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Mucoid pseudocysts – clinical presentations, classification, and treatment

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Retrospective Study

Abstract

Mucoid pseudocysts (syn. myxoid pseudocysts) are benign lesions of the distal parts of fingers and toes. Traumata and osteoarthritis seem to be involved in pathogenesis. Based upon their localization, three subtypes can be differentiated. We report a retrospective investigation over 20 years on MP's, demographics, classification and treatment. We identified 22 patients with 23 lesions. The male to female ratio was 2.3. The mean age was 55.1 years with a range of 26 to 77 years. The majority of lesions belonged to type A, while type C was the least common. Surgery with Oberst block anesthesia was performed for 15 lesions with a cure rate of 100%. The cure rate with laser therapy was 86%. Laser therapy is an alternative for type A lesions only.

Introduction

Mucoid pseudocysts (MP) also known as myxoid cysts are benign ganglioma-like lesions of fingers and toes. Based on clinical findings, three major subtypes can be differentiated. The most common type A is located dorsally or laterally to the distal interphalangeal joint. Type B is

located subcutaneously on the proximal nail fold. When it grows it can cause nail dystrophy. Type C, the less common type, occurs subungual. Nail dystrophy is a possible consequence. Most of MP's are asymptomatic, but type C MP's may become painful (1).

Histologically, MP has no epithelial lining. The center consists of viscous, gelatinous fluid that compresses neighboring tissue. The connection to the interphalangeal joint can get lost (1). There are several pathogenetic factors discussed, which may be responsible for the developments of MP. Exit of gelatinous synovial fluid from the capsule of the distal interphalangeal joint after repetitive trauma is the most favored. Other possibly contributing factors are herniation of tendon sheaths or synovial linings and degenerative joint diseases (osteoarthritis) in elderly patients. Histologically ganglion-like and myxoid degenerative cases have been described (2). Dermoscopy of MP reveals arboriform telangiectasias over white, bluish, and reddish-orange diffuse areas (3). Another dermoscopy study described vascular patterns with arborizing vascular patterns with dotted vessels, linear vessels or polymorphous vessels, red-purple lacunas and white shiny structures (4). Magnetic resonance imaging (MRI) demonstrates a high signal intensity and sharp borders on T2-weighted images. Intracystic septa and satellite cysts may be present in some patients (5).

Patients and methods

This is a retrospective study. We investigated the files of the Department of Dermatology and Allergology from February 2001 to February 2021 for patients with MP who underwent either surgery or laser treatment. We report demographic data, clearance rate, recurrence rate and adverse events. The operation field was disinfected carefully using 72% propan-2-ol (Cutasept F®; Bode, Hamburg, Germany) or 45% 2-propanol, 10% 1-propanol, 30% hydrogen peroxide with biphenyl-2-ol (Kodan®, Schülke & Mayr, Norderstedt, Germany) before and after the procedure.

We employed the following lasers: Erbium-YAG-laser MCL 29 Dermablate (Asclepion Laser Technologies, Jena, Germany). The wavelength of this laser is 2,940 nm. The focus diameter varied between 1.6 mm and 3 mm. We used a frequency of 8 Hz. The pulse energy was between 800 to 1,000 mJ. The ultrapulsed 980 nm diode laser Ceralas HPD (Biolitec, Jena, Germany) was used with a focus diameter between 0.6 and 1.0 mm. The maximum power of this laser is 120 W. Laser treatment was individually tailored by power, pulse duration, and pulse pause. On average 80 W, 0,1 sec pulse duration and 0,02 to 0,05 sec pulse pause were used. The dual diode laser Leonardo Dual 45/100 (Biolitec Biomedical Technology GmbH, Jena, Germany) combines 980 nm and 1470 nm. Each wavelength can be individually selected or blended together to obtain the perfect effect. Hand pieces with spot sizes of 1 mm and 1.5 mm were used, depending on the size of the lesion. The maximum power for dual mode is 45 W with up to 30 W (range 0-30 W) for the 980-nm diode laser and up to 15 W (0-15 W) for the 1470-nm diode. The laser offers continuous wave (CW) or pulse mode, but

