



Relapse Prevention of Lichen Sclerosus in the Pediatric Phimosis Treated by Surgery

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Abstract

Lichen sclerosus (LS) is a chronic inflammatory and progressive disease, usually located in the ano-genital area; spontaneous remission is rare. The disease is more common in females than males (3-10F:1M) but it can also be seen in children and middle-aged men.

Objective: The paper aims to investigate the possibility to lower the relapse rate incidence in boys surgically treated because of phimosis produced by LS.

Method: Two groups—established according to temporal succession—of 176 boys suffering from phimosis (63.6% with lichen sclerosus in the histologic specimen) were treated by partial circumcision and post-operative topical corticosteroid treatment. For the second group the topical treatment was prolonged.

Results: In the second group the incidence rate of relapse of lichen on the residual prepuce was significantly lower (1.6% vs 5.6%).

Conclusion: The topical prolonged corticosteroid treatment appears a good therapeutic choice.

Keywords: Phimosis; Lichen sclerosus; Topical corticosteroid treatment

Introduction

Lichen sclerosus at atrophicus is a chronic inflammatory sclerotic and atrophic disease of unknown cause that predominantly affects male and female genital skin. LS (Lichen Sclerosus) in females may be an autoimmune disorder, in which the body's immune system mistakenly attacks and injures the skin. People with LS are at greater risk of developing other autoimmune disorders, such as some types of thyroid disease, anemia, diabetes, alopecia areata and vitiligo. Malignant degeneration has been recorded in up to 5.8% of penile LS, being controversial for such degeneration a putative role of HPV infection; HPV has also been found in a significant number of penile LS. In males, LS is considered to be a disease of the uncircumcised individual, although it can also persist after circumcision. In females, the vulvar-perineal area is mainly affected, especially in middle aged and elderly women. It was demonstrated that lichen appears as the main cause of phimosis in childhood, much more than balanitis or iatrogenic causes.

The Authors investigated into a possible modality of relapse prevention of LS, after surgery, for the residual foreskin.

Methods

From July 2008 to June 2016 we have treated by preputial plasty with resection of the scar foreskin (*partial circumcision*) 176 boys suffering from phimosis—where the foreskin cannot be fully retracted over the gland penis. Study occurred after having previously obtained the informed consent from the parents and the ethics approval according to Helsinki Declaration.

Mean age at surgery was 9.2 y. and average follow-up has been 39 m. and 12 d. In the former group of children (*from July 2008 to April 2011*) –53—the topical steroid treatment was remaining five days postoperatively (once a day); in the latter (*from May 2011 to June 2016*) –123 children, not only for the boys with a whitish foreskin and clear little blood-vessels- macroscopic indication on the existence of lichen—the topical steroid treatment was extending for fifteen days (always once a day) postoperatively. We used a gel with Fluocinolone (0.025 grams in 100 grams of product).

The statistical analysis was performing by χ -square Test.

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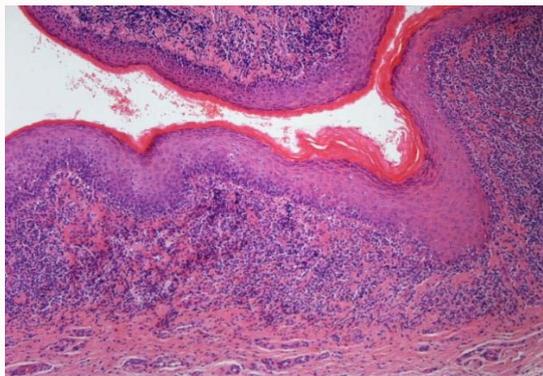


Figure 1: Dense lymphocytic band-like infiltrate of LS is located at the epidermal-dermal interface, associated with basal epidermal alteration and upward migration of inflammatory cells within epidermis. Haematoxylin and Eosin 10x.

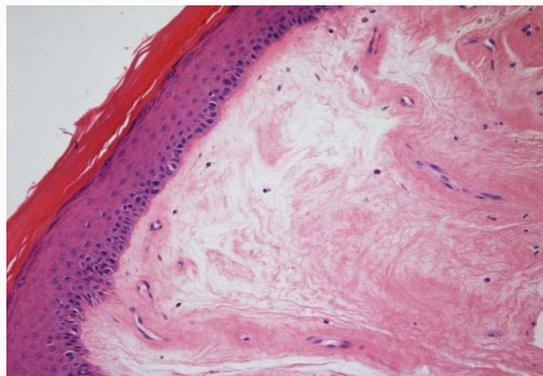


Figure 3: A more detailed view of edema and sclerosing late modifications of dermis in LS. Haematoxylin and Eosin 20x.

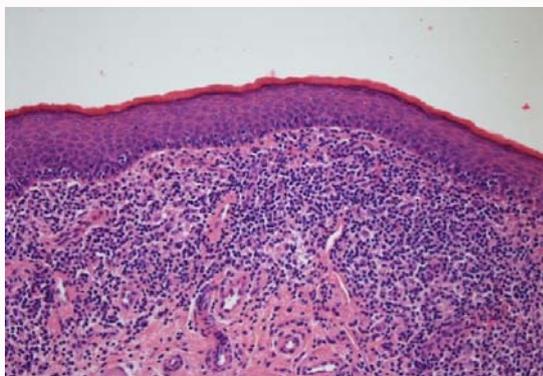


Figure 2: Detail of the inflammatory infiltrate of LS. Haematoxylin and Eosin 20x.

