

УДК 616.577-002.36

COMPLICATED ONYCHOMYCOSIS AND INGROWN NAIL: COMPLEX TREATMENT (CASE SERIES)

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The aim of research is optimal sequence of surgical treatment, local and system therapy after moving away of the staggered nails at destructive onychomycosis, complicated by the secondary ingrown nail for some patients with the complicated mycotic defeat of nails.

Materials and methods. Over a five-year period 325 cases of incarnated onychomycosis, 182 cases late relapses of onychocryptosis (after previous surgeries at other clinics) were performed. Patients with such combined pathology got five-day system «pulses» of 400 mg/day itraconazole therapy at a simultaneous use of hepatoprotectors and correction of comorbid pathology.

Results. Three variants of dermatophytoma are differentiated: front center – with up to 25% eroded nail – 65 cases, subtotal – from 25 to 70% (without capturing the growth plate) – 138 cases, total – from 70 to 90% (with affected growth plate of the nail) – other cases. Surgical treatment provided in addition to standard decompression stage (complete removal of the nail plate), cutting pathologic eponychial tissues, hypergranulations and dermatophytoma, contained antirecurrent component (partial marginal matrixectomy in the ingrowth area) to prevent from repeated ingrowth.

Conclusions. In all cases of mycotic onychocryptosis (secondary ingrown toenail) underwent a comprehensive treatment of comorbid pathology, system therapy of itraconazole to operative treatment (basic onychial defeats sanitation) and in a postoperative period, sanitation of other nails for prevention of mycotic reinfection was carried out by ciclopirox & amorolfine nail lacquer.

Key words: destructive incarnated onychomycosis, ingrown nail, antimycotic therapy, surgical removal.

УСКЛАДНЕНИЙ ОНИХОМИКОЗ ТА ВРОСТАННЯ НІГТЯ: КОМПЛЕКСНЕ ЛІКУВАННЯ (АНАЛІЗ КЛІНІЧНИХ СПОСТЕРЕЖЕНЬ)

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Мета дослідження – створити оптимальну послідовність хірургічного лікування, локальної та системної терапії після оніхектомії при деструктивному оніхомікозі з вторинним вросанням нігтів у пацієнтів з ускладненим мікотичним ураженням.

Матеріали і методи. Протягом п'ятирічного періоду було діагностовано 325 випадків інкарнованого оніхомікозу, з них 182 випадки – пізні рецидиви оніхокриптозу (після попередніх операцій в інших клініках). Пацієнти з такою комбінованою патологією отримали п'ятиденні системних «пульсів» терапії ітраконазолом 400 мг на добу за одночасного застосування гепатопротекторів і корекції коморбідної патології.

Результати. Розрізняли три варіанти дерматофітоми: передній центральний – з деструкцією нігтя та ураженням до 25% ложа – 65 випадків, поширений (субтотальний) із площею ураження від 25 до 70% (без узурування росткової зони нігтя) – 138 випадків, тотальний – 70–90% площі ураження (з узуруванням росткової зони нігтя) – інші випадки. Хірургічне лікування як доповнення до стандартної стадії декомпресії (повного видалення або резекції нігтьової пластини), видалення патологічно змінених епонхіхеальних тканин, гіпергрануляцій і дерматофітоми, містило антирецидивний компонент (часткову маргінальну матриксектомію в ділянці інволюції та вросання), щоб запобігти повторному реоніхокриптозу.

Висновки. У всіх випадках мікотичного оніхокриптозу (вторинного врослого нігтя) необхідно застосовувати комплексну терапію коморбідної патології, системну терапію ітраконазолом до основного оперативного лікування (видалення ділянок ураження) і в післяопераційному періоді; інші нігті для профілактики мікотичної реінфекції санувати циклопірокс- та аморфоліновим лаком для нігтів.

Ключові слова: деструктивний інкарнований оніхомікоз, врослий ніготь, антимікотична терапія, хірургічне видалення

Conservative and orthopedic treatments of incarnated surgical nail pathology with ingrown nail are not very effective while Dupuytren's method, Emmert-Schmiden surgeries etc. are very traumatic [18-22], disfigure nail bone, distort anatomic and functional unity of a finger and in 2-20% cases (depending on absence or presence of onychocryptosis and fungal agents) cause a relapse [1]. As is known, among the nosological forms of destructive purulent-necrotic chronic and combined pathology of the distal phalanges of the toes, the ingrown nail constitutes a significant number of uncomplicated and complicated cases [2]. Frequent variants of nail lesions are ingrowth, i.e., onychocryptosis (incarnation of the nail) and destructive onychomycosis, which account for more than half of all calls for medical care for onychial pathology [4, 7]. The results of complex treatment of the patients on nail trichophytosis, associated with ingrown toenail [3, 7-9, 18]; submitted of depending on a nail plate and eponychial changes are presented in the publication.

