

Surgery for ingrowing nail is an effective treatment choice in an urban region

Tırnak batması için cerrahi kırsal kesimde etkili bir tedavi seçeneğidir

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ABSTRACT

Objectives: The aim of this study is to evaluate the risk factors and treatment outcomes of patients with ingrowing nails in an urban region.

Methods: This descriptive prospective study was performed in a General Surgery outpatient clinic in an urban region for 6 months. The data about sex, risk factors, age, history of previous medication were obtained. Body mass index, the ratio of second toe to the length of hallux, the ratio of the diameter of hallux to width of hallux nail were calculated. The ingrowing nails with stage II and III were treated by Winograd method. The patients were followed for recurrences and complications for nearly 6 months.

Results: Total 61 patients were treated. Female to male ratio was 33/28. The man age was 24.8±11.8. The mean BMI was 28.5±5.3. Tight shoes, improper nail trimming were the leading etiological factors. Total 44 patients had a history of at least one time antibiotic usage history. Symptoms were found to be increased after pregnancy (66.7%). Lateral localization was significantly higher in patients with longer second toe than the hallux. There were 5 postoperative infections (8.2%) and only one (1.6%) recurrence.

Conclusion: Ingrowing nail is an important problem because of increased risk factors in urban region. Winograd method which is an easy method with low recurrence and high patient satisfaction can be preferred. *J Clin Exp Invest* 2014; 5 (1): 45-47

Key words: Ingrowing nail, urban region, Winograd, hallux pathology

INTRODUCTION

Onychocryptosis or ingrowing toe nail is a result of ingrowing of the nail to the nail matrix. Inflammation related symptoms like pain, foul-smelling, swelling, erythema and granulation tissue formation are often result in functional consequences and impairs the quality of life [1]. Although the true incidence not known, it's more seen in population earning less than \$10,000 per year [2]. A variety of treatment options

ÖZET

Amaç: Bu çalışmanın amacı; tırnak batması şikayeti olan kırsal kesimdeki hastalarda risk faktörlerinin ve tedavi sonuçlarının değerlendirilmesidir.

Yöntemler: Bu tanımlayıcı prospektif çalışma 6 ay süreyle kırsal kesimde bulunan bir Genel Cerrahi polikliniğinde gerçekleştirilmiştir. Hastaların cinsiyeti, tırnak batması risk faktörleri, yaşı ve daha önceki tedavileri hakkında bilgi toplanmıştır. Vücut kitle indeksi, ikinci ayak parmağının ayak başparmağına oranı, ayak baş parmağının çapının tırnak genişliğine oranı hesaplanmıştır. Evre II ve III tırnak batması olguları Winograd yöntemi ile tedavi edilmiştir. Hastalar rekürens ve komplikasyonlar açısından yaklaşık 6 ay süreyle takip edilmiştir.

Bulgular: Toplam 61 hasta tedavi edilmiştir. Kadın erkek oranı 33/28'dir. Ortalama yaş 24,8±11,8 yıl idi. Ortalama vücut kitle indeksi 28,5±5,3. Dar ayakkabı giyme, uygun-suz tırnak kesimi en önemli sebepler arasındadır. Toplam 44 hastada en az 1 kez antibiyotik tedavi öyküsü bulunmaktadır. Semptomlar gebelik sonrası artış saptanmıştır (%66,7). Lateral yerleşim ikinci parmağın uzun olduğu olgularda belirgindir. Postoperatif 5 (%8,2) hastada enfeksiyon 1 (%1,6) hastada rekürens izlenmiştir.

Sonuç: Tırnak batması kırsal kesimde artmış risk faktörleri nedeniyle önemli bir problemdir. Winograd yöntemi düşük rekürens ve yüksek hasta başarısı ile uygulaması kolay tercih edilebilir bir yöntemdir.

Anahtar kelimeler: Tırnak batması, kırsal kesim, Winograd, halluks patolojileri

exist, ranging from advice on how to keep pressure off the area to removal of the entire nail with ablation of nail bed to ensure that nail plate never grows back. However recurrence is the main problem of the treatment.

