A Retrospective Study of Ectoparasitosis in Patients Referred to Imam Reza Hospital of Mashhad, Iran

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This cross-sectional study was performed on all patients suspected to be suffering from ectoparasites who were referred to the parasitology laboratory of Imam Reza Hospital of Mashhad during 15 years (April 1995 to April 2010). All patients’ data were collected from the questionnaires and then analyzed statistically. From 1814 suspected patients to be suffering from ectoparasites, 375 patients had scabies and, 99 suffer from pediculosis. The mean age of patients was $26.18 \pm 17.68$. The most common age of scabies was 10–19 (27.7%) and pediculosis 0–9(9.6%) ($P$ value = 0.00). The highest incidence of pediculosis was in women (3.6%) and scabies in men (13.7%) ($P$ value = 0.00). Pediculosis is more common in children (9/9%) and scabies in workers (32%)($P$ value = 0.00). Scabies and pediculosis were more prevalent in patients from Razavi Khorasan Province with 18.7% and 5%, respectively ($P$ value = 0.08).

1. Introduction

Ectoparasitic infestation can induce persecutor diseases. Some of the common diseases of this group are pediculosis and scabies. Pediculosis and scabies are caused by ectoparasites; patients usually present with itching. Body lice are vectors of Rickettsia prowazekii, Borrelia recurrentis, and Bartonella quintana, the etiological agents of epidemic typhus, relapsing fever, and trench fever, respectively. Proper hygienic condition can prevent these diseases. Although these illnesses are not the concern of health care systems, they can cause high morbidity. Their incidence varied around the world depending on type and place of living. Ectoparasitic infestation can be as sporadic, endemic or epidemic [1].

Pediculus is a blood sucking parasite that is specific to humans. Pediculus humanus var capitis involved human head, Phthirus pubis involve genital area, and Pediculus humanus var corporis infest human body and use it as a warm place to live and feed. Pediculus capitis is the most common type in this group of ectoparasites especially in age groups of 3–11 years. Since 1970, the incidence of Pediculus capitis is increasing in the world [2].

Sarcoptes is an obligatory skin parasite and is important in dermatology. Sarcoptes usually involved hand skin including area between fingers and wrist, as well as elbow, feet, testis, and other sites of body [2].

The prevalence of Pediculus capitis in school children was reported by some studies as follows: Yasuj 11% [3], Babol 2.2% [4], Kerman 3.8% [5], Hamedan 1.3% [6], Turkey 6.8% [7], Korea 4.1% [8], and Egypt 12% [9]. In a study on Iranian prisoners, 9% of patients with dermatology complain of pediculosis and 57% had scabies [10].

In poor communities the prevalence of scabies is reported more than 20% [11]. The prevalence of scabies was reported 0.4% in Turkey [7], 2.09% in Sari, and 1.3% [12] in Somehsara.

Since mentioned diseases are considered among important parasitic skin diseases and show the level of public health, by considering their high prevalence in our country and the necessity of identification of region of common infections, the dominant species in the region, and the mode of their transmission to human, we decided to report a 15-year period retrospective statistics study of patients who referred to parasitology laboratory of Imam Reza Hospital of Mashhad, Iran, one of the most important laboratories of east Iran.
Table 1: Frequency distribution of final diagnosis based on gender and place of living.

<table>
<thead>
<tr>
<th>Final diagnosis</th>
<th>Gender</th>
<th>Place of living</th>
<th>Number</th>
<th>Percent</th>
<th>Number</th>
<th>Percent</th>
<th>Number</th>
<th>Percent</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scabies</td>
<td>Female</td>
<td>Razavi Khorasan</td>
<td>127</td>
<td>14.2</td>
<td>65</td>
<td>7.3</td>
<td>702</td>
<td>75.5</td>
<td>1185</td>
<td>33.2</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Razavi Khorasan</td>
<td>248</td>
<td>28.1</td>
<td>34</td>
<td>3.8</td>
<td>602</td>
<td>68.1</td>
<td>23</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>North Khorasan</td>
<td>341</td>
<td>41.3</td>
<td>92</td>
<td>11.1</td>
<td>1153</td>
<td>123.3</td>
<td>23</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>South Khorasan</td>
<td>10</td>
<td>1.2</td>
<td>2</td>
<td>0.2</td>
<td>23</td>
<td>2.5</td>
<td>25</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Table 2: Frequency distribution of final diagnosis based on age.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Scabies</th>
<th>Pediculosis</th>
<th>Negative</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>0–9</td>
<td>65</td>
<td>20.1</td>
<td>31</td>
<td>9.6</td>
</tr>
<tr>
<td>10–19</td>
<td>101</td>
<td>27.7</td>
<td>28</td>
<td>7.7</td>
</tr>
<tr>
<td>20–29</td>
<td>84</td>
<td>20.0</td>
<td>16</td>
<td>3.8</td>
</tr>
<tr>
<td>30–39</td>
<td>49</td>
<td>17.6</td>
<td>10</td>
<td>3.6</td>
</tr>
<tr>
<td>40–49</td>
<td>69</td>
<td>18.9</td>
<td>12</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>368</td>
<td>21.0</td>
<td>97</td>
<td>55</td>
</tr>
</tbody>
</table>

*Cases with final diagnosis except ectoparasites.

2. Objects and Method

In this cross-sectional study which was performed in February 2012, records of 1851 patients who had been suspicious of suffering from ectoparasitosis and had been referred to parasitology laboratory of Imam Reza Hospital of Mashhad during a 15-year period (from April 1995 to April 2010) were evaluated. In this study, diagnostic method for pediculosis was inspection and microscopic examination and for diagnosis of scabies direct examination from eruption and then microscopic examination had been used.

