ONYCHOMYCOSIS CAUSED BY *PHIALOPHORA JEANSELMEI*

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PRELIMINARY

Onychomycosis is common nail disorders caused by dermatophytes , yeasts and non-dermatophyte fungi . [1] In 90% of cases , onychomycosis caused by anthropophilic dermatophytes . [2] Infection mold could about nail bed , plate as well as nail matrix . Onychomycosis is enough disease _ often found and account for up to 50% of nail abnormalities . [1]

Prevalence onychomycosis in tropical Asian countries by 8.1%, whereas in Indonesia found number sufferer onychomycosis as much as 3.5-4.7%. [3] Reason onychomycosis most common is mold group dermatophytes (65%), followed with species candida (21%) and molds (13%). [2] Based on patient register data at the polyclinic Skin and Genital Mycology Division of Sanglah Central General Hospital During January 2020 to October 2021 there were 27 cases onychomycosis . From the data above , obtained 5 cases with species candidate as causative etiology . [4] Late _ this there is trend enhancement prevalence onychomycosis caused by species _ candida , especially on the fingernails . [5] things _ linked with work and related activities _ with deep water exposure long time .

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Phialophora jeanselmei first isolated in 1928 by Jeanselme _ from case https://en-m-wikipedia-org.translate.goog/wiki/Eumycetoma?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=scmycetoma https://en-m-wikipedia-org.translate.goog/wiki/Eumycetoma?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=sc black on the legs, based on the characteristics morphology mushrooms , because that , at first classified as *Torula jeanselmei* because shape like yeast when mold the grow . Then reclassified by McGinnis and on 1977 as _ *Phialophora jeanselmei* after study more carry on about https://en-m-wikipedia-org.translate.goog/wiki/Conidium?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=scconidiogenes is https://en-m-wikipedia-org.translate.goog/wiki/Conidium?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=sc. *Phialophora jeanselmei* generally found in soil , plants , water, and can also be isolated from rotting wood _ because mold this character https://en-m-wikipedia-org.translate.goog/wiki/Saprophyte?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=scsaprotroph https://en-m-wikipedia-org.translate.goog/wiki/Saprophyte?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=sc. Species this own happening all over the world but especially recorded in Asia and more common in the area tropical and subtropical . Infection *Phialophora jeanselmei* generally often cause inflammation of the skin and tissues subcutaneous skin , cause *cyst phaeomycotic* , *chromoblastomycosis* . [7]

Finding clinical onychomycosis usually no specific and many nail abnormalities showing description same dystrophy _ such as trauma to nails, psoriasis and even a number of cancer skin . For avoid anti - fungal therapy _ needed , then the diagnosis of onychomycosis should confirmed before start gift therapy .

Following reported a case onychomycosis DLSO type (*distal and lateral subungual onychomycosis*) caused by *Phialophora jeanselmei* which rarely infects superficial tissues . Purpose of reporting case this is for add understanding about diagnosis, examination support that can done , as well governance onychomycosis DLSO type caused by *Phialophora jeanselmei* .

CASE

A patient male , 47 years old , Foreign Citizen, with number record medical 21055557. Patient reference from Jimbaran Hospital with paronychia differential diagnosis Nail candidosis + infection Secondary come to Polyclinic skin and sex subdivision mycology at Sanglah Hospital Denpasar on October 11, 2021 with complaint redness and pain in the index finger finger hand right .

From the anamnesis obtained redness and pain in the index finger finger hand right feel first time since 1 month ago . _ Originally complaint painful appears at _ currently surfing hand patient bump with a rock , on the index nail finger hands are also felt swelling , pus and increase redness the longer the redness the more widen accompanied swollen and festering . Pain is felt more and more heavy accompanied fever and itching so that patient treatment at the clinic since 2 weeks ago , given _ drug drink and ointment however moment this redness , swelling nor pus still felt .