Various etiologies have been described. Improper nail trimming; wider nail folds and thinner, flatter nails; repetitive trauma (running, kicking); poor foot hygiene; lower extremity edema; longer second toe

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than ipsilateral hallux; tight fitting shoes are the mentioned risk factors for ingrowing nails [3]. According to the signs and symptoms, in growing nails are classified into three stages by Heifetz staging system [4].

People living urban region with low socioeconomically status cannot reach the medical support all the time. For this reason conservative treatments with more recurrences of ingrowing nail which limits the physical activities is a great problem for them. Also having the risk factors made them more susceptible to ingrowing nails. The aim of this study is to evaluate the risk factors and treatment results of ingrowing nails of patients living in urban region.

METHODS

This is a descriptive prospective study performed in a general surgery outpatient clinic in an urban region. The study was approved by the local ethical committee. The population in this region is composed of people with low socioeconomic status and working in agriculture or industry. The study was performed in 2012 between January and July. Total 61 patients with infection as a result of ingrowing toe nail were evaluated. The Heifetz staging was used in the evaluation [4]. Stage I, indicates swelling and erythema at the nail fold, Stage II indicates acute and active infection, Stage III indicates chronic inflammation with granulation tissue neighboring the nail folder. Seven patients were evaluated because of bilateral in growing nail. The data about age, gender, weight, height and body mass index (BMI) of the patients were obtained. The history of wearing of tight fitting shoes, improper nail trimming, history of pregnancy, repetitive trauma like running, football playing; if exist previous treatments were asked. The location and side of the ingrowing toenails were determined. The length of hallux and the second toe, the diameter of hallux, and the width of the hallux nail were measured. The ratio of the length of second toe to the length of hallux (TH) and the ratio of diameter of hallux to width of toe nail (HN) were calculated.

All surgical interventions were performed under digital anesthesia in outpatient room. A finger tourniquet was applied. Winograd procedure which is known as partial matricectomy was performed without any antibiotic prophylaxis. An 4-5 mm oblique incision was performed to the proximal nail border. The nail was get out of the nail bed and excise by a scissor (Figure I). Nail bed curetted by scalpel and all hypertrophic tissues excised. The nail matrix is approximated by 3/0 propylene sutures (Figure II). Compression bandage was applied on the toe. Following wound care for two days, the sutures are taken out on the 7th day. The patient were back to work on the 5th day. The patients were evaluated after 6

months period for recurrence. Informed consent form was signed by all the patients.

Data are presented as means \pm standard deviation. A computer program (SPSS version 13.00; SPSS Inc. Chicago, IL) was used for statistical analysis. The difference between risk factors according to gender, localization and side of ingrowing nails were determined by one-way analysis of variance followed by a post hoc Turkey's test. Other analysis was performed by student t-test. A p value less than 0.05 was considered to indicate significance.

RESULTS

During 6 months period, total 61 patients came to general surgery outpatient clinic because of ingrowing nail with symptoms of pain, swelling, discharge and erythema. None of the patients had diabetes mellitus, peripheral vascular disease, or a connective tissue disease. There were 33 women (54.1%) and 28 men (45.9%). The mean age was 24.8 ± 11.8 (range 15-67). The incidences of left, right and bilateral hallux in growing nails were 32 (52.5%), 22 (36.1%) and 7 (11.5%) respectively. Occurrence on lateral side ($n=43, 70.5\%$) was significantly higher than the occurrence on medial side ($n=18, 29.5\%$) ($p=0.001$). All of the cases (91.8%) except 5 patients (8.2%) (stage III), were classified as stage II. History of tight fitting shoes were observed in 27 patients (44.4%) most of whom were females (66.6%). History of improper nail trimming was seen in 20 patients (32.8%) half of whom were females (50%). History of repetitive trauma was seen in 4 cases (6.6%). Among 33 female patients, in growing nail problems had been worsened after pregnancy in 22 cases (66.7%). The mean BMI was calculated 28.53 ± 5.3 (15-43.9). There were no significant difference between the mean BMI according to the sex. The mean ratio TH and HN was 1.17 ± 0.17 (range 0.88-1.5) and 4.49 ± 0.5 (range 2.8-6), respectively. The number of patients with the second toe length is equal to or greater than the ipsilateral hallux length is 54 (88.5%). Total 44 patients (72.1%) had a history of antibiotic usage at least one time, at most 4 times, before. In the postoperative period 5 patients (8.2%) had wound infection and treated with oral antibiotics. Only one recurrence (1.6%) was seen on the 6th operative month in 23 years old women who was treated with re-excision. One patient was suffered from onikomycosis on the 6th postoperative month and treated with local and oral antifungal treatment. History of tight fitting shoes, improper nail trimming and repetitive trauma didn't show any differences in side and localization of ingrowing nails, and sex. However the TH ratio of laterally located ingrown nails (0.99) was significantly higher the TH ratio of medially lo-