The aim of research is optimal sequence of surgical treatment, local and system therapy after removing of the staggered nails at destructive onychomycosis, complicated by the secondary ingrown nail for some patients with the complicated mycotic defeat of nails.

Materials and methods. Over a five-year period (2011-2016) 325 cases of incarnated onychomycosis (32-85 years old patients) were performed. In 182 patients late relapses of onychocryptosis were confirmed after previous surgeries at other clinics. Removal

of the affected nails was performed in patients with mycotic lesions (local and systemic fungicide therapies were used). Investigation of the morphogenesis of destructive aspect of the mycotic lesions was carried out. The analysis justifies the feasibility of establishing predictive relationships between clinical variants of chronic purulent necrotic infections and combined comorbidity. Removal of the affected nails was performed in patients with mycotic lesions (local and systemic fungicide therapies were used). System therapy of itraconazole [11, 16] to operative treatment (basic onychial defeats sanitation) and in a postoperative period was carried out.

Results and discussion. Three variants of dermatophytoma are differentiated: front center – with up to 25% eroded nail – 65 cases, subtotal – from 25 to 70% (without capturing the growth plate) – 138 cases, total – from 70 to 90% (with affected growth plate of the nail) – other cases. In all cases, dermatophytoma (onychomatricoma) affected distal and central part of the nail bed [14, 15]. Conglomerate of nail plate and subungual hyperkeratosis and trichophytosis calcinated completely, forming onychogryphosis [6] with deformation and forming secondary recurrent ingrown nail [9, 17]. In patients with polyonychomycosis, especially in severe destructive forms of subungual hyperkeratosis [7, 10, 11], large deterioration of microcirculation was noted. Patients with such combined pathology got 5 five-day system «pulses» of 400 mg/day itraconazole therapy at a simultaneous use of hepatoprotectors and correction of other

comorbid pathology [3, 4, 7, 22]. Conservative treatment was recommended only at early stages of ingrowth was noted. Provided adequate surgical treatment, in addition to standard decompression stage (complete removal of the nail plate), contained antirecurrent component to prevent from repeated ingrowth, cutting pathologic eponychial tissues, hypergranulations; removing nail plate (fig. 1) with partial marginal matrixectomy in the ingrowth area [17-19].

With mycotical changes, complicated by bilateral ingrowing of the nail, the nail plate was cut through its mobilization at the proximal end after the bilateral eponycheotomy was performed with the formation of a retronycheal flap and «exfoliation» bluntly from the side of the growth zone [4-6].



Fig. 1. Trichophytil incarnated onychomycosis. Subnail hyperkeratosis, distal subnail dermatophytoma, hypergranulations, destruction of the central part of the nail bed, recurrent ingrown nail. Nail plate removal. Intraoperation photo. 47 years old man. Clinical case.

The applied types of operative treatment of surgical nail pathology [1-4, 13] may be divided into five main groups: 1 – Emmert-Schmiden type surgeries (marginal excision of nail plate and eponychia with removal of the growing part via partial matrixectomy); 2 – Dupuytren's type surgeries (onycheotomy – complete removal of nail plate); 3 – Bartlett type surgeries (local tissue plastic reconstruction); 4 – marginal resection of marginal section of nail plate; 5 – Meleshevych surgery; 6 – our modifications with previous block-type eponycheotomy (fig 2).



Fig. 2. Incarnated onychomycosis. Recurrent ingrown nail with spicula, hypergranulations. Previous block-type eponycheotomy. Intraoperation photo. 36 years old woman. Clinical case.

Non-invasive methods of nail excision and marginal nail resection were preferred in patients with diabetes mellitus. Analysis of subonychia scraping allowed stating the prevalence of red trichophytia, where in 74% cases it was associated with mold, in 26% cases it was associated with yeast fungi; in 31% cases - with the bacterial flora. The left pathologically altered sections of the nail plates should be treated with antifungal ciclopirox 8% nail lacquer / amorolfine 5% solution nail lacquer [8, 11, 12, 22]. The presence of concomitant mycotic lesions of more than two nail plates is an indication for systemic itraconazole antimycotic therapy, after the pathogen sensitivity definition [3, 5, 9].

