leading to systemic consequences as my o car di t i s, neuropathy, and damage to the kidneys. Clinical observations, lab cultures, and PCR testing for bacterial DNA are used to make the diagnosis. Treatment include giving antibiotics like penicillin or erythromycin to kill the germs and diphtheria antitoxin to neutralize the toxin. Supportive treatment, which includes airway control, could be required in extreme situations. The main method of prevention is immunization with the diphtheria-tetanus-pertussis (DTP) vaccine, which has been successful in eradicating the illness almost completely in many regions of the world. It is advised to take booster dosages to keep immunity strong. Even in places where vaccination rates are low or when outbreaks of illnesses that may be prevented by vaccination are common, diphtheria can still occur, therefore caution is still necessary. Sustaining worldwide surveillance and vaccination campaigns are crucial in order to avert a recurrence and efficiently handle any possible epidemic.

One of the vaccinations for children that American doctors advise is the diphtheria-tetanus-pertussis vaccine. If the right therapy is given at an early stage of the illness, the chance of complications or death is significantly decreased. Because of this, as soon as diphtheria is suspected, testing should be run to confirm the illness and treatment should begin very once. Antibiotics and diphtheria antitoxin are typically used to treat cases of diphtheria. Toxins in the bloodstream are neutralized by a particular antitoxin against diphtheria (Guilfoil, et al. [3]). The WHO treatment recommendations provide comprehensive instructions for giving antitoxin. Antibiotics accelerate the removal of germs and stop them from spreading to other individuals (Levy, et al. [4]). They also halt bacterial reproduction, which in turn stops the creation of toxins. Nevertheless, a number of contemporary diphtheria strains have demonstrated resistance to a number of widely used antibiotics. Moreover, everyone who has experienced diphtheria ought to get the vaccination when the illness has reached its acute stage. Antibiotics should be administered prophylactically to people who have come into contact with instances of diphtheria in order to avoid sickness. It's important to verify each contact's immunization history.

They should also be given the vaccination if they haven't had it all. Vaccines against diphtheria can be prevented; they are frequently administered together with tetanus, pertussis, and other illnesses. For long-term protection, the WHO advises administering the diphtheria vaccination in six doses, starting at age 6 weeks and continuing into puberty (Drutz, et al. [5]). The best method of preventing diphtheria is to vaccinate the community with a high coverage rate as part of routine immunization programs integrated into primary health care (Phalkey, et al. [6]). Every youngster should receive a vaccination against diphtheria using vaccination when the illness has reached its acute stage. Antibiotics should be administered pro phylactically to people who have come into contact with instances of diphtheria in order to avoid sickness. It's important to verify each contact's immunization history. They should also be given the vaccination if they haven't had it all (Hsu, et al. [7]). Vaccines against diphtheria can be prevented; they are frequently administered together with tetanus, pertussis, and other illnesses. For long-term protection, the WHO advises administering the diphtheria vaccination in six doses, starting at age 6 weeks and continuing into puberty (Drutz, et al. [5]). The best method of preventing diphtheria is to vaccinate the community with a high coverage rate as part of routine immunization programs integrated into primary health care (Phalkey, et al. [6]).

Every youngster should receive a vaccination against diphtheria using three extra booster doses in addition to the entire primary series for long-term protection. (Kroger, et al. [8]). There is no risk associated with the vaccination. Most frequently, the diphtheria vaccination is administered in conjunction with immunizations against tetanus, per t us sis, hepatitis B, Hem op hi l us in flue n z a e, and inactivated polio. While there is a modest increase in cost, combining vaccinations offers the benefit of protection against other childhood illnesses that can cause tetanus, whooping cough, meningitis, and polio, as well as the ability to share delivery and administration expenses. The COVID-19 pandemic impacted surveillance efforts as well as

the regular immunization programs (Lassi, et al. [9]). Many youngsters are now more vulnerable to illnesses like diphtheria that may be prevented with vaccinations as a result of these failures (Kuchar, et al. [10]).No WHO region is totally free of diphtheria, and places with poor vaccination rates with vaccines containing the t o xo id allow the bacterium to proliferate, raising the risk of increasing the possibility of breakouts and endangering the lives of those who are unvaccinated. inadequately immune I sed. It is recommended that primary health care programs for monitoring and immunization be reinforced.