From history treatment moment to doctor general in clinic given antibiotics for 3 days , ointment mixture antibiotics and steroids (patient forget name drug that), because no there is changes on October 12, 2021 patient treatment to Jimbaran Hospital and be referred to Sanglah Hospital , smearing drug rub other as oil or Herbal ingredients on nails are undeniable . Allergy history medicine and food refuted . Consumption history drug period long refuted . From history disease first , no obtained complaint similar before . Complaint this new first felt by the patient . Disease history skin such as lichen planus, psoriasis, atopic dermatitis refuted . Disease history systemic such as diabetes mellitus , disorders kidney , disorders liver , immunosuppression (HIV) was denied by the patient . Family history of the same disease refuted . Patient is Spanish citizen domiciled in North Kuta, Denpasar, Bali since not enough over 5 years and working as a DHA investor (activities many outside building), rest patient classified less .

On examination physique obtained state general ok , awareness *compost mentis* , nutrition normal impression . On *the visual analogue scale of* pain obtained score 2/10. Pressure blood is 110/70 mm Hg. Frequency breathing 20x/ min , pulse pulse 80x/ min , temperature axillary 36.5 ^{o} C. In generalized status obtained head normocephalic , on examination second eye no looks anemia and jaundice . Inspection ears , nose , throat no found abnormalities and on the neck no found enlargement gland sap clear . Inspection thorax , on the heart obtained voice heart (S1 and S2) single , regular, not there is *murmurs* and *gallops* . In the lungs , sound breath vesicular , no found existence *rhonki* nor *wheezing* . On abdominal examination , bowel sounds normal limit , no found distension , no there is enlargement liver and spleen. Extremities up and down palpable warm , no edema was found in both limbs bottom .

On examination dermatological , at *the location of the periungual digiti II manus dextra* obtained fluorescence appear existence *macula* erythema , solitary , borderline firm , shape geography size 0.8x1cm, localized , edema (+), pus (+). On examination palpation of the palpable nail area pain . (**Figure 1a,1b**)

1 1

Figure 1a-b. In *digiti II manus dextra* appear dyschromia colored reddish . In periungual obtained presence of patches of erythema , edema and pus.

Evaluation score *Onychomycosis Severity Index* (OSI) in the second *digit of the right manus* is large involved surface _ 0% with score 0, then multiplied with involvement nail matrix part proximal < 1/4 with score 1, however no obtained subungual hyperkeratosis >2mm with score 0. So the total OSI score on digiti I manus dextra is 0, which indicates indication recover .

From history and examination physical , the patient is differentially diagnosed with Paranokia *et causa* Bacteria and differential diagnosis of onychomycosis DLSO type . Patient done inspection support in the form of inspection *potassium hydroxide* (KOH) 20%, gram examination , culture of nail scrapings, blood sugar time and inspection chemical blood . From result 20% KOH examination was obtained description spore clustered (**Figure 2**). On gram examination no found leukocytes , gram positive cocci results negative and gram negative rods results negative . From result blood sugar check time and chemistry blood in normal limit as following GDS 140 mg/dl (100-200); SGOT 10.0 U/L (5.0-34.0); SGPT 5.20 U/L (11-34); BUN 11.60 mg/dl (8-23); Creatinine 0.9 mg/dL (0.72-1.25); eLFG 80.69 (>=90) .

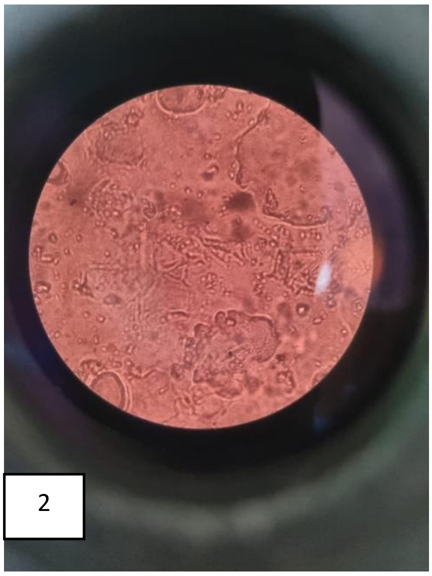

Figure 2. The spores are seen in clusters

In patients moment this given management Fluconazole 300 milligram tablets per week for 2 weeks intraoral, Ciproflocasacin 500 milligrams every 12 hours intraoral for 7 days Paracetamol 1000 milligram tablets every 8 hours intraorally Miconazole 2 % cream every 12 hours on finger lesions . Patient given counseling and information about possibility illness suffered _ as well as plan therapy that will given after obtained fungal culture results . other than that patients are also educated for reduce contact with water, using sarong hand moment activity contact , take care fingers hand permanent clean and dry as well as 2 week control after .

