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ORIGINAL ARTICLE

Prevalence of sacrococcygeal pilonidal disease in Turkey

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Received 23 December 2015; received in revised form 10 March 2016; accepted 7 April 2016

KEYWORDSdispersion
characteristics;
pilonidal sinus
disease;
Turkish population

Summary *Background:* Pilonidal sinus disease is frequently observed in the producing population; despite it not being a malignant disease, attention of clinicians to this disease has increased. Studies on this disease have not clearly revealed its prevalence. We aimed to detect its dispersion characteristics in our country.

Materials and methods: Our study was designed as a descriptive study involving a large number of patients. A total of 19,013 candidates, aged between 17 years and 28 years and coming from different regions of the country, who applied to be students or officials of the state's schools and institutions, were enrolled in the study. Examination was performed including the perineal region, the presence of any comorbid diseases was noted, and clinical types of pilonidal sinus disease were detected according to Tezel's classification and recorded.

Results: Pilonidal sinus was detected in a total of 1258 (6.6%) candidates, of whom 72 (0.37%) were female and 1186 (6.23%) male. Our clinical experience showed that pilonidal cysts had a higher incidence in the Turkish population than in other populations, and it was especially increased in individuals of military age.

Conclusion: We believe that soldiers coming from different regions of Turkey and candidates applying for auxiliary staff positions provide a small sample group resembling a representation of the whole of Turkey.

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Conflicts of interest: None.

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<http://dx.doi.org/10.1016/j.asjsur.2016.04.001>1015-9584/ Copyright © 2016, Asian Surgical Association. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).Please cite this article in press as: Duman K, et al., Prevalence of sacrococcygeal pilonidal disease in Turkey, Asian Journal of Surgery (2016), <http://dx.doi.org/10.1016/j.asjsur.2016.04.001>

1. Introduction

Pilonidal sinus disease is a chronic and inflammatory disease concerning skin and adnexa, which frequently develops in the sacrococcygeal region and is generally observed in puberty and young adult period (producing young population). The disease sometimes manifests itself as infected and abscess drained through the mouth or spread to the perineum, and sometimes as a running fistula mouth anastomosed to the skin.¹ This disease was frequently encountered by jeep riders during the Second World War; and was referred to as "jeep disease".² During that time, 79,000 soldiers of the American Army were operated on following a diagnosis of pilonidal sinus. It is also understood from the records, that 2000 soldiers were operated on following a diagnosis of pilonidal sinus every year during the Vietnamese War.³ The facts that it is frequently observed, impairs quality of life, and is frequently observed in the producing population, despite not being a malignant disease, have increased the attention of clinicians to the disease; many treatment modalities have been suggested and discussed in the literature. However, the prevalence of the disease has not been clearly revealed. Thus, we observed that there are few studies estimating the prevalence of sacrococcygeal pilonidal sinus cases. We aimed to detect its dispersion characteristics in Turkey. Our study is one of the studies comprising a large number of cases that have been observed in the literature to date.

2. Materials and methods

Approval for the study was obtained from the Local Institutional Ethics Committee of Firat University Faculty of Medicine, Elazig, Turkey (date: 11.26.2015; number: 118202). Our study was designed as a descriptive study involving a large number of patients. Medical examination and checkups were conducted, and a short questionnaire was given to 19,013 candidates aged 17–28 years and coming from different regions of the country, who applied to the state's schools and institutions between March 2012 and October 2014 as students or officials. Demographic data, family histories, allergy condition, and comorbid diseases of all the candidates were recorded using a questionnaire before the examination, and then a detailed physical examination was performed by a dermatologist such that all regions of the skin were included. Examination was performed including the perineal region, the presence of any comorbid diseases was noted, and clinical types of pilonidal sinus disease were detected according to Tezel's⁴ classification and recorded (Table 1). The identification number of the data, and percentage, average, minimum, and maximum values were used.