Removal of affected nails for patients with polyonychomycosis and partial matrixectomy was performed through successive stages at add-back of certain systemic «pulses» with itraconazole [16, 20]. To destructive and complicated forms of onychomycosis associated with ingrown nail it was attributed subungual hyperkeratosis with onycholysis and the formation of subungual panaritium and purulent mycotic paronychia [4, 6, 7, 22]. The disease was characterized by a mild pain syndrome. Pathological changes in the nail plate were in nail hypertrophy and deformation, pathological surface stratifications on the nail bed (brown with decay) and forming of multiple pyogenic bacterial-mycotic foci with abscess formation (in the form of a «honeycomb»). The main

pathological structure of destructive onychomycosis is subungual hyperkeratosis, which is characterized by the presence of abnormal excess «keratinization» of the nail, the nail plate is thickened, deformed, grows over the brownish pathological mycotic hyperkeratoid fragile layers on the nail bed. In the zone of subungual hyperkeratosis along the distal edge of the nail, visualize the least rigid, softened area, scrape it with a Volkmann's spoon, removing the subungual hyperkeratosis, dermatophytoma (onychomatricoma), separating and lifting the central part of the nail. In the formed channel have insert a clamp, which fixes the central part of the nail plate; removed in the proximal direction only the central part of the nail, most affected by mycosis. The final fragments and stratifications of the nail plate leaving fixed in eponycheal tissues. They are mobilized with a sharp scalpel blade, fixed it with a «Mosquito» type clamp and then conduct their block-like cuttings along with pathologically altered eponycheal tissues [1, 4, 21]. Visualize the naked nail bed with the remains of dermatophytic hyperkeratosis in the distal part. The latter are additionally sanified with a Volkmann's spoon, removing pathological elements by scraping with partial matrixectomy [2, 8, 13].

Investigation of the morphogenesis of destructive aspect of the mycotic lesions was done. With mycotic onychogryphosis, complicated by bilateral ingrowing of the nail, the nail plate was cut through its mobilization at the proximal end after the bilateral eponychectomy was performed with the formation of a retronycheal flap and «exfoliation» bluntly from the side of the growth zone [13]. A linear incision was performed through a retronycheal platen [4], which continued semilunar in the distal eponychium, carving the latter totally to visualize the edge of the nail. In the case of onychogryphosis, complicated by compression of eponycheal tissues and ingrown nail [14, 19, 22], the lateral separation of the nail plate by the raspatorium from the side of «ingrowing» into the eponycheal tissues after excision of the eponychium was performed with expanded lateral access. A channel was formed by the raspator, bluntly by successive movements the onychogryphosis changed nail plate in a contralateral direction opposite to the side of the ingrowth was separated. The nail plate was fixed with a clamp and removed (fig. 3).



Fig. 3. Trichophytil polyonychomycosis, incarnated onychogryphosis, subungual hyperkeratosis, the big dermatophytoma, hypergranulations, destruction of the central part of the nail bed and local necroses of onychomatricoma. Nail plate was separated in a contralateral direction opposite to the side of the ingrowth, removed nails. Intraoperation photo. 48 years old man. Clinical case.

Arguing that the removal of the nail plate with antifungal treatment provides positive dynamics of regenerative type cytologic picture and shorter healing onychectomy wounds 18 – 27 days to 12-25 days, with good early and long-term results. Type of transaction cytograms onychectomy wounds in the study group on the 10th day of the post-operative period named as the regenerative-inflammatory were 24.81%, 75.19% in the regenerative ($p=0.031$). In these embodiments, the control group was respectively 53.12% and 46,88%.

Relapse causes after Meleshevych, Emmert-Schmidten, Bartlett surgeries were technical faults of surgical tools, intraoperative nail bed trauma, faults of post-operative anti-relapse treatments, surgical area trauma, wearing tight shoes, non-compliance with doctor's recommendations as to correction of comorbid pathology, onychomycosis.

Conclusions

1. The usage of classical methods of surgical treatment of onychopathology in the presence of ingrown nails is determined by the principle that provides indications for the removal of affected nails with more than half of the affected onychal surface, which makes it impossible to perform resection.

2. In all cases of mycotic onychocryptosis (secondary ingrown toenail) underwent a comprehensive treatment of comorbid pathology, system therapy of itraconazole to operative treatment (basic onychial defeats sanation) and in a postoperative period was done, some patients with combined pathology got system «pulses» of 400 mg/day itraconazole therapy, sanation of other nails for prevention of mycotic reinfection was carried out by ciclopirox & amorolfine nail lacquer.
3. For surgical treatment of ingrown nail, it is advisable to use transeponychial access to the edge of the nail plate, the effectiveness of which is determined by total elimination of the altered eponychia from ingrowth, a clear visualization of the growth zone and matrix to perform coagulation partial matrixectomy, the possibility of expanding access for revision subonycheal structures.

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Стаття надійшла 27.10.17

Після допрацювання 10.11.17

Підписана до друку 20.12.17