International Journal of Global Health and Health Disparities

Volume 5 | Number 1 Article 9

2007

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INTRODUCTION

Leptospirosis was once a common zoonotic disease affecting most mammalian species. While it was once a very prevalent disease, it had tailored off only affecting humans with certain occupational hazards in developed countries. Recently, there has been an increase in the incidence of leptospirosis associated with recreational exposures and travel to tropical climates.

Humans become infected with the disease through either direct or indirect contact with infected animal urine. Since leptospirosis has a longer survival period in wet, humid and warm conditions it is more prevalent in tropical and temperate climates and exposure peaks in the summer. There are a variety of ways a person can contract leptospirosis including through cuts in the skin, the conjunctiva of the eye, through the respiratory tract as a result of aerosol or water inhalation and though it is rare, animal bites may transmit the disease.

Appropriate treatment and early diagnosis can reduce the side effects and potential death associated with leptospirosis. Unfortunately, because the disease incidence dropped off so dramatically for such a long time doctors are not recognizing the symptoms and are not properly diagnosing and/or treating the disease. Humans present with many flu-like symptoms and abdominal pain, dysuria, nausea, anorexia and fever. A simple blood culture can confirm the presence of leptospires. However, the morbidity and mortality remain high for leptospiosis. The purpose of this study is to examine the epidemiologic relationship between exposure, whether it is travel, occupational or incidental, and the risk of contracting leptospiosis.

REVIEW OF STUDIES

A study describing the epidemiology of leptospirosis in France from 1920 to 2003 was of interest because France has the highest incidence of leptospirosis in all of Europe. Since this study was conducted over such an extended period of time many inconsistencies existed with data collection. Many different hospitals were used, many different detection techniques with varying degrees of accuracy and because of the population growth over the years it is hard to determine if the number of cases reflects a population increase/decrease or trends within the disease itself. There were also a few gaps in accurate recordings due to World War I and II. The authors never actually said the total number of people confirmed to have leptospirosis in this paper, though it was probably high for this epidemiologic study.

When there were outbreaks they usually lasted two to five years. Then there was a period of much lower outbreaks, though the lower incidence years varied in length. There appeared to not be any predictable cyclical pattern to the outbreaks. The most

International Journal of Global Health and Health Disparities, Vol. 5, No. 1 [2007], Art. 9

duced the highest rate of incidence, while dry, colder weather had the lowest incidence.

This paper was well written and the authors did the best they could with the available information. They were able to make some great conclusions about weather being the most important risk factor.

A second study was "A rapid and quantitative method for detection of Letopira species in human leptospirosis" from FEMS Microbiology Letters. This study focused on the accuracy of current testing and tried out some new techniques to improve the diagnostic quality of testing. The researchers took 51 patients with clinical symptoms that had been previously tested negative for leptospirosis and retested them using this new type of test and had a control group of 12 with no clinical symptoms. Of the 51 supposedly negative people 25 patients had a significant density of leptospires in their blood.

This case-control study is going to make a huge difference in current leptospirosis testing. It is faster, safer and significantly more sensitive. This is going to increase the likelihood of a correct diagnosis from hospitals, allow faster treatment and give the scientific community better estimated of how many people actually have leptospirosis and a better idea about disease trends. This paper was extremely well written. It was mostly straight scientific testing and allowed little room for bias. This new testing is going to do great things for people and will hopefully reduce the morbidity and mortality rates among its victims.

A third paper evaluated was "Leptospirosis among patients presenting with dengue-like illness in Puerto Rico" in Acta Tropica. This paper addresses the major problem of mistaking leptospirosis for dengue fever. Both diseases have very similar symptoms and both are transmitted in hot, rainy countries or seasons. In this case control study, there were 42 case patients and 84 controls. This study evaluated factors such as male sex, exposure to puddles, rural habitation, and owning horses.

The authors compared and contrasted many of the like symptoms and unlike symptoms for both dengue fever and leptospirosis (they did not have access to the superior test discussed in the previous paper that would have made this study rather obsolete). Most of the leptospirosis positive patients had rash, myalgias, headache and jaundice. They also determined that failure to wear boots, going either barefoot or wearing sandals increases the likelihood of contracting leptospirosis, especially in the rainy season.

One of the major problems with this study is the authors didn't take into account co-infection of both dengue fever and leptospirosis. They estimated that some of the cases actually had both diseases, but never tested to confirm.

This paper was very poorly written. The authors were testing too any variables without enough technology to help them reach accurate conclusions. They tried to compare and contrast dengue and leptospirosis, but they also tried to observe risk factors for contraction, all while using outdated, inaccurate testing methods. I would not trust any of the information gathered through this very confusing article.

A fourth study was "Three cases of anicteric leptospirosis from Turkey: Mild to severe complications" from Journal of Infection. In this case study there were three infected individuals. The first person was correctly diagnosed with leptospirosis initially, while the other two were initially incorrectly diagnosed with meningitis. The problem

with this disease, because of the extensive vasculitis, the severity of symptoms ranges form sub clinical to fatal.

All three of the patients presented with reduced renal function. The one that was properly diagnosed and was treated with effective antibiotics had a much milder case and recovered faster with fewer complications. The other two that were incorrectly diagnosed had longer recoveries and more complications.

This paper was superior to many of the others. It took the reader through a step-by-step process to see what was done correctly and what was done incorrectly by the doctors. It makes one wonder how many cases are misdiagnosed and how many severe complications and maybe even deaths could be eliminated by proper education and availability of testing materials.

A final paper for review was "Leptospirosis in an urban setting: case report and review of an emerging infectious disease" form the Journal of Emergency Medicine. This was a case report on one infected individual, a woman who waited too long and reported to the hospital with very severe symptoms and had many complications. She arrived at the hospital with flank pain, anorexia, rash, nausea, fever (40.5 C), dysuria and hematuria. This patient had a wide array of tests run. It wasn't until day nine of her hospitalization, after suffering from severe respiratory distress, that tests results showed she had leptospirosis. This patient was able to make a full recovery once the proper antibiotics were administered. This paper was also very well written. It clearly outlined how the patient proceeded to worsen until a proper diagnosis was made. It also stated quite succinctly how few doctors know about leptospirosis and its symptoms, especially in higher latitudes where the weather is far from tropical.

CONCLUSION

This review uncovers the general ignorance among doctors and problems with diagnosing less common diseases. One important factor that can reduce the incidence of decrease and the morbidity and mortality of leptospirosis is education. Persons who are at high risk of exposure need to be informed about all of the possible dangers associated with specific occupations, hobbies or travel plans. Educating people about the risks of animal urine and the ways to avoid infection is critical.

Doctors and hospital staff also need a lot more education. In many of the case studies patients were initially misdiagnosed. That is because the doctors are not able to diagnose the symptoms correctly. The CDC, or some disease control authority, needs to organize leptospirosis continuing education classes for doctors. They need to be aware of the symptoms and the problems of misdiagnosing cases. In the past the testing for leptospirosis took a long time, had questionable accuracy and had many toxic agents that were harmful to the technicians running the tests. The new testing method developed is much simpler, more accurate, has a smaller incubation time and is not hazardous.

If people are educated and physicians are able to use are the resources they have, the morbidity and mortality rates for leptospirosis can drop once again. If people are aware and precautions are taken leptospirosis may become a disease of the past once again.

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