

## Clinical-Morphological Characteristics Of Tuberculoid Form Of Leprosy After Treatment With Sulfonyl Drugs

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### ANNOTATION

In this scientific study, morphological changes in the skin in the tuberculoid form of leprosy treated with Sulfonyl drugs were presented. Samples were taken from 22 of the patients treated at the Karakalpak clinic for patients with leprosy after treatment with Sulfonyl, and from 14 patients who did not receive Sulfonyl for comparison. The results showed that in patients treated with Sulfonyl drugs appear tuberculous-shaped foci in the form of atrophic and depigmented centers, the edges of which are thickened in the form of ring-shaped plaques. At the center of the tuberculoid foci, skin tissue structures, including the epidermis, are atrophied and thinned, sweat, sebaceous glands, and hair follicles are atrophied in the dermis, the fibrous connective tissue is thickened, and a rough and hyaline appearance is found. In the periphery of the tuberculoid foci, leprosy-specific granulomatous inflammation is observed, and leprosy nodules appear at various levels along the blood vessels, glands, and hair follicles.

**Keywords:** leprosy, treatment, sulfonyl drugs, tuberculoid form, skin, morphology.

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### INTRODUCTION

Leprosy remains a pressing problem for the global health system. According to the World Health Organization and the International Association of Leprologists, 300,000 new leprosy cases are reported each year, a trend that is not declining. For example, leprosy-endemic countries (India, Indonesia, Burma, Brazil, Central, and South Africa) are home to 85% of those registered (3, 4). Currently, the risk of disease is very high, with 2.4 billion people living in areas where 1 lepra per 10,000 populations is prevalent. A total of 50,000 people with leprosy are registered in European countries, mostly workers and migrants from countries endemic for leprosy (1, 2).

Combination therapy with high-performance Sulfonyl-like drugs cures leprosy in patients. There are cases of high-performance monitoring of leprosy, reduction of morbidity to a sporadic state. It was reported by the World Health Organization (WHO) that by the 1990s, the incidence of leprosy had dropped to 1 per 10,000 populations (5.6). With the development of high-impact combination therapy for leprosy, some problems,

such as the specificity, sources, and length of the incubation period of mycobacteriosis, remain unexplored. From leprosy to a disability, taking medication continuously for a lifetime remains an important problem (7).

This study aimed to confirm the effectiveness of these drugs as a result of histological examination of patients with leprosy lesions on the skin of positive changes that developed after treatment of patients with leprosy in the Karakalpak clinic for patients with leprosy.

## **MATERIALS AND METHODS**

Samples were taken from 22 of the patients treated at the Karakalpak clinic for patients with leprosy after treatment with Sulfonol from the affected areas of the skin and from 14 patients who did not receive Sulfonol for comparison. Patients underwent clinical-anamnestic analysis using medical history data. Objectively, patients were examined using direct communication, leprosy-specific changes in the skin were examined, and their appearance was described and recorded. The pieces of skin were hardened for 48 hours in 10% neutralized formalin, washed in running water, dehydrated in increasing concentrations of alcohols and chloroform, and paraffin beads were prepared. Histological preparations were stained by hematoxylin-eosin, PAS-reaction, and van-Gieson methods. The micro preparations were examined under a light microscope and the required areas were photographed on a computer.

## **RESULTS AND DISCUSSION**

It is known that the tuberculoid form of leprosy is relatively safe and often affects the skin and peripheral nerves. In the patients we examined, the presence of clearly hypochromic or erythematous spots on the skin of the face, body, wrists as dermatological signs was detected. At the periphery of the spots, the borders formed a papule resembling a reddish-ink-colored lychee iron. Several of these papules were fused to form a ring-shaped plaque with a center of depigmentation and atrophy, and this type of change is called a "tuberculoid figure." In these damaged areas of the skin, sweat and sebaceous glands stopped secreting, and the skin was found to be dry, hair loss, and hyperkeratosis. In the tuberculoid form of leprosy, the nails were also found to be damaged, i.e., they turned dark gray, thickened, deformed, and became brittle. It was observed that the perception of heat and cold, the pain was impaired due to damage to peripheral nerve fibers. It was often found that the nerves of the face, wrists, and small legs were damaged, making them thick and painful. Injury to peripheral nerves was found to be manifested by paralysis of limbs and tissues, atrophy of skeletal muscles, the appearance of tropical lesions, and contracture of the palms and fingers.