FURTHER OBSERVATIONS I (Day 14 , October 25, 2021)

On history, the patient say nails changed color Becomes black since 5 days after redness around finger fading , history of recent trauma to the nail is denied , pain is lost raised , swollen and red already reduce from visit before . Itching and fever refuted . Complaint after consume drug refuted .

On examination dermatologist , on site *periungual* and *purple digiti II manus dextra* obtained fluorescence appear presence of erythematous , solitary , borderline patches firm , shape geography size 0.7x0.9 cm, localized , edema (-), pus (-), dyschromia green blackish . On examination palpate the nail area palpable pain . (**Figure 3**) . Evaluation score *Onychomycosis Severity Index* (OSI) on *digiti II digiti manus dextra* is large involved surface _ 15% with score 2, then multiplied with involvement nail matrix part proximal < 1/4 with score 1, however no obtained subungual hyperkeratosis >2mm with score 0. So the total OSI score on digiti I manus dextra is 2, which indicates onychomycosis light .

Figure 3. On *subungual* be found makula erythema and thin scurvy . On the periungual, erythema and edema already decreased

From the examination of fungal culture on *Saboroud's Dextrose Agar (SDA)* media after 7 days planted , on October 19, 2021 appears existence growth . by macroscopic on part front obtained existence growth colony colored black with surface slippery shaped as round short , shiny *like-yeast* colored green old until blackish (**Fig. 4a**). by microscopic A short hyphae of moniliform, tube-shaped, elongated and branched was found, the organism was identified as Phialophora *jeanselmei* . (**Figure 4b**).

Figure 4a. Macroscopic examination of fungal culture, colonies appear colored black with surface slippery . **Figure 4b.** Microscopically, the hyphae were moniliform, tube-shaped, elongated and branched, image of *Phialophora jeanselmei* .

Based on history, examination physical and examination support , working diagnosis in patients this is Onychomycosis type DLSO and Paronychia *et causa* bacteria . In patients moment this given management Fluconazole 300 milligram tablets per week for 2 weeks intraorally, Paracetamol 1000 milligram tablets every 8 hours intraorally, Miconazole 2% cream every 12 hours on finger lesions . Patient given counseling and information about disease , therapy given , possibility _ effect aside , the importance obedience treatment and duration long enough therapy for _ disease this . other than that patients are also educated for reduce contact with water, using sarong hand moment gardening , caring fingers hand permanent clean and dry as well as 4 week control after .

(Day 90, January 12, 2022)

Patient come for control . Complaint Pain , itching , swelling in the nail area and surrounding areas are denied . New lesions no there is . Patient already guard condition hand so as not damp . None _ complaint after consume medicine .

On examination physique obtained state general patient good with awareness mentis compost . Generalist status check obtained in normal limit .

On examination dermatologist , on site *purple digiti II manus dextra* obtained fluorescence appear existence dyschromia gray . On examination palpate the nail area palpable pain . (**Figure 5**) . Evaluation total OSI score on *digiti I manus dextra* is 1, which indicates onychomycosis light . On KOH examination 20% of the nails are not found element mushrooms .

Figure 5. On the tip of the nail there is dyschromia colored gray

Working diagnosis in patients is *follow up* Onychomycosis DLSO type and Paronychia *et causa* Bacteria improve . In patients moment this given management Fluconazole 300 milligram tablet 1 time intraorally, Miconazole 2% cream every 12 hours on finger lesions for 7 days . Patient given counseling and information about disease , result examination , duration treatment , how use medicine . Patients are also educated for guard hands to stay clean , avoid hand prolonged contact with water, avoid use goods private (*nail clipper*) together with other people. Patient planned control back 1 month again for evaluate effectiveness therapy .

DISCUSSION

Onychomycosis is the most common caused by dermatophytes , the most common isolates is *Trichophyton rubrum. Non-dermatophyte molds* and *yeasts* are also increasingly often found as pathogens in nail infections . More toenails often caught than fingernails _ with ratio around 4:1. Garg et al in study them in 90 patients with onychomycosis from Central India, reported *Trichophyton rubrum* (23.07%) as agent the most common etiology , followed by *T. verrucosum* (2.22%) and *Epidermophyton floccosum* (1.11%).