we preferred CW mode. Patients and staff carried protective goggles during any laser treatment. All treatments were performed with Oberst block anesthesia: A subcutaneous deposit of prilocaine 1% local anesthetic is administered dorso-radially and dorso-ulnarly at the metacarpophalangeal or metatarsophalangeal joint (6). In case of surgery the method dependent on the location. In Type A and B MP's, the MP was completly removed after careful preparation of the lesion with suturing. In type C MP´S partial or complete nail plate removal using a nail plate elevator was followed by complete excision.

In laser treatment, the lesion was perforated, the fluid was expressed, and a second laser application followed to obtain thermal injury to collapse the tissue space. The healing was faster and necrosis more limited with dual diode laser than with ultrapulsed 980 nm diode laser (7).

Results

A total of 22 patients with 23 MP's could be identified. There were 14 men and 6 women (ratio 2.3). The median age was (55.1 ± 18.3) years with a range of 26 to 77 years. MP were located on fingers in 17 cases and on toes in 6 cases. One patient developed two consecutive MP's on the thumb. Two lesions were ulcerated. MP's could be classified into type A (n=12), type B (n=7), and type C (n=4) (Fig. 1).

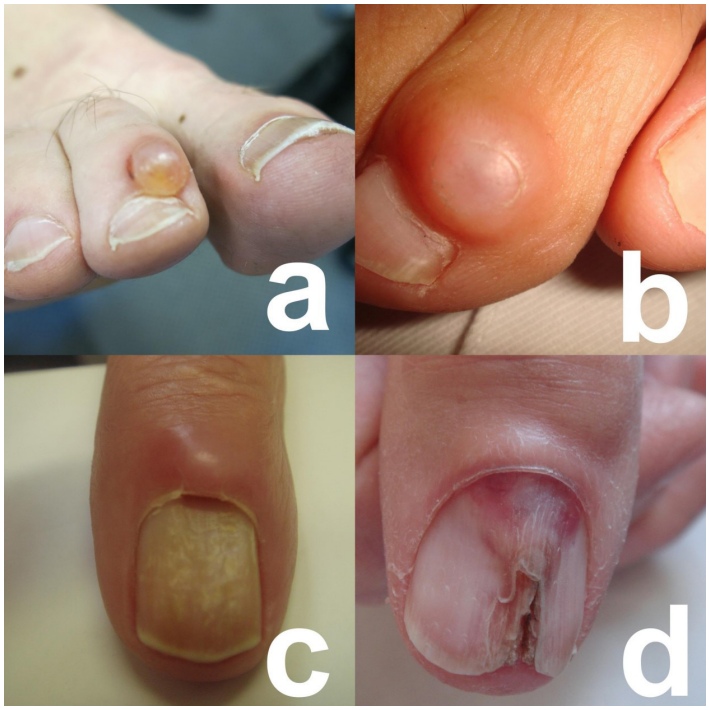

Fig. 1.*Various presentations of MP's. (a): Type A; (b) and (c): Type B; (c): Type C with destruction of the nail plate.*

Mean follow-up was (27 ± 16) months. The lesions were treated by surgery in 15 patients (Fig. 2). Surgical defects could be closed by skin advancement flaps or, in case of larger lesions, with bilobed or bipedicled flap from the lateral aspect of the distal phalanx (8).