Additionally, all children should be vaccinated against diphtheria to xo id-containing vaccine three times during infancy, childhood, and adolescence. Strong surveillance measures should be put in place by nations in order to detect and validate cases and promptly fix immunity breaches (Bröhmer, et al. [11]). The best method of preventing diphtheria is to vaccinate the community with a high coverage rate as part of routine immunization programs integrated into primary health care. For long-term protection, all children should get a full primary series of vaccinations against diphtheria in addition to three booster doses (Gustafsson, et al. [12]). The vaccination works and is safe. Most typically, the diphtheria vaccination is administered in conjunction with other vaccinations against illnesses including as inactivated polio, hepatitis B, tetanus, pertussis, and Hem op hi l us influenzae. While there is a modest increase in cost, combining vaccinations offers the benefit of protection against other childhood illnesses that can cause tetanus, whooping cough, meningitis, and polio, as well as the ability to share delivery and administration expenses.84% of kids in 2023 received all three doses of the first series of the diphtheria vaccination. Nonetheless, there are significant differences in coverage levels across and within nations (Chen, et al. [13]). Diphtheria cases and outbreaks can result from subsequent kid cohorts not receiving the recommended vaccinations. The potential for major complications and the historical influence of diphtheria on mortality—especially before to the introduction of vaccinations—make it an important public health concern.

Timely diagnosis and treatment are crucial since the disease, which is caused by Cory ne bacterium diphtheriae, presents with specific clinical symptoms, including pseudo membrane in the throat and the impact of systemic toxins. Modern medicine has made significant strides in preventing sickness, as seen by the widespread usage and creation of the diphtheria vaccine, which has drastically decreased the disease's occurrence. Nonetheless, epidemics of diphtheria may still happen, particularly in regions with low immunization rates or among people whose immunity is eroding. To keep this potentially fatal illness under control, frequent immunization, booster shots, and ongoing observation are essential. To stop a comeback and promptly contain any epidemic, ongoing surveillance and international health activities are required. We can successfully control and reduce the hazards associated with diphtheria, protecting public health globally, by making sure that strong immunization programs and public health measures are in place (Blumberg, et al. [14]).

Pseudo Membrane

The illness known as pseudo membranous conjunctivitis results in the formation of a thin membrane on the surface of the eye. It can cause symptoms including discharge and edema from the eyes, as well as impaired vision. The word "pseudo membrane" in medicine refers to a fibrin and inflammatory debris plaque that appears on the surface of the mucous membrane covering the front of the eye, the moist conjunctiva, where it covers the inner eyelid. It appears to be a membrane, but it is not one. Even while conjunctivitis is fairly prevalent, pseudo membrane production is not always the result of it. The definition of a pseudo membrane, its causes, and common symptoms are covered in this article. Any illness or inflammation that affects the conjunctiva is referred to as conjunctivitis, or conjunctivitis. The surface of the eyes and eyelids are covered with a thin, translucent membrane called the conjunctiva. Rarely, the discharge from conjunctivitis thickens and covers the conjunctiva with a yellowish membrane. When the membrane pierces the epithelium, the top layer of the conjunctiva, it results in membraneous conjunctivitis. It is impossible to remove the membrane without seriously bleeding the patient. A pseudo membrane, on the other hand, is located above the conjunctiva. Peeling it off won't result in bleeding.

The colon inflammation known as pseudo membranous colitis is linked to an overabundance of the bacterium Clostridioides difficile, sometimes known as C. diff. Antibiotic-associated colitis or C. difficile colitis are other names for pseudo membranous colitis. Clostridium difficile overgrowth is frequently associated with recent hospitalization or antibiotic use. Infections with C. difficile are more prevalent in those over 65. The symptoms of pseudo membranous conjunctivitis, an inflammatory disorder of the conjunctiva, include mu co purulent discharge, conjunct t v al injection, and pseudo membrane development. When an inflammatory exudate that is rich in fibrin clots in the conjunctiva, a pseudo membrane is formed. On the f o r n ices and pal p e b r al conjunctiva, this is observed as a thin, yellowish-white membrane that is readily separated, minimally causing hemorrhage, and leaving the underlying epithelium intact. There are a number of reasons why conjunctival pseudo membrane forms. Adenovirus, Neisseria gonorrhoeae, Streptococcus p y o genes, and Cory ne bacterium diphtheriae are among the often reported infectious causes.