Exophiala jeanselmei is Incoming *dematiaceous* fungus in *Phaeohyphomycosis* or group infection mold variety caused by fungi _ *dematiacous* related with disease cutaneous , subcutaneous and invasive . *Exophiala jeanselmei* who also has synonym that is *Phialophora jeanselmei* , indeed reason Rare onychomycosis _ reported . Based on literature until moment this new reported 2 reports case onychomycosis caused by *Exophiala _ jeanselmei .* Garsaud et al , first reported case onychomycosis caused by *Exophiala _ jeanselmei* in 2002 in men 60 years old . Patient ish recipient renal transplant and underwent therapy with prednisolone and azathioprine. Second nail Mother his finger and two thumb her feet has caught for 4 years . Another case of a woman 39 years old reported by Oudaina et al in 2009. The big toe nail caught During two year . *E. jeanselmei* isolated from the culture of taking sample repeated of pathological nails . Isolate the resistant to fluconazole . Treatment given During one year , and not there is repair . There is a number of report about isolation once in a while *E. jeanselmei* in Indian literature . *E. jeanselmei* survive and thrive breed more good in a relative area _ dry with season rain short .

by common , onychomycosis more often attack type sex man because of existence more nail surface wider nail plate and width thick . risk factors main onychomycosis is existence defect immunity by local to nails and by systemic . Disturbance immunity local to the nail unit can caused because the presence of repeated trauma to the nail, the presence of history deep water exposure period a long time, as well ingredients irritant as soap , detergent as well as chemicals . [6] Related work _ with long exposure to water such as craftsman gardeners , farmers , fishermen , athletes swimming as well as assistant House ladder have more risk _ tall with onychomycosis . [7] Influential factors other is climate topical or subtropics and contacts with animals also become risk factors . [8] In the case of this obtained patient manifold sex male and have history surf .

Healthy nails grow normally in various shape depending on the shape matrix . The average growth rate is by 1/10 inch per month . A number of things that affect nail growth , among others, age (nail growth slows down) along increase age), season (nails grow more fast in season hot), nail position (middle nail grow the fastest , while mother's nails finger slowest growing) . mostly _ study concerning nails show rate growth could varied between 1.9 and 4.4 mm per month). The average growth is around 3 mm per month or 0.1 mm per day . Toenails estimated grow about 1 mm per month . [9]

Population study about nail growth has give findings general that there is a little change related seasons and nails not affected by disease attendant light . height or heavy individual no make significant difference . _ Gender _ make difference small in adulthood start , with Men own significant linear nail growth ($P < 0.001$) more fast until 19 years old . This thing Keep going occur with level reduced significance _ by gradually , until 69 years old . Besides , it says that children under 14 years old own more growth _ fast than adults . _ Pregnancy could Upgrade rate nail growth and nutrition bad could slow it down . Influence temperature not yet confirmed clearly . [10]

at the time patient come first time got redness and pain in the index finger finger hand right feel first time since 1 month ago . _ Originally complaint painful appears at _ currently surfing hand patient bump with a rock , after painful patient feel redness the longer the redness the more widen accompanied swollen and festering . at the time observation advanced p patient say nails changed color Becomes black since 5 days after redness around finger fade . A number of agent *phaeohyphomycosis* capable cause dermatomycosis and onychomycosis similar with those caused by dermatophytes . Infection this , as classified _ as " superficial ," only involve keratin tissue but level damage network and response related immunity _ more big , produce presentation different clinical . _ Pigmentation dark on nails and paronychia could Becomes clues that lead to suspicion involvement organism *dematiaceous* in onychomycosis ; *phaeohyphomycosis* skin by clinical no could distinguished from dermatophytosis . Change nail color to dark also shown 2 reports cases by Garsaud et [al11] and Oudania et al. [12.13]