The data were collected from their health records by a researcher made questionnaire. Patient demographic data including age, gender, occupation, place of birth and place of living, and final diagnosis were collected. Data were analyzed by SPSS v 15, using Chi square test. *P* value less than 0.5 was considered significant.

3. Results

In the present study, 1814 patients were assessed, 375 patients had scabies and 99 had pediculosis. The patients' minimum age was one month and maximum age was 97 years. *Sarcoptes* was more common among males with incidence of 13.7%, and pediculosis was more common among females with incidence of 7% (*P* = 0.00) (Table 1). The mean age of patients was 26.18 ± 17.68 years. The most common incidence of scabies and pediculosis was observed in age groups of 10–19 years and 0–9 years, respectively (*P* = 0.00) (Table 2).

Considering occupation, scabies was more common among workers with incidence of 32% and pediculosis was more prevalent among children with incidence of 9.9% (*P* = 0.00) (Table 3).

Regarding the place of living, the highest percentage of patients with *Sarcoptes* infestation were from Razavi Khorasan Province (18.7%), and the highest percentage of patients with pediculosis were from Razavi Khorasan Province as well (5%) (*P* = 0.08) (Table 1).

The laboratory results confirmed initial diagnosis, 23.7% of scabies and 45.1% of pediculosis (*P* = 0.00).

4. Discussion

Pediculosis is one of the common ectoparasitic infestations that are still considered as one of the health problems in the world [6, 7].

Our study revealed that ectoparasitic infestation is gender-dependent; the pediculosis is more common among females and scabies is more common among males. Many other studies have also shown that pediculosis is more common among females, which is similar to our results [8, 12]. It can be related to the women's hair length.

However, some of the researches about scabies have declared higher incidence in women rather than men [13]. Furthermore, the incidence of scabies in age groups of 31–40 and 41–50 is higher in women and in age groups 11–20 is higher in men [14]. These results are partly different from our findings. Poudat and Nasirian, in their study, reported similar
Table 3: Frequency distribution of final diagnosis based on occupation.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Scabies</th>
<th>Number</th>
<th>Percent</th>
<th>Pediculosis</th>
<th>Number</th>
<th>Percent</th>
<th>Negative</th>
<th>Number</th>
<th>Percent</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee</td>
<td>24</td>
<td>16.2</td>
<td></td>
<td>6</td>
<td>4.1</td>
<td></td>
<td>118</td>
<td>79.7</td>
<td>148</td>
<td>100</td>
</tr>
<tr>
<td>Worker</td>
<td>16</td>
<td>32.0</td>
<td></td>
<td>2</td>
<td>4.0</td>
<td></td>
<td>32</td>
<td>64.0</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Self employed</td>
<td>73</td>
<td>30.8</td>
<td></td>
<td>7</td>
<td>3.0</td>
<td></td>
<td>157</td>
<td>66.2</td>
<td>237</td>
<td>100</td>
</tr>
<tr>
<td>Housewife</td>
<td>58</td>
<td>11.6</td>
<td></td>
<td>22</td>
<td>4.4</td>
<td></td>
<td>419</td>
<td>84.0</td>
<td>499</td>
<td>100</td>
</tr>
<tr>
<td>Student</td>
<td>98</td>
<td>27.8</td>
<td></td>
<td>23</td>
<td>6.5</td>
<td></td>
<td>231</td>
<td>65.6</td>
<td>352</td>
<td>100</td>
</tr>
<tr>
<td>Child</td>
<td>52</td>
<td>20.6</td>
<td></td>
<td>25</td>
<td>9.9</td>
<td></td>
<td>176</td>
<td>69.9</td>
<td>253</td>
<td>100</td>
</tr>
<tr>
<td>Retired/unemployed</td>
<td>44</td>
<td>22.4</td>
<td></td>
<td>11</td>
<td>5.6</td>
<td></td>
<td>141</td>
<td>71.9</td>
<td>196</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>365</td>
<td>21.0</td>
<td></td>
<td>96</td>
<td>5.5</td>
<td></td>
<td>1274</td>
<td>73.4</td>
<td>1735</td>
<td>100</td>
</tr>
</tbody>
</table>

5. Conclusion

Scabies is a prevalent dermatologic disease in Iran and is transmitted from person to person or from dressing or bed sheets to others. In this study, the highest incidence of scabies among different occupations was observed in workers with 32% incidence and between genders it was more common among males with incidence of 28.6%. Therefore, it seems that education about the signs and transmission method of this disease to high risk groups will help greatly to reduce the prevalence of scabies and prevent probable future epidemic. Increasing knowledge of high risk people and having good hygiene are the proper methods for controlling scabies in the community.

A study in Germany showed that the relation between initial diagnosis and final diagnosis varied depending on the used diagnostic method; in diagnosing scalp pediculosis, this relation is 90.5% when wet combing method was used, and it is 28.6% when the diagnostic method is visual inspection [24]. Laboratory findings confirmed initial diagnosis of scabies and pediculosis cases 23.7% of 45.1% respectively. In this study, diagnostic method for pediculosis was inspection and microscopic examination and, for diagnosis of scabies, direct examination from eruption and then microscopic examination had been used.
is necessary. The authors believe that considering pediculosis high incidence in kindergarten and school children, educating parents and teachers is an important method for preventing and controlling pediculosis.

Conflict of Interests
The authors declare that there is no conflict of interests regarding the publication of this paper.

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References