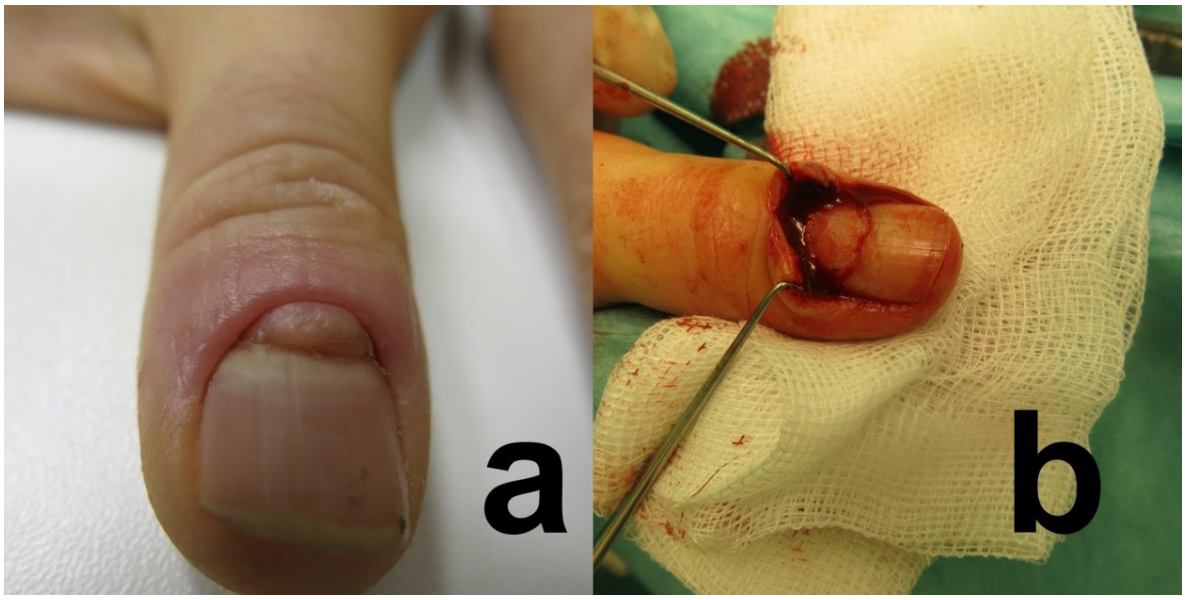

Fig. 2. *MP-surgery. (a): Clinical presentation of a type A MP; (b): After surgical removal.*

No relapses were observed. Seven patients underwent a laser therapy (Fig. 3). Two patients were treated by erbium-YAG, 3 by 980 nm diode laser and two MP's of on patient was treated by 980nm/ 1470 nm dual diode laser. Treatment was well tolerated. We observed no infection or joint affections, no hypertrophic scars. One patient with a type B lesion experienced a relapse after erbium-YAG laser treatment. She was cured by surgery. No relapses were observed after diode laser therapy.