Manifestation clinical onychomycosis These include distal and lateral subungual (DLSO), *proximal subungual* (PSO), *white superficial* (WSO), total dystrophy and *endonyx onychomycosis* (EO). Onychomycosis candidate The distolateral subungual type is also known as onycholysis candidate . on type this , by clinically very similar OSDL type caused by fungus dermatophytes . On OSDL candida , mushrooms first time in through hyponychium distally and then _ spread to nail plate and *nail bed* to direction proximal . Candidate OSDL clinical features be marked with the presence of hyperkeratotic debris that accumulates in the subungual area so that the nail looks thicken and cause onycholysis. [14] On Candidate OSDL could found existence dermatophytoma , i.e colored longitudinal or oval - shaped nail thickening white yellowish . Dermatophytoma is sign from formation of a biofilm on the nail containing hyphae and spores in large amount . [15] Nails are also visible fragile , dull accompanied with change nail color on the distally and laterally. dyschromia or change most common nail color occur is color white yellowish (77.8%), but can also be found change nail color to dark (melanonychia) like color blackish (55.6%), brown (22.2%) and gray (16.7%), and could in the form of mixture color above. [16]

Melanonychia is dyschromia chocolate until black on the nail plate . Melanonychia caused by because infection mold also called _ melanonychia onychomycosis (MO). Melanonychia onychomycosis in general accompanied with signs onychomycosis other as subungual hyperkeratosis or onycholysis . by clinical , MO most often join onychomycosis distolateral subungual type, followed by with onychomycosis total dystrophy , and onychomycosis proximal subungual type .

One of the differential diagnoses and a concomitant diagnosis that may be confusing is paronychia. Paronychia may also cause complaints and discoloration of the nails. Patient with paronychia I could report painful local and pain press on the perionychium. Symptom could appear by spontaneous , or after trauma or manipulation nail base . *Perionychial* area usually looks erythematous and inflamed , and nails may be looks changed color and even distorted . If not treated , group pus could develop as abscess around the perionychium. Fluctuations and purulence local to the nail edge occurs , and infection could expand below _ nail edge up to involve nail base . Accumulation pus as that could cause elevation nail plate . Frequent pathogens _ infects paronychia _ I is *Staphylococcal aureus , streptococci, Pseudomonas,* and bacteria anaerobic . In addition , other pathogens such as viruses and fungi (usually Candida species).

Classification paronychia I covers presentation clinical happening _ up to 6 weeks , painful , and purulent . paronychia I usually caused by infection bacteria . Whereas paronychia chronic , more possible caused by fungal infection . risk factors paronychia chronic including occupation , medication certain , and conditions immunosuppression (diabetes, HIV, and malignancy). Inspection physique for paronychia I will show Lateral nail folds that are erythematous , swollen , and painful press . if any abscess , maybe there is a fluctuating area . If there is abscess doubtful , *digital pressure test* could To do this with give pressure on the volar finger involved . If there is abscess , more *blanching* area big than expected _ will seen in paronychia and drainage will required . On paronychia chronic , nail folds possible red and swollen , but fluctuation seldom happen . Nail plate maybe experience thickening and changing color . Finding general other from paronychia chronic possible retraction proximal nail folds , nail dystrophy , and loss of cuticle .

Definitive diagnosis onychomycosis made with there is or no existence element mold use : preparation *potassium hydroxide* (KOH) or coloring *periodic -Schiff acid* (PAS), and identification mold with culture. Most expert perform KOH and perform fungal culture . PAS has superiority because more objective , however it is expensive. There are various technique moment take different samples _ subtype onychomycosis . In DLSO, specimen should obtained from nail base with curettage for maximizing results inspection . Remove onycholytic nail plate will produce more samples _ useful on the most proximal sites from cuticle , because that 's where concentration hyphae the highest is. [17]

In patients this done inspection support in the form of 20% KOH examination, gram examination, and culture of nail scrapings. From result 20% KOH examination was obtained description spore huddle . On gram examination no found leukocytes , gram positive cocci results negative and gram negative rods results negative . Culture results show growth colony colored black with surface slippery shaped as round short , shiny *like-yeast* colored green old until blackish . by Microscopically , short hyphae were moniliform, tube-shaped, elongated and branched, identified as *Phialophora jeanselmei* .