3. Results

A total of 19,013 young official and student candidates (18,292 males and 721 females) between the ages of 17 years and 28 years (the age range in which sacrococcygeal pilonidal sinus disease is most frequently seen) were

Table 1 Clinical types of study patients.

Clinical type	Explanation	N
Type 1	Asymptomatic pit(s) without a history of abscess and/or drainage	924
Type 2	Acute pilonidal abscess	45
Type 3	Pit(s) within the navicular area with a abscess or previous drainage	289
Type 4	Extensive disease, with one or more sinus opening lying outside the navicular area	—
Type 5	Recurrent pilonidal sinus following any surgical treatment	—

examined. The average age of the candidates for both sexes was calculated as 20.8 ± 2.6 years (range: 17–28 years), with 19.3 ± 1.87 years (range: 17–28 years) in males, and 21.6 ± 3.4 years (range: 17–28 years) in females (Tables 2 and 3). Pilonidal sinus was detected in a total of 1258 (6.6%) people, 72 (0.37%) of whom were female and 1186 (6.23%) male candidates.

All patients were white. The mean body mass index (BMI) was slightly higher in candidates with pilonidal sinus. It was 22.8 ± 2.6 (range: 20.8–29) in the patient group and 20.2 ± 2.4 (range: 20–28) in others ($p < 0.001$). The most popular jobs were described for candidates. The most commonly reported occupations were students (70.1%), irregular workers (13.3%), teachers (11.3%), accountants (3.4%), and engineers (1.9%). The percentage of mildly hairy and hairy persons was significantly higher in the patient group than in other groups (53.1% and 40.1% compared with 42.1% and 13.9%, respectively; $p < 0.001$).

Pilonidal sinus disease was seen to be accompanied by acne conglobata and acne vulgaris in 81 (0.4%) patients and by hidradenitis in 62 (0.32%) patients. It is understood from the questionnaire that first-degree relatives of 327 (1.7%)

Table 2 Male patients' age dispersion.

Age (y)	N	%
17–18	398	33.55
19–20	568	47.89
21–22	165	13.91
23–25	35	2.95
26–28	20	1.68
Total	1186	100

Table 3 Female patients' age dispersion.

Age (y)	N	%
17–18	9	12.5
19–20	33	45.83
21–22	7	9.72
23–25	6	8.33
26–28	17	23.61
Total	72	100

candidates with sacrococcygeal pilonidal sinus and second-degree relatives of 141 (0.74%) candidates have the disease; both relatives of 101 (0.53%) candidates have sacrococcygeal pilonidal sinus. It was noted that 924 (4.85%), 45 (0.23%), and 289 (1.52%) cases of sacrococcygeal pilonidal sinus disease were asymptomatic (Type 1), acute (Type 2), and chronic (Type 3) forms, respectively.

4. Discussion

Sacrococcygeal pilonidal sinus is a disease which should be studied in detail and more frequently, due to the fact that the young population is affected by it and its treatment causes an economic burden. In this respect, we are of the opinion that estimating its prevalence, elucidating its etiopathogenesis, making it an avoidable disease and reducing recurrences are very important steps to increase the quality of life of patients.

In routine examinations in the University of Minnesota, 365 (1.1%) of 31,497 male students and 24 (0.11%) of 21,367 female students were found to have pilonidal sinus disease. Thus, the disease is seen four times more frequently in male students. The disease is more frequently seen in the Caucasians of the Middle East.⁵ The prevalence rate of pilonidal sinus disease is 26/100,000 in the USA. In England, 11,534 patients were admitted to hospital due to pilonidal sinus disease during 2000–2001; 71.85% of the patients were male with an average age of 30 years.⁶ In Turkey, epidemiological studies of the pathology, which is very frequently encountered by general surgery specialists, are not adequate. In a study in 1999, Akinci et al⁷ detected that pilonidal sinus disease manifests itself at the age of 18 years in females and 22 years in males, at a rate of 8.8%, and about 45% of these were reported to be asymptomatic.