For histological examination, a separate piece was taken from a specific lesion of the skin, i.e., from the depigmented and atrophied part of the erythematous spot, from the peripheral part in the form of an annular plate. Examination of the central part, i.e., the atrophied part of the skin, under a microscope revealed that the epidermis was thinning, the flat epithelial layers were shrinking, the cells were elongated, and closely spaced (Fig. 1). It was found that in the cells of the surface layers of the epidermis, the nuclei disappeared and a relatively thick layer of the same dark eosinophil appeared. The basal membrane under the epidermis is also

thinned and becomes a dense fiber, the special connective plate is atrophied, and the amount of cells and fibrous structures in it is sharply reduced. All the structures in the dermis, i.e. the sweat and sebaceous glands, the hair follicles, are atrophied and lost. Histotopography of the fibrous structures of the dermis was disrupted, resulting in rough and dispersed tufts, in some places developed hyalinosis (Fig. 2). The number of blood vessels between the fibrous structures has sharply decreased, the existing ones have also narrowed, the cells in the wall have become denser and connected to the surrounding connective tissue.

Histological examination of leprosy lesions of the skin, i.e. atrophic and depigmented areas at the edges of the area, showed that leprosy-specific inflammation in all areas of the skin actively formed tuberculoid nodules, inflammation of almost all sweat and sebaceous glands and hair follicles. Leprosy-specific tuberculoid granulomatous inflammation is found to have caused infiltration of the dermis scattered throughout the blood vessels and around the skin inclusions. For example, tuberculoid nodules are found when the hair follicle is attached to a multilayered squamous epithelium, and specific infiltration of mainly active macrophages, other proliferated histiocytic cells, and lymphocytes are detected (Fig. 3).

The central part of the nodule is found to be rich in macrophages and leprosy pathogens with relatively light-stained phagocytic inclusions. The specificity of this area is determined by the presence of leprosy-like inflammatory infiltrate that densely surrounds the sweat and sebaceous gland structures, and the glandular cells are deformed and disorganized, their glandular epithelium is disordered, and most are dystrophic and destroyed (Fig. 4). In addition, leprosy-specific nodules of the dermis, mainly along the blood vessels, have been observed to varying degrees. Of these, the newly formed leprosy-specific nodule was confirmed to have the following structure (Fig. 5). Infiltration of macrophages, mainly enlarged in the structure of the nodule, to varying degrees, among which, in most cases, the accumulation of lymphocytes at the periphery. In this case, the macrophages are of different sizes, differentiated, the cytoplasm in the center of the node is relatively wide and catches phagocytic inclusions, the macrophages in the outer parts are relatively hyperchromic and the cytoplasm is dark, the nucleus is larger, hyperchromic. However, the presence of well-formed leprosy nodules is detected. Their center is composed of relatively light-stained and necrotic tissue, and the cytoplasm is broad and star-stained cells. The infiltrate, which consists mainly of macrophages, occupies a large area at the periphery of such mature nodules (Fig. 6). The cytoplasm of macrophages is wide, containing structures consisting of fatty substances and granular leprosy pathogens. Among them, lymphoid cells are infiltrated scattered.

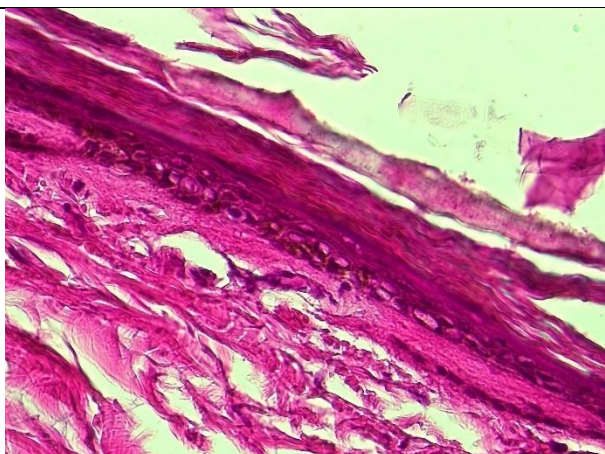


Figure 1. Atrophy of the skin epidermis and dermis. Stain: H-E. Size: 10x40.

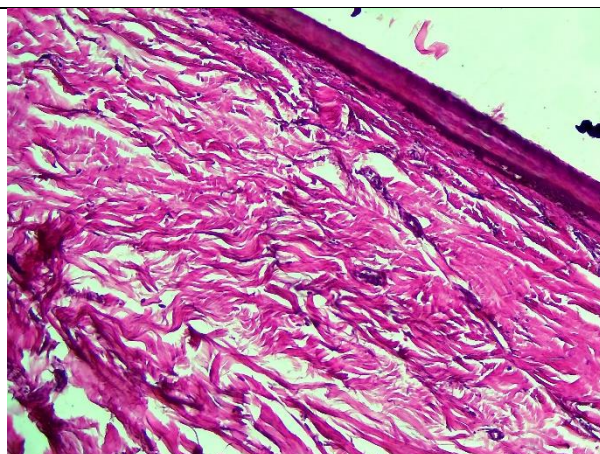


Figure 2. Fibrous structures in the dermis appear rough and hyaline foci. Stain: H-E. Size: 10x40.

