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Chagas Disease: Immigration into the United States

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Introduction

Chagas Disease is starting to make a profound entrance into our communities within the United States. The influx of the immigrant population is the principal cause of the accumulation in the number of reported cases. [Center for Disease Control and Prevention, 2014]

The Trypanosoma cruzi is a parasite that causes Chagas disease. The triatomine blood sucking insect meets the mucosal membranes of their prey, both humans and animals. The common regions of the penetrating bite are the conjunctiva of the eye or around the mouth. It is through the feces of the vector entering the inoculation site that initiates the parasite life cycle.

Overview Incidence

The disease is most prominent in Mexico and Central and South America, which has seen a total of 10 to 14 million cases. However, in the United States is increasing due to immigration of infected persons.

The congenital form occurs in approximately 2% to 10% of infants of infected mothers. [Mandal, 2014]

Signs and Symptoms

Chagas disease has two phases: acute and chronic. The acute phase may have no symptoms or very mild symptoms. After the acute phase, the disease goes into remission. If other symptoms may appear for many years. [Now New Times, 2014]

The clinical features of megathorax include chest pain, dyspnea, cough and hypogeusia, hypokinesis, paroxysm, and repeated aspiration may occur, while coughing or swallowing. The typical symptoms of patients with megathorax, however, in patients with advanced megathorax, obstruction, perforation, and constipation may develop.

The most common and most serious manifestation of chronic infection is the Chagas’ cardiac disease, the earliest sign of which includes the conduction system abnormalities (right bundle branch block and left anterior hemiblock), and with the prolongation of the disease patients may develop atrial and ventricular arrhythmias, left ventricular dysfunction, thromboembolic events, dilated cardiomyopathy and congestive heart failure with a risk of sudden death.

Echocardiography with chronic Chagas’ heart patients reveals left ventricular hypokinesia with dyskinesia, dyspnicogenic segments, ventricular aneurysm (apical or other), low ejection fraction are 50-100 ml, and dilatation of right ventricle. [Mandal, 2014]

No symptoms or very mild symptoms, including:

- Fever
- Malaise
- Swelling of one eye
- Development of further symptoms, including:
  - Diarrhea
  - Digestive problems
  - Pain in the abdomen
  - Swallowing difficulties.

Pathophysiologically Processes Underlying Pathophysiology

Chagas disease, or American trypanosomiasis, is caused by the parasite Trypanosoma cruzi. Infection is most commonly acquired through contact with the feces of an infected triatomine bug (or "kissing bug"), a blood-sucking insect that feeds on humans and animals. [Center for Disease Control and Prevention, 2014]

The life cycle of the parasite represents four cellular forms characterized by the relative position of the flagellum, kinetoplast and nucleus. The amastigotes are found in blood, by several cell divisions, within various tissue cells of human body, and release by rupture of the cells. The macrophages, which generally become attack by the infective T. cruzi flagellates, are recognized as one of the first cell types encountered by the parasite during natural infection, because of the fact of recognition of T. cruzi by macrophages through various T cell receptors and lectin receptors; during initial replication, the infection becomes facilitated by parasitic survival. [Mandal, 2014]

Complications

- Cardiomyopathy
- Enlargement of the colon (megacolon)
- Enlargement of the megathyphus (megathorax) with swallowing difficulty
- Heart attack
- Malnutrition

It is estimated that there are over 300,000 people living in the United States who are infected with the parasite that causes Chagas disease. More than 300 infected patients are seen in the United States every year. [CDC, 2014]

Significance of Pathophysiology

Diseases or illnesses that are underdiagnosed, untreated, and lack the education of healthcare professionals have always been the interest of mine. Not to mention the bugs that carry such serious diseases that are not visible. With the increasing number of immigrants migrating to the US, the need for such education will become necessary to correctly diagnose and treat individuals with this infection. Educating nursing students and other seasoned nurses on material that is still new on an entirely new healthcare profession, has ignited a curiosity. The rare, yet still growing infections created from the triatomine insect may just be the addendum to add to nursing and medical schools curricula in detail if the rise of Chagas disease becomes more prevalent in the United States. Kuehn explains that given the increasing number of Chagas cases in the United States, attention has turned to local modes of transmission within the country. Triatomine bugs have roam across the United States for more than 100 years. They live in 28 states, mostly in the southeastern half of the country. (Kuehn, 2015)

Implications for Nursing

Nursing implications for patients with Chagas Disease, is first to be aware of and knowledgeable of the possibility that individuals in the US are presenting this disease. Following a diagnosis of Chagas disease, a nurse would include the following in patient care:

- Cardiac monitoring
- Health history interview and physical assessment
- Nutritional assessment
- Cardiac disease
- Respiratory assessment, venipuncture and weight measurements

Transmission Cycle

References Cited


Additional Resources