The incidence of pilonidal sinus disease is different between races, being low among Africans and Asians, and high among white people, particularly those from the Mediterranean.^{8,9} Among Greek soldiers, 4.9% had pilonidal sinus in 1960, 25.8% in 1974, and 33% in 1992.¹⁰

In our study, we found out that approximately 4.5% of all patients were asymptomatic and had no complaints throughout their life. Seventy candidates (0.36%) were operated on to drain the pilonidal sinus. One candidate had Type 3 form. The other 58 (0.3%) patients, were considered Type 1, was recorded by this way. Aysan et al¹¹ reported that the incidence of 4.6% reported in the literature might be increased to 8.3% after adding these asymptomatic patients. Although it has no correlation with the military service, regarding the etiology of the pilonidal sinus an incidence of 4.8% for asymptomatic cases provided results, which was taken into the consideration in the literature for the acquired theory and genetic predisposition.

Pilonidal sinus are not common in the Japanese population. However, in the study conducted by Chijiwa et al¹² on Japanese soldiers, they reported a higher incidence of pilonidal sinus among the members of the cabinet compared with the soldiers in the defense force, indicating that lifestyle has a role in the manifestation of this disease. Indeed, in a recent study conducted in Turkey, it was reported that pilonidal cyst incidence increased among people sitting for long hours in front of their desks and working

with computers.¹³ As we enrolled a significantly high number of patients into our study, it should be remarked in the interpretation of the higher incidence of the pilonidal sinus compared to the previous assumptions. Although chronic fistulated and acute forms are the most common forms observed in the clinics, their incidence was approximately 2% in our patient group. The reason for this is that it is not desirable that the candidates seeking admission to military schools have complaints and diseases. Our society is aware of this situation. Therefore, persons with such complaints do not apply and do not participate in health examinations. Types 4 and 5, for the same reason, were not observed among the candidates.

Pilonidal sinus disease is more common in dark-skinned and dark-haired persons with excess body hair, which has an important role in the etiology.¹⁴ Among the patients who visited our institute and were diagnosed with a pilonidal sinus, 803 male candidates (68%) and 49 female candidates (68%) had dark hair and skin and excess body hair. Many investigators accept that pilonidal cyst disease is often accompanied by obesity.^{15,16} As obese candidates are eliminated in their first health controls, the BMI of our candidates was in the range of 20–29. In our study, BMI and body hair rate, shown to be among the risk factors of pilonidal sinus disease, were detected to be slightly higher in the patient group.

The follicular occlusion triad (acne conglobata, dissecting cellulitis, and hidradenitis), which was discovered by Goeckerman in 1940, has etiopathogenetic similarities with pilonidal sinus disease regarding etiological factors such as follicular occlusion, glandular hyperplasia, hyperactivity in pilosebaceous formation, and bacterial translocation. It is seen in the scalp, umbilicus, and axillary, perineal, and genitourinary regions often with the pilonidal cyst.¹⁷ We observed acne conglobata and acne vulgaris in the face of 21 candidates, in the perineal region of 19 candidates, and in the back and torso of 41 candidates. In addition, we detected hidradenitis in the axillary region of 23 candidates and in the sacrococcygeal area of 29 candidates. Coexistence of these three pathologic findings is called follicular occlusion triad.¹⁷ We did not find the coexistence of all these three findings in any of our candidates. We found the coexistence of pilonidal sinus disease and acne conglobata in 21 candidates and that of pilonidal cyst disease and hidradenitis in 32 patients.

Our clinical experience showed that pilonidal sinus had a higher incidence in the Turkish population than in other populations, and it was especially increased in individuals of military age. We believe that the soldiers coming from different regions of Turkey and the candidates applying for auxiliary staff positions provide a small sample group resembling the whole of Turkey.

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