Onychomycosis Severity Index (*OSI*) used for know level the severity of the affected nail . OSI scores are also used for determine consideration election medicine , as well evaluate development clinical During treatment with more objective . OSI score can be determined with using 3 criteria , namely large damage nail plate , involvement graded nail plate from part distal to proximal , as well as existence dermatophytoma or subungual hyperkeratosis with thickness > 2mm. The first criteria that is evaluation large damage nail plate given range score 1-5 that is score 1 if abnormality reach 1-10% of the area nail plate , score 2 if 11-25%, score 3 if 26-50%, score 4 if 51-75% and score 5 if about area of 76-100%. For the second criterion , the nails are divided into 4 parts from the tip of the nail distal to the proximal . If abnormality only found on < distal nail plate is given score 1, if -½ the distal part of the nail is involved given score 2, if -¾ nails are involved given score 3, if >¾ nails involved given score 4, and score 5 if there is involvement part proximal to nail to the lunula, signifying damage to the nail matrix . The third criterion given score 10 if found existence dermatophytoma or there is existence subungual hyperkeratosis with thickness > 2mm. Total OSI score calculated use formula score criterion I multiplied with score criteria II and added score criteria III. If results OSI score 1-5 stated as onychomycosis level light ; level currently when score 6-15; and degrees heavy when score 16-35. In the case of obtained OSI scores include onychomycosis light .

Currently _ therapy onychomycosis Keep going develop , therapy topical and systemic oral therapy still Becomes choice therapy main . Election therapy based on severity nail conditions , infecting organisms , and need also considered _ interaction drugs and effects side medicine . Treatment onychomycosis Becomes something challenge clinician . Therapy moment this own limitations because long nail growth , annoying nail keratin thickness absorption drug topical and systemic , ability mold endure life because environment skin supportive patient . [2] In onychomycosis level light could given therapy topical such as amorolfine , cyclopirox , efinaconazole , tavabarole , while onychomycosis level currently until heavy could considered therapy systemic such as terbinafine, itraconazole and fluconazole. [1.2]

In patients moment this given management Fluconazole 300 milligram tablets per week for 2 weeks intraoral, Ciproflocasacin 500 milligrams every 12 hours intraoral for 7 days Paracetamol 1000 milligram tablets every 8 hours intraorally Miconazole 2 % cream every 12 hours on finger lesions . Although Becomes line first onychomycosis , administration Fluconazole lately this more preferred , Fluconazole own excess that is administration once a week . This thing possible because nature pharmacokinetics , and provide profit in Upgrade compliance and reduce cost treatment . Drugs excreted especially in urine and therefore that need customized depending on the clearance creatinine . Effect side general from fluconazole including sick head , rash skin , gastrointestinal complaints and insomnia. Effect side that causes termination treatment occurred in 2% of patients who received fluconazole 150 mg per week , which increases to 5-8% for dose more weekly _ high (300-450 mg). Fluconazole is blocker enzyme more cytochrome P450 weak than itraconazole , and because that possible own interaction less medication . _ [18]

Onychomycosis have level enough recurrence _ tall that is about 35%. A number of factors that cause happening recurrence and chronicity in onychomycosis including patients _ with age old , state immunosuppression , the presence of circulation bad peripheral , species _ resistant candidate _ to therapy , looks existence dermatophytoma by clinical , subungual hyperkeratosis with thickness > 2mm, onychomycosis with extensive nail involvement , as well as Disobedient treatment . If recovery by mycological no achieved after gift therapy with adequate dose and duration , then _ therapy combination with drugs topical as well as therapy mechanic like a laser can considered .

In the case of a quo ad vitamin prognostic dubius ad bonam because patient experience obtained level obedience drink medicine , response good therapy _ after Anti-fungal administration . Prognosis *quo ad* functional *dubius ad b* onam and Prognosis *quo ad* sanationam *dubius ad bonam* because the patient occur infection mold superficial as well as patient fast got treatment .

CONCLUSION

Reported _ case onychomycosis DLSO type caused by Phialophora jeanselmei . Diagnosis is made based on history, examination physical and examination support . Patient in case this got therapy in the form of Fluconazole 300 milligram tablet 1 time intraorally, Miconazole 2% cream every 12 hours on finger lesions . After got therapy for 90 days , lesion show repair . The results of the KOH examination are not show existence spores . Patient planned control back 1 month again for evaluate effectiveness therapy . Prognosis *quo ad vitamins dubius ad bonam* , *quo ad functionalam dubius ad bonam* , Prognosis *quo ad sanationam dubius ad bonam* .

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