Table 1. Summary of data on thrombocytopenia and anemia from series of cases of Plasmodium vivax malaria.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study location</th>
<th>No. of study patients</th>
<th>Type(s) of study patients</th>
<th>Platelet count data</th>
<th>Anemia, proportion (%) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Median count (range), platelets/µL</td>
<td>Proportion (%) of patients with count &lt;150,000 platelets/µL</td>
</tr>
<tr>
<td>[5]</td>
<td>Thailand</td>
<td>646</td>
<td>Migrant workers with imported cases</td>
<td>131,000 (males); 141,000 (females)</td>
<td>NR</td>
</tr>
<tr>
<td>[6]</td>
<td>USA</td>
<td>38</td>
<td>US Rangers with imported cases</td>
<td>109,000 (40,000–308,000)</td>
<td>26/31 (90)</td>
</tr>
<tr>
<td>[7]</td>
<td>Australia</td>
<td>63</td>
<td>Australian travelers, expatriates, and immigrants with imported cases</td>
<td>109,000</td>
<td>NR</td>
</tr>
<tr>
<td>[8]</td>
<td>South Korea</td>
<td>101</td>
<td>Veterans, travelers, and residents in fected in areas of endemicity</td>
<td>NR</td>
<td>86/101 (85)</td>
</tr>
<tr>
<td>[9]</td>
<td>Colombia</td>
<td>104</td>
<td>Rural residents</td>
<td>269,000</td>
<td>8/104 (8)</td>
</tr>
<tr>
<td>[10]</td>
<td>USA</td>
<td>97</td>
<td>US Marines with imported cases</td>
<td>109,000</td>
<td>(83)</td>
</tr>
<tr>
<td>Present</td>
<td>Italy</td>
<td>24</td>
<td>Italian nationals who traveled abroad with imported cases</td>
<td>65,000 (28,000–352,000)</td>
<td>23/24 (96)</td>
</tr>
</tbody>
</table>

**NOTE.** NR, not reported.

a Includes 7 patients with cases of *P. falciparum.*

b Anemia was defined as a hemoglobin level of <12 g/dL, except in [6], in which it was defined as a hematocrit of <42 %, and in [5], in which it was defined as an RBC count of <4,000,000 cells/µL.

c Authors’ unpublished data.

and malaria in the physician’s mind could represent a possible pitfall in the diagnosis of imported malaria in travelers.

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**Reply to Antinori et al.**

We appreciate the comments made by Antinori et al. [1] regarding our letter [2]. The main contribution of our report lies in the occurrence of severe thrombocytopenia attributed to Plasmodium vivax infection, not of thrombocytopenia per se, as Antinori et al. [1] imply. Furthermore, Antinori et al. [1] refer to a textbook to suggest that thrombocytopenia is a common phenomenon found in all four human malaria [3]. Interestingly, the reference used by White [3] as a basis for this particular statement is a publication on thrombocytopenia due to Plasmodium falciparum [4]. Antinori et al. [1] further base their letter on a report of thrombocytopenia due to *P. vivax* from Thailand [5] that was also referenced in our article [2]. The findings of this study [5] do not discuss cases of severe thrombocytopenia.

We are certain that severe thrombocytopenia in *P. vivax* infection has rarely been reported. Furthermore, Antinori et al. [1] elaborate most of their conclusions on the basis of a few cases of imported *P. vivax* malaria (3–4 per year) in a non-immune population. In Sucre, Venezuela, malaria is caused almost exclusively by *P. vivax*. This region of Venezuela is also considered a zone with moderate-to-high levels of malaria transmission. Therefore, most of the population has suffered previous episodes of *P. vivax* infection. We believe that making the distinction between immune and nonimmune populations exposed to *P. vivax* is relevant to the occurrence of severe thrombocytopenia.
nia. Preliminary research from Venezuela [6] has demonstrated that P. vivax-related thrombocytopenia may be an immune-mediated phenomenon caused by anti-platelet antibodies in immunologically primed individuals.

The purpose of our report [2] is to bring closer attention to the possibility of P. vivax infection presenting with severe malaria manifestations, such as severe thrombocytopenia. Much has been described about severe malaria due to P. falciparum infection [7]. Only a few reports, such as one recently published by Kochar et al. [8], have described severe malaria in P. vivax infection. We consider our report to be relevant in demonstrating that P. vivax infection ultimately may present, albeit less frequently, with severe malaria manifestations, such as severe thrombocytopenia and hemorrhagic episodes (both of which occurred among a group of our patients). In support of our conclusions [2], the report by Kochar et al. [8] demonstrated the occurrence of severe anemia and severe thrombocytopenia associated with bleeding diathesis that required intensive care support. Coinciding with our observation of a distinction between immune and nonimmune populations, Kochar et al. [8] also included only cases from an area in India where malaria is endemic [8].

We are in the process of preparing a report to further describe the frequency and severity of anemia in Northeastern Venezuela, where P. vivax infection is endemic. We believe that our report [2], along those of with Kochar et al. [8], and Antinori et al. [1], demonstrates that hematological abnormalities associated with P. vivax infection are clinically relevant and could be associated with severe malaria, and their pathogenesis deserves further research.

Acknowledgments

Potential conflicts of interest. All authors: no conflicts.

References


What Does “Culture of Life” Mean for an Undocumented Immigrant?

SIR—We read with interest the article by Anstead et al. [1] about the use of posaconazole for the treatment of refractory coccidioidomycosis; however, we feel case report 6 deserves further comments. The patient, a 28-year-old man who initially had a favorable outcome with prolonged posaconazole therapy, eventually died of progressive disease because, as “an undocumented immigrant, [he] was returned to Mexico, where he ran out of medications” [1, p. 1774]. According to the Declaration of Geneva, adopted by the Second General Assembly of the World Medical Association in 1948, physicians should not permit considerations of ethnic origin or nationality to intervene between their duty and their patient [2]. In France, there is a law stipulating that a patient cannot be returned by force to his or her country of origin if an interruption of care that may have severe health consequences would occur [3]. Obviously, physicians cannot always interfere with immigration policies. However, in light of the long debate about “culture of life” politics surrounding the case of Terri Schiavo, for whom the clinical signs of life were not obvious [4], the discontinuation of posaconazole for this 28-year-old ambulatory Hispanic man raises the following questions for Anstead et al. [1]: (1) what was done to prevent this patient’s expulsion from the United States, given the knowledge that it was likely a death sentence, and (2) did the pharmaceutical company that manufactures this precious investigational drug try to deliver it to the patient after he had been returned to Mexico?

Acknowledgments

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3. Assemblée Nationale. Rapport 2003 sur la proposition de loi n° 1654 relative à l’expulsion des personnes visées à l’article 26 de