Travel Medicine and Infectious Disease (2012) 10, 197–200

Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevierhealth.com/journals/tmid

Travel health preparation and travel-related morbidity of splenectomised individuals

Christien Boeddha [a], Wilmar de Graaf [b], David Overbosch [b,c], Perry J.J. van Genderen [a,b,c,*]

[a] Department of Internal Medicine, Havenziekenhuis, Rotterdam, The Netherlands
[b] Institute for Tropical Diseases, Havenziekenhuis, Rotterdam, The Netherlands
[c] Travel Clinic Havenziekenhuis, Rotterdam, The Netherlands

Received 21 March 2012; received in revised form 25 June 2012; accepted 27 June 2012
Available online 15 July 2012

KEYWORDS
Splenectomy;
Infection;
Encapsulated bacteria;
Travelling;
Ailments

Summary Asplenic or hyposplenic patients are at an increased risk of encapsulated bacterial and intraerythrocytic parasitic infections, which are endemic at many travel destinations. With proper travel health advice and preparation splenectomised individuals could have comparable travel-related morbidity as healthy control subjects. We conducted a prospective case–control study with 21 travel pairs. Each pair consisted of a splenectomised patient (case) and a healthy, non-splenectomised travel companion (control) in order to match for travel destination, duration and potential exposures to travel-related health risks. All participants filled out a questionnaire detailing travel health preparation including vaccination and malaria prophylaxis as well as travel-related morbidity. Cases and controls were comparable for age and gender. Cases received significantly more information about on demand use of antibiotics in case of fever. Immunisation coverage against encapsulated bacteria and adherence to malaria prophylaxis guidelines was suboptimal. There were no significant differences in the occurrence of travel-related ailments nor differences in severity of ailments. The immunisation coverage against encapsulated bacteria and adherence to malaria prophylaxis guidelines was suboptimal in some splenectomised patients and should be improved. Strict adherence to national travel health advice guidelines and specific guidelines for asplenic patients is advisable. However, with regard to travel-related morbidity there are no significant differences in morbidity between splenectomised patients and healthy controls, at least in the setting of short-term travel.

* Corresponding author. Institute for Tropical Diseases, Havenziekenhuis en Instituut voor Tropische Ziekten, Haringvliet 72, 3011 TG Rotterdam, The Netherlands. Tel.: +31 10 404 3305; fax: +31 10 412 1645.
E-mail addresses: p.van.genderen@havenziekenhuis.nl, pjjvangenderen@tiscali.nl (P.J.J. van Genderen).

1477-8939/$ - see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.tmaid.2012.06.005

Introduction

The spleen plays an essential role in human defence against infection by processing of antigens and production of antibodies.[1] Splenic macrophages are critical in clearing opsonized encapsulated bacteria such as pneumococci and meningococci and in clearing intraerythrocytic parasites such as those causing malaria and babesiosis.[1] This may explain the fulminant nature of these infections in persons with anatomic or functional asplenia. The estimated life-time risk of such overwhelming infection in asplenic or hyposplenic patients is approximately 5% with a mortality of 50–70%.[2] Paramount to the management of asplenic patients is educating patients about their predisposition to infection and to emphasise the importance of preventive immunisations and prophylactic and on-demand use of antibiotics.[2]

Preparing splenectomised patients for travel to less developed countries may constitute a challenge since these patients are at an increased risk for encapsulated bacterial and intraerythrocytic parasitic infections which are endemic at most travel destinations. We hypothesised that with proper travel health advice and preparation, splenectomised patients would have comparable travel-related morbidity as healthy, non-splenectomised controls. To study this, a prospective case–control study was set-up investigating the current practice of travel health preparations in splenectomised patients and to evaluate the travel-related morbidity of these individuals compared to healthy, non-splenectomised travel companions.

Methods

A prospective case–control study was conducted at the Travel Clinic Havenziekenhuis in Rotterdam, the Netherlands from February 2005 to May 2011. Ethical clearance was granted by our Institutional Ethics Review Board. Participants were included after written informed consent. Since the aim was to compare travel-related morbidity of splenectomised individuals to that of healthy, non-splenectomised controls, we included only travel pairs. Each pair consisted of a splenectomised patient (case) and a healthy, non-splenectomised travel companion (control) in order to specifically match for travel destination and for potential exposures to travel-related health risks. All participants received a standardised questionnaire in which participants were asked about their travel health preparation, including vaccinations and malaria chemoprophylaxis, if indicated. In addition, they were asked to fill out the questionnaire during their trip and to return it afterwards. In the questionnaire 34 travel-related ailments were detailed, which were graded on a semi-quantitative scale, as published previously[3,4]:

Grade I (mild)	The ailment did not affect the daily routine.
Grade II (moderate)	The ailment interfered with the daily routine.
Grade III (severe)	The ailment necessitated a visit to a doctor or clinic.

Individuals who failed to return their questionnaire were considered lost to follow-up.

Statistical analysis

Statistical analysis was performed with GraphPad InStat 3.00 (GraphPad Software, San Diego California USA). The Fisher's exact test with Yate's continuity correction was used to compare proportions between cases and controls. Paired *t*-test was used to compare continuous data between cases and controls. Statistical significance was accepted at *P*-value <0.05. The power of the completed study was determined with the use of the GraphPad StatMate module.

Results

Twenty-one matched case–control pairs were included in the study period, all of Dutch origin. The case group consisted of 12 males and 9 females, with a median age of 53 years (range 31–70 years). The reasons for splenectomy were trauma ($n = 14$), complicated surgery ($n = 2$), solid tumours ($n = 2$) and haematologic disorders ($n = 4$), respectively. The splenectomy occurred at a median of 25 years ago (range 1–46 years). The control group consisted of 5 males and 16 females, with a median age of 51 years (range 31–71 years). There were no significant differences ($p = 0.0578$) in gender distribution between the cases and controls. Two case–control pairs travelled within Europe, 3 pairs travelled to South-America, 10 pairs travelled to Africa (4 of these pairs travelled to South-Africa), 1 pair travelled to Australia and 5 pairs travelled to Asia, respectively. The median duration of travel was 18 days (range 6–31 days).

Travel health preparation of splenectomised individuals

As shown in Table 1, cases received more frequently information about food hygiene, protection against insect bites, medical facilities and about carrying a medical alert, although differences did not reach statistical significance. None of the cases used prophylactic antibiotics after splenectomy. All splenectomised patients received information about and a prescription for on demand use of antibiotics in case of fever, in contrast to half of the control subjects ($p = 0.0005$). However, none of the cases had to use the on demand antibiotics during travel. Even though all cases had undisputed indication for pneumococcal, meningococcal and *Haemophilus influenzae* immunisation, only 91%, 58% and 83% of the unprotected cases received immunisation, respectively. Only 7 of 10 cases travelling to a malaria-endemic region used actually malaria chemoprophylaxis.

Travel-related morbidity of splenectomised individuals

There were no significant differences in ailment rates between cases and controls, as detailed in Table 2. In addition, there were no differences in severity of the ailments, even though 3 splenectomised individuals reported severe