DEPARTMENT OF VETERANS AFFAIRS

Accurate and Timely Diagnosis of Infectious Diseases in Veterans Returning from Iraq and Afghanistan

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Introduction

Historically, infectious diseases have had a significant impact on the conduct of military operations, and the current conflicts are no exception. Veterans have been returning from Afghanistan and Iraq with a variety of infectious diseases endemic to those countries, including leishmaniasis, malaria, acute eosinophilic pneumonia, Q fever, brucellosis, diarrheal illness, and wounds infected with multidrug-resistant *Acinetobacter* species.

From March 2003 until June 2005, an estimated 0.23% of deployed U.S. ground forces in Operation Iraqi Freedom (OIF) received a diagnosis of leishmaniasis.[1] Cutaneous leishmaniasis is also endemic to Afghanistan and has been diagnosed in soldiers serving in Operation Enduring Freedom (OEF).[2] Leishmaniasis is a protozoan infection usually transmitted by the bite of an infected sand fly. The clinical presentation of cutaneous leishmaniasis generally includes chronic, painless skin lesions.

Malaria is endemic to both Iraq and Afghanistan and cases have been diagnosed among OIF/OEF service personnel.[2] Malaria can present with a variety of symptoms, depending on whether the infection is severe or uncomplicated. Symptoms of uncomplicated malaria include fever, chills, malaise, headache, sweats, body aches, nausea, and vomiting. During 2004, *Plasmodium vivax* infection acquired in Afghanistan accounted for 25% of the 56 malaria cases diagnosed among U.S. Army soldiers who presented for care weeks to 20 months following their return to the United States.[1]

Primary care physicians practicing in the United States may not be familiar with these types of infections given their low incidence.[3] In addition, physicians practicing outside urban areas may not have access to an infectious diseases specialist for consultation. This may lead to variation in the accuracy and timeliness of diagnosing specific non-endemic infectious diseases among returning veterans. The objective of this study was to determine whether veterans returning from OEF/OIF had difficulty receiving an accurate and timely diagnosis of and treatment for leishmaniasis or malaria.

Key Findings

- Diagnosis and initiation of treatment at a VAMC occurred in a timely manner, most commonly by primary care providers.
- Diseases endemic to Iraq and Afghanistan are not always diagnosed in the country of deployment, despite visiting the medical clinic while deployed.
- Because of the delay in onset of symptoms and potential delay in diagnosis until returning home, physicians need to take a careful travel history when presented with undiagnosed infectious diseases in soldiers returning from overseas.

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Methods

The study sample included patients who received care at a Veterans Integrated Service Network 23 (VISN 23) facility with an ICD-9 code indicative of malaria (084.x) or leishmaniasis (085.x) during October 2001 through September 2009. VISN 23 includes Iowa, North Dakota, South Dakota, Minnesota, Nebraska, and portions of western Wisconsin and Illinois. Patient information, including demographics, date of onset, date of diagnosis, and number of provider visits to correctly diagnose the infection, was abstracted from the electronic medical record. Frequency distributions were calculated using SAS version 9.2 (SAS Institute Inc., Cary, NC).

Results

Fifteen veterans received a diagnosis of leishmaniasis (n = 11) or malaria (n = 4). The majority were male (87%) and white (60%), and the median age was 25 years (range, 19 to 55 years). No patients died of their infection. Using Rural Urban Commuting Area (RUCA) classification codes,[4] two veterans resided in a rural area, three in a large rural area, nine in an urban area and one had an address which could not be linked to a RUCA classification.

The number of days to diagnosis from the date of the first VA provider visit ranged from 0 to 28 days. No veteran required more than two visits before diagnosis. Elapsed time between diagnosis and treatment ranged from 0 to 2 days and all were diagnosed on the first visit. All of the veterans were deployed prior to their infection and the majority (10/14; 71%) were deployed to Iraq. The duration of deployment ranged from 5 to 19 months. The greatest number of patients (6/15; 40%) was seen at the Iowa City VA Medical Center followed by three patients (20%) seen at the Omaha VA Medical Center. An accurate diagnosis was most frequently made by a primary care provider (4/8;50%) followed by a dermatologist (2/8;25%). The specific causative organism was often unknown; nevertheless, one patient with leishmaniasis was found to be infected with *Leishmania major* and one patient with malaria was co-infected with *P. vivax* and *P. falciparum*.

Conclusions

Diagnosis and initiation of treatment occurred in a timely manner, most commonly by primary care providers. This finding was somewhat surprising given that we expected more of the correct diagnoses to have been made by an infectious diseases clinician. Nevertheless, it is encouraging that primary care clinicians appear to be familiar with the clinical presentation of these diseases and are able to make the correct diagnosis, especially given that they are the first to evaluate the veteran upon return.

Our study was limited in that the sample size was small, only two of the veterans resided in a rural area, therefore limiting comparisons between rural- and urban-residing patients, and we were missing information for patients who were seen at non-VA facilities.

Because of the delay in onset of symptoms and potential delay in diagnosis until returning home, physicians need to take a careful travel history when presented with undiagnosed infectious diseases in soldiers returning from overseas. It is important for veterans to receive a correct diagnosis if they seek care for an infectious disease while deployed so as to not delay treatment if warranted.

References

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