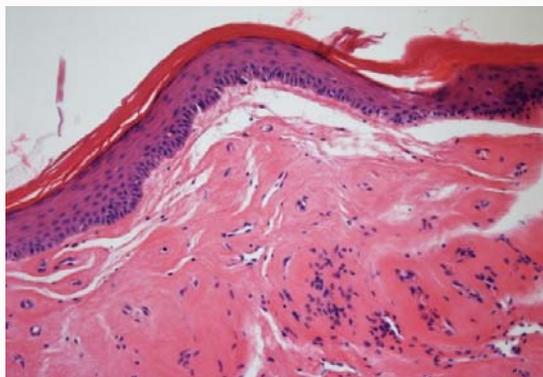


Figure 4: Detail of late hyaline sclerosis of the dermis in LS. Haematoxylin and Eosin 20x.

Results

112 boys (63.6%) showed the existence of lichen sclerosus in the histologic specimen. For five children – 2.8% -the condition of phimosis was coming back on the residual prepuce. In the first group of boys –53, treated with steroid gel on the suture for 5 days only, the relapses of phimosis were three (5.6%). In the second group of boys–123, treated with steroid gel for fifteen days on the suture, two were the relapses of phimosis (1.6%).

All boys with relapse (5-4.4%) have suffered from lichen sclerosus on the foreskin. These five boys were treated by a total prepuce resection–circumcision - ; for a child we have added a meatoplasty because the relapse was involving the outer urethral meatus. The lichen has been the cause of all relapses.

We have confirmed a statistically significant difference in relation to the incidence rate of relapse between the two groups - $p \leq 0.05$.

Discussion

In our experience we wanted to understand the chances of relapse prevention in boys surgically treated for phimosis caused by lichen sclerosus. These relapses were happening exclusively in children who showed the existence of lichen on the removed prepuce. All relapses (2.8%) had appeared within the first three months after surgery. It's therefore an early condition.

The choice of extending for all boys the postoperative topical

steroid treatment on the preputial suture after the first series (5.6% of relapse) was found to reduce the incidence rate of relapses (1.6%). This choice was leaving apart from consideration of the wait pertinent to histologic report. In adulthood the medical treatment with corticosteroids for the penile lichen is accepted, also outside of the surgical treatment [1-3].

Now it's confirmed the main list of lichen sclerosus for causing the scar preputial fibrosis in children [4-8]. Then it's quite clear that the question regards which wideness we can achieve with reference to excision of the foreskin. We know the significance of the foreskin in order to the immunocompetence and the peripheral sensitivity [9,10]. For this reason we prefer a conservative treatment, with the exclusive excision of the scar foreskin. Of course, in consequence of the partial preservation of the prepuce, we can expect a reappearance of phimosis. Then we have resolved, in the course of our experience, that the extension of topical steroid treatment on the residual prepuce finds an effective application for the sake of reducing the relapse incidence rate.

The clinical attitude has to abide by the histopathologic pattern.

The etiology of LS is poorly understood. In females, studies have demonstrated a link with autoimmune diseases and various autoantibodies, whereas local factors seem to play a major pathogenetic role in males, especially the exposure of the sensitive epithelium of glans and prepuce to urine, particularly in uncircumcised individuals [11]. A possible role of Borrelia infection in the development of LS remains to be elucidated [12].

Concerning the pathological features of LS, macroscopically the disease starts as flat, ivory to white papules that coalesce to form plaques of varying size and shape, followed by progressive atrophy (LS atrophicus) leading to a wrinkled, flat or depressed scar. Vulvar lesions may have secondary lichenification due to pruritus-related scratching and coexist with hypertrophic areas, the so-called “mixed vulvar dystrophy”. The glans, prepuce or external meatus of prepubertal or adolescent males may be involved by LS, resulting in phimosis or meatal stenosis (balanitis xerotica obliterans). Histologically, in LS there are numerous epidermotropic and dermal lymphocytes CD8+ CD57+ as well as significant alteration of the extracellular matrix such as increased hyaluronate accumulation in the broad hyalinized dermal zone that is observed in well-established lesions.

In early ones (Figure 1) the inflammatory infiltrate is quite heavy, superficial and band-like, mimicking lichen planus (interface or junctional dermatitis). Other early histologic features include basal vacuolization of the epithelium or the epidermis, followed by fragmentation of basal membrane, epidermal atrophy, and loss of dermal papillary elastic fibers and a broad expanding zone of sub-epidermal edema (Figure 2). Later, extensive hyalinization of dermis and subepithelial connective tissue occurs, that in later stages becomes densely sclerotic. In these stages basement membrane thickening becomes evident whereas inflammatory cells become more dispersed (Figure 3 and 4). A spectrum of vascular changes occurs in LS, chiefly represented by lymphocytic vasculitis, ranging from concentric lymphohistiocytic infiltrate with lamination of the adventitial layer (a feature typical of penile lesions) to a dense perivascular lymphocytic cuff with occasional fibrin deposition in vessel walls.

Conclusion

The choice of prolonging for two weeks the topical corticosteroid treatment on the residual foreskin, after surgical treatment, in our experience appears a good behavior for relapse prevention in boys with phimosis caused by lichen sclerosis.

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