cated ones (1.2) ($p=0.001$). The mean follow up of the patients were 7.2 ± 2.3 months.

DISCUSSION

Toe nail in growing is a common disorder that effects the daily life. The causative factors are obesity, tight fitting shoes, improper nail trimming, wider nail folds and thinner, flatter nail, longer second toe, poor foot hygiene [1,5]. In our study, patients with ingrowing nails have high BMI (28.53kg/m^2). Overweight person accentuate pressures on the medial hallucal nail fold in particular. Pedal hyperhidrosis maceration with increased pressure due to obesity make the obese people more vulnerable to toe in growing. Increased incidence of obesity in urban region might affect the high incidence of ingrowing nail. Tight fitting shoes were the blamed etiologies in several studies [1]. Tight shoes exert high pressure on the nail borders. This effect is increasing when the second toe length is equal to or greater than the ipsilateral hallux length. In our study, 88.5% of the patients with the second toe length is equal to or greater than the ipsilateral hallux length. Pressure effect of long second toe over the lateral side of hallux is increasing the risk of lateral nail in growing. In our study, lateral sided nail incidence is 70.5%. All these factors with long time shoe wearing in poor hygiene environment like agriculture and industry in urban region might aggravate the process.

Wider nail folds and thinner, flatter nails were blamed for the ingrowing nails, however remained unproved [6]. In the study of Pearson et al., curve of nails were measured. Similarly in our study, we measured the ratio of the diameter of hallux to the width of toe nail. The mean ratio was found 4.49 ± 0.5 (range 2.8-6). We didn't found any study that had searched this ratio before. Narrow nail might be a factor for ingrowing nails. However this study has limitations in which there's lack of control group in order to compare the TH and HN. Future studies are needed to show this relationship. Improper nail trimming is an another factor which constituted 32.8% of the patients. In our study, it was observed that patients not only cut the nail in improper way, but also elevated the nail borders or put foreign substances under nail in aseptic conditions. Low attainability to surgical clinics might lead the patients to try to resolve the problems by themselves in urban region.

Young adults and adolescence were predominant in our study. As mentioned before, perspiration of feet, which is mostly seen in adults, lead soften skin and nails and soft nails results in easy splitting [3]. Long time shoe wearing and working in poor hygiene with these features might affect the increased incidence of ingrowing nail in young adults. In our

study, the females were effected slightly more than the males like the study of Uruç et al. [7]. This is probably due to the tight shoes. Although not mentioned in the literature, the pregnancy is a risk factor for ingrowing nails. Among women, 22 patients (66.7%) who had only swelling (stage I) before pregnancy, had worsened symptoms after pregnancy.

It was observed in our study that the previous antibiotic usage is very high for stage II and III. Low attainability to surgical clinics had led more conservative treatment for stage II and III. In the practice of general practitioners for ingrowing nails, the antibiotic treatment with warm soapy water application were generally preferred [8]. However increased antibiotic usage and high recurrence rates are important problems for ingrowing nails. For this reason, surgery is a choice of treatment whether in stage II.

Among several surgical options, we performed partial matricectomy without phenolization and antibiotic usage. As the treatment is a kind of drainage; and wound dressing is given, the infection rate remained 8.2% in our study. In the study of Boss et al. Antibiotic treatment didn't reduced the signs of the infections and the recurrence. On the other hand phenolization is a preferred method in some centers but have a risk of toxicity to physician and risk of infection risk because of tissue damage [9].

As a result, Winograd method can be easily learned and performed in a short time with low recurrence rates, high patient satisfaction, and good cosmetic results; without special instrument. It can be preferred in urban areas in which the incidence of ingrowing nail is increasing and in which the attainability of patients are limited.

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