Acute Stevens-Johnson syndrome, woody conjunctivitis, allergic reactions, toxins, chemical irritants, and plant and animal irritants are among the other etiologies that have been documented. The presence of a foreign body is an intriguing and seldom discussed etiology of pseudo membranous conjunctivitis. The earliest report of conjunctival pseudo membrane development caused by a foreign body dates back to 1971. According to a histological analysis of three conjunctival pseudo membrane instances in this investigation, there was evidence of a cellular foreign body response. Notably, Staphylococcus aureus was also grown in two out of the three conjunctival cultures, whilst the third conjunctival culture yielded negative results. The signifi-

cance of these foreign body observations is called into doubt in light of the Staphylococcus aureus positive cultures. In response, four ideas are put forth. First of all, there are innumerable instances of Staphylococcus aureus-caused conjunctivitis in which no membrane forms. Furthermore, Staphylococcus aureus typically belongs of the typical flora on the conjunctiva. In 1972, a large population-based research of 10,271 patients found that Staphylococcus aureus colonization occurred 42% of the time. Fascinatingly, in one of the three cases, there was no membrane discovered until the foreign things were detected microscopically as cotton threads when a cotton swab was inserted to the conjunctiva. Ultimately, these examples showed how foreign entities with enormous cells around them may be plainly seen on histology (Aydiner, et al. [15]).

Diphtheria

The bacteria Cory ne bacterium diphtheriae is the source of the infection diphtheria. The majority of infections are asymptomatic or have a moderate clinical course, while the death rate can be up to 10% in some outbreaks. In general, signs and symptoms start two to five days after exposure and can range in severity from moderate to severe. Usually, fever and sore throat are the first symptoms to appear. In more severe cases, a white or gray patch appears in the throat, which can obstruct the airways and produce a cough akin to croup. In addition, the neck may expand as a result of swollen facial lymph nodes. In addition, diphtheria can develop consequences that affect the skin, eyes, or genitalia, such as myocarditis, which can result in an irregular heartbeat, and nerve irritation, which can result in paralysis), as well as low platelet counts that create bleeding issues. People often contract diphtheria from one another by direct touch, airborne transmission, or contact with infected materials. Chronic infection and asymptomatic transmission are also plausible. Since the exo toxin that the bacteria produces is what causes both lethality and symptoms, variations in lethality are mostly due to strain variations of C. diphtheriae. The look of the throat may frequently be used to make the diagnosis, which is then confirmed by microbiological culture. It's possible that prior infection won't prevent rein fection.

There are several versions of the diphtheria vaccination that are both effective and accessible for prevention. It is advised to receive three or four doses throughout childhood, in addition to the tetanus and pertussis vaccines. Every 10 years, booster doses of the diphtheria-tetanus vaccination are advised. Antitoxin levels in the blood can be used to confirm protection. People who have been exposed to diphtheria can avoid it or treat it with erythromycin or benzyl pen I c I l l I n . A tracheostomy may be necessary in extreme situations in order to clear the airway.4,500 cases were formally documented globally in 2015, compared to over 100,000 in 1980. It is estimated that there were around one million cases annually prior to the 1980s. At the moment, South Asia, Indonesia, and sub-Saharan Africa are the regions where diphtheria is most common. It resulted in 2015 2,100 fatalities as opposed to 8,000 in 1990. Children are particularly impacted when it is still prevalent in a region. Because of widespread immunization, it is uncommon in the industrialized world, but if vaccination rates fall, it may reappear. Between 1980 and 2004, there were 57 instances documented in the US. Of people with a diagnosis, 5 to 10% die. The most common way for diphtheria to spread from person to person is through the air, generally by coughing or sneezing. An infection is brought on by breathing in particles that the diseased person releases. Although it is uncommon, contact with any skin lesion might potentially spread diphtheria. Moreover, indirect infections may happen. A person who is sick may leave behind live bacteria if they contact a surface or object. Furthermore, there is evidence suggesting that diphtheria may be zoo no tic, albeit this has not been verified. The discovery of Cory ne bacterium ulcerans in certain animals raises the possibility of zoo no tic potential (Collier, et al. [16]).