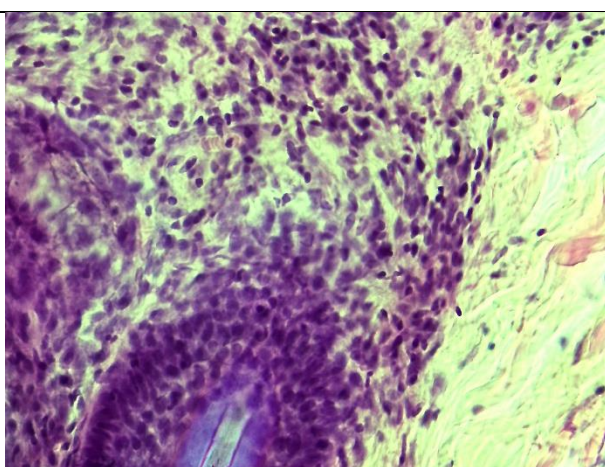


Figure 3. The appearance of leprosy-specific infiltration around the hair follicles. Stain: H-E. Size: 10x40.

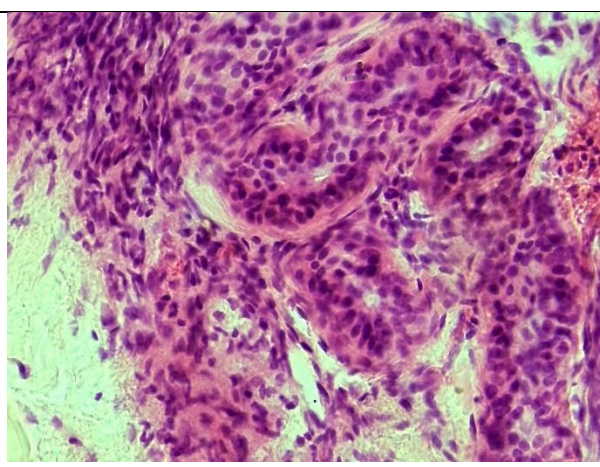


Figure 4. The appearance of leprosy-specific infiltration around the sweat glands. Stain: H-E. Size: 10x40.

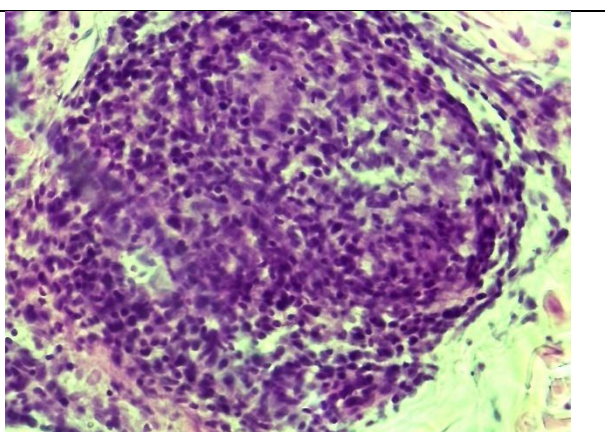


Figure 5. The appearance of a new nodule of the tuberculous form of leprosy. Stain: H-E. Size: 10x40.

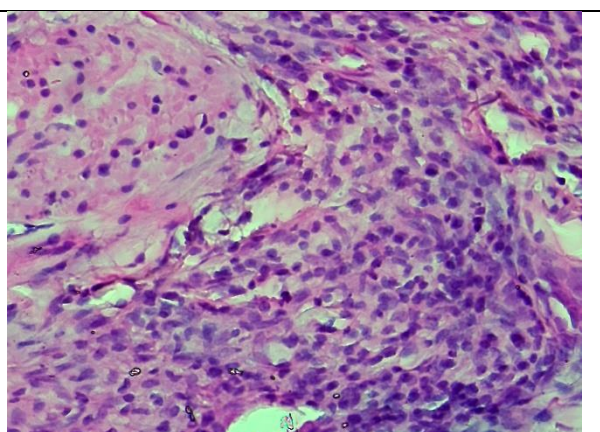


Figure 6. Leprosy is a tuberculoid nodule. Stain: H-E. Size: 10x40.



## CONCLUSION

Patients treated with Sulfonyl drugs develop foci in the form of "tuberculoid firuga" with an atrophic and depigmented center, thickened edges in the form of ring-shaped plaques.

At the center of the tuberculoid foci, skin tissue structures, including the epidermis, are atrophied and thinned, sweat, sebaceous glands, and hair follicles are atrophied in the dermis, the fibrous connective tissue is thickened, and a rough and hyaline appearance is found.

In the periphery of the tuberculoid foci, leprosy-specific granulomatous inflammation is observed, and leprosy nodules appear at various levels along the blood vessels, glands, and hair follicles.

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