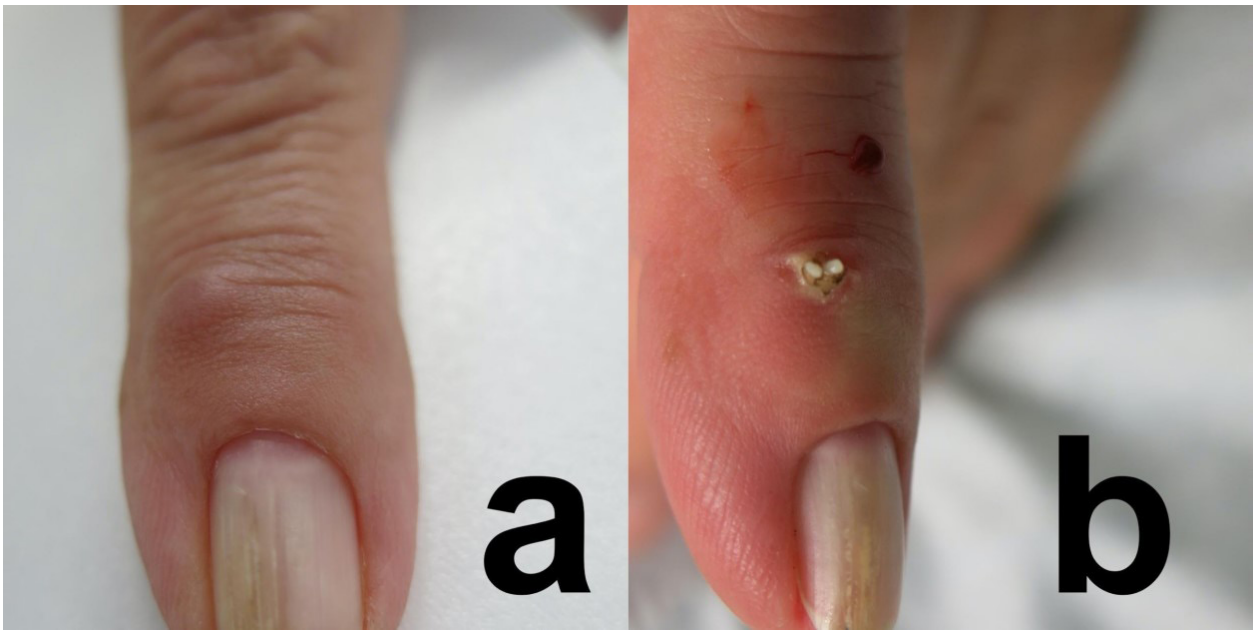

Fig. 3. *Laser therapy of a type A MP. (a): Clinical presentation; (b): After laser perforation. Viscous fluid can be expressed.*

Discussion

There is no standardized treatment algorithm available for MP's. Aspiration and injection of a sclerosant such as sodium tetradecyl sulfate into MP's seems convenient (9, 10), but recurrence rates of 22% to 40% within 2 years of follow-up have been described, which seems too high (11, 12). Intralesional steroid injections have relapse rate of 40% (12).

Cryosurgery with intermittent spray technique is compromised by a high relapse rate (13). The effect is insufficient for type B and C MP's anyhow. Surgery with complete excision with careful tying off of the channel to the joint has been shown a high remission rate. Among 100 MP's the recurrence rate was only 2% (14). These results were confirmed by others (15).

An Italian study analyzed 53 MP´s in 51 patients. They were treated by surgical excision with a cure rate of 72.6% at a mean recurrence time of 160 days with a mean follow-up of 3.6 years (16). Dockery (1994) reported retrospective results of 25 consecutive complete excisions with Schrudde rotation flap defect closure for MP's type A (17, 18). The long-term results after at least 12 months demonstrated a relapse rate of 6% (17). Blume et al. (2005) used a bilobed flap for defect closure. During a follow-up for 4.6 years on average no recurrence was noted (18). In a meta-analysis of more than 1,000 published cases surgery achieved a cure rate of 95%. In contrast, sclerotherapy had a cure rate of only 77%, cryotherapy of 72%, intralesional corticosteroid injection of 61%, and expression of cyst content achieved less than 40% (19).

Among those with nail involvement, 78% achieved a marked improvement or complete resolution. However, recurrence of the digital mucoid cysts was observed in 22.5% (20). In our smaller single center study, the cure rate after surgery was 100%. Laser therapy is an alternative to surgery. Different laser types have been employed such as 10,600 nm CO2-laser (21, 22), 1,444-nm neodymium-doped yttrium aluminum garnet (YAG) laser (23), 2,940 nm erbium-YAG-laser (24), or 980 nm diode laser (25).

Unfortunately, there are no comparative studies for laser and surgery. CO2-laser therapy achieved cure rates of up to 80% in particular in type A MP's (26, 27). We have used both erbium-YAG and diode lasers. Laser therapy is appropriate for type A MP's. For types B and C, we would prefer surgery since we experienced a relapse after two sessions with diode laser. In conclusion, MP's are benign pseudocysts of fingers and toes. Traumata and osteoarthritis are involved in pathogenesis. Type B and C MP`s can lead to secondary nail involvement. Complete excision is the treatment of choice. Laser therapy may be an alternative.

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