Immunization

The process of strengthening a person's immune system against an infectious pathogen (sometimes referred to as an immune gen) is called immunization. This system will coordinate an immune response in response to molecules that are alien to the body and are referred to as non-self; moreover, because of immunological memory, it will acquire the capacity to react rapidly in the event of a future encounter. This is what the immune system's adaptation mechanism does. Therefore, an animal or human's body may learn to defend itself by being exposed to an immuneogen under carefully regulated conditions; this process is known as active immunization. T cells, B cells, and the antibodies that B cells generate are the three most significant components of the immune system that get better with vaccination. Both memory T and memory B cells are in charge of reacting quickly to a subsequent interaction with an alien chemical. Direct administration of these components into the body as opposed to the body generating them is known as passive immunization. There are several different ways that immunization happens, both naturally and through human intervention in healthcare. If the disease is one that can be immunized against, then an organism obtains natural immunity if its immune system successfully fights off a prior infection. Depending on the disease, natural immunity may be somewhat effective rather than completely successful, and it may wane over months, years, or decades.

Vaccination is the primary method used in healthcare to artificially induce immunity [1], which is a crucial component of disease prevention, either either by preventing significant illness (infection still occurs but is not serious), by preventing infection (the pathogen fails to replicate sufficiently in the host), or by doing both. Though it usually cannot completely eradicate a disease, vaccination against vaccine-preventable illnesses is an essential way to reduce the burden of disease. Immune system priming from vaccinations against pathogenic microbes can aid in the body's defense against illness or possibly prevent it altogether. The theoretical foundation for therapeutic cancer vaccines is the ability of mutations to enable cancer

cells to create proteins or other compounds that are recognized by the body. Other compounds can also be utilized in vaccinations; for instance, ghrelin hormone in studies to develop an obesity vaccine, or nicotine in vaccines against obesity. Vaccines are frequently said to be less dangerous and a less risky method of developing immunity to a certain illness than taking a chance on a less severe version of the illness. They can shield us from a variety of current illnesses, which makes them vital for both adults and children. Children who receive vaccinations not only avoid fatal illnesses but also benefit from immune system development. Worldwide, some illnesses and diseases have been all but eliminated as a result of vaccination campaigns.

Polio is one instance. In the US, polio has been eradicated since 1979, mostly due to the efforts of committed medical professionals and parents of children who received early vaccinations. Some people may still be at risk of polio since it is still present in some regions of the world. This comprises those who have never had the shot, those who are going to regions of the globe where polio is still common, or who have not gotten all of the vaccination doses (Gallos, et al. [17]).

Diagnosis

When diagnosing a patient, the physician also depends on further hints, including bodily manifestations, nonverbal cues of concern, and the outcomes of certain radiological, laboratory, and imaging investigations. Differential diagnosis is the process of determining a list of potential diagnoses from the vast quantity of data collected. The most likely diagnosis is given first in the doctor's list of priorities. In order to reduce the number of potential illnesses or confirm one of them, more data is found and relevant tests are chosen. The traditional definition of diagnosis is the skill of determining a disease based only on its outward manifestations. There were not many diagnostic tests accessible in the past, so the doctor had to rely more on history, examination, and observation. Numerous technical developments in medicine during the 20th century led to the creation of novel tissue imaging methods and a broad range of diagnostic tests. The capacity of doctors to diagnose patients accurately was greatly enhanced by these developments. During the Greek physician Hippocrates' reign in the fifth century BC, there was a surge in interest in both medicine and personal cleanliness. The Greeks understood the benefits of exercise, a healthy diet, fresh air, and bathing. The Romans of antiquity acknowledged the impact of these elements on well-being as well and achieved notable breakthroughs in A balanced diet, access to clean water and air, and regular exercise are still stressed as critical components of good health today. The idea that disease was caused by an imbalance between the body's four humours—blood, phlegm, yellow bile, and black bile—was also brought to us by the ancient Greeks.

They underlined the need of paying attention to body language and excretions. But the emphasis was less on the diagnosis and more on forecasting the course of a disease, or prognosis. The prestige of a doctor rested on his or her ability to make correct prognostications, such as estimating the duration of a patient's sickness or who would survive. A Yorkshire terrier on a white background, disguised as a doctor or veterinarian. When it comes to patient care, diagnostic investigations are a valuable addition to clinical findings. As a physician assistant (PA), using technology for patient evaluation may be both affirming and frustrating. When diagnostic investigations are used to validate diagnoses and clinical suspicions, affirmation comes with benefits. The difficulties of keeping up with new techniques and technologies, learning how to employ diagnostic tests economically, and addressing the shortcomings and restrictions of diagnostic research are all summed up by feelings of dissatisfaction. This chapter's objective is to give readers a fundamental grasp of the essential ideas required to reduce difficulties with the use of diagnostic studies. Practical uses for specimen collection, a summary of tests often used in primary care, and variables impacting the utilization of diagnostic investigations are all covered and management, as well as a method for interpreting diagnostic tests (Bain. et al. [18]).

Neuropathy

Damage to the peripheral nerves, which are located outside of the brain and spinal cord, results in peripheral neuropathy. Typically, the hands and feet experience discomfort, numbness, and weakness as a result of this illness. It may also have an impact on the body's other systems and processes, such as urine and digestion. Through motor nerves, the peripheral nervous system transmits information from the central nervous system—also known as the brain and spinal cord—to the rest of the body. Via sensory nerves, peripheral nerves also transmit sensory data to the central nervous system. Traumatic injuries, infections, metabolic issues, inherited reasons, and exposure to toxins are some of the conditions that can lead to peripheral neuropathy. Diabetes is one of the most frequent causes of neuropathy. Peripheral neuropathy patients frequently describe their discomfort as tingling, burning, or stabbing. Occasionally, symptoms become better, particularly if a treatable ailment is the source of them. Peripheral neuropathy pain can be lessened with medication. Your physician will inquire about your symptoms and if there is anything aggravating or improving them.

They will inquire as to the duration of your symptoms. Along with any drugs or other therapies you are taking, questions regarding any ailments you may have may also be asked. To find out whether there is a nerve or nerves problem, you will be examined. They will also search for indications of the nerve problem's underlying etiology. It is possible that you will be required to undergo nerve conduction examinations. This kind of examination can gauge the nerves' electrical activity. Your physician could also advise blood testing as a means to determining the neuropathy's etiology. For more testing and care, your physician might recommend that you see a specialist. Damage to the peripheral nerve system is the term used to describe a variety of disorders known as peripheral neuropathy. All of the body's other components communicate with the central nervous system, which consists of the brain and spinal cord, through the extensive peripher-

al nervous system. In the United States, peripheral neuropathy affects millions of individuals. Damage to the peripheral nerve system is the term used to describe a variety of disorders known as peripheral neuropathy.

All of the body's other components communicate with the central nervous system, which consists of the brain and spinal cord, through the extensive peripheral nervous system. In the United States, peripheral neuropathy affects millions of individuals. Peripheral nerves transmit a variety of sensory data, including the idea that your feet are chilly. Additionally, they transmit impulses to the rest of the body from the brain and spinal cord. In addition to telling muscles to contract, which is how we move, peripheral nerves also provide other signals that regulate our heart and blood vessels, digestion, urine, sexual function, bones, and immune system (Feldman, et al. [19,20]).

Conclusion

All things considered, pharyngitis is a common ailment that can be caused by a variety of factors, including bacterial and viral infections. Although self-care often resolves problems, it is essential to know when medical intervention is required. Early detection and effective treatment can reduce symptoms and prevent problems.

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ISSN: 2574-1241

DOI: 10.26717/BJSTR.2024.59.009340

Muhammad Akram. Biomed J Sci & Tech Res

Submission Link: https://biomedres.us/submit-manuscript.php