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## Frequency of Occurrence and Clinical Characteristics of Zooanthroponotic trichophytosis in Uzbekistan on the Example of Tashkent Region

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### Abstract

The study of the long-term dynamics of morbidity, features of the epidemiology and clinical course of zooanthroponotic trichophytia in Tashkent region of Uzbekistan. Retrospective analysis of the dynamics of morbidity and demographic structure was carried out on the basis of data processing of the annual statistical reporting of Tashkent Regional skin and venereal diseases dispensary (form SSV-9) for 2015-2017. Prospective studies of clinical manifestations, ways of infection were conducted in 250 patients with zooantroponous trichophytosis at the age of 3 months – 40 years. Microscopic and bacteriological methods were used to determine the species composition of the pathogens. A steady increase in the number of patients with zooanthroponotic trichophytosis and indicators per 100,000 population is noted in Tashkent region in 2015-2017. Along with the high morbidity of children and adolescents, the proportion of adult patients, mainly from rural areas, increases. *Tr. verrucosum* dominated the species spectrum of mycosis pathogens, less often *Tr. mentagrophytes var. gypseum*. The clinical picture was dominated by multiple superficial and infiltrative-suppurative foci on smooth skin and scalp and atypical localization, often combined, complicated by symptoms of intoxication and allergic reactions. The analysis of the obtained results indicates an unfavorable epidemiological situation, which indicates the need for strengthening sanitary and epidemiological control, increasing active patient detection and improvement of therapy with regard to studying the pathogenesis of common and complicated forms of the disease.

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Zooanthroponotic trichophytia,  
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### Introduction

Zooanthroponotic trichophytosis is a socially significant highly contagious fungal disease of the smooth skin and scalp [5,9,12,13,20] with a high incidence rate in children and adults, caused by *Trichophyton verrucosum* (syn. *Trichophyton faviforme*) and *Trichophyton mentagrophytes* (var. *Gypseum*) [8,16,17,19]. The

percentage ratio and the dominance of various pathogens in the general structure of trichophytosis varies in different years, which largely depends on the natural-geographical and socio-economic characteristics of the region, the traditional way of life of the population, development of animal husbandry, sanitary and veterinary control [8,10,17]. The spread of infection is promoted by migration, the level of sanitary culture and

the way of life of the population, late detection (from 2 weeks to 3 months) and mistakes in diagnosis [12,16,17,18]. Early detection impedes primary and secondary pathomorphosis of mycosis [3,21]: changes in the transmission of infection, clinical polymorphism, atypical, complicated and erased forms of the disease [2,4,6,13,15,17,18,22], occurring under the mask of various dermatoses [7,12,17]. About 10% of cases are complicated by abscess formation [8,9,11,14,17], intoxication, with inflammatory processes (CarionCelsi) increases the risk of cicatricial alopecia and allergic reactions [1,13,20,22]. In Uzbekistan, zoo-anthroponic trichophytosis is a serious medical and social problem – in 2013-2017, the morbidity increased from 20.2 to 28.2 per 100 thousand population [1,2]. In connection with the above, the study of the clinical and epidemiological features of this mycosis is relevant.

## Materials and Methods

Data of the annual statistical reporting of Tashkent Regional skin and venereal diseases dispensary (form SSV-9) for 2015-2017 served as the material for retrospective research on the dynamics of morbidity and the demographic structure. Prospective studies of clinical manifestations, ways of infection were carried out in 250 patients with antiretroviral therapy at the age of 3 months – 40 who received treatment in Tashkent Regional skin and venereal diseases dispensary in the period of 2015-2017. Microscopic and bacteriological methods were used to determine the species composition of the pathogens.

## Results and Discussions

In the period from 2015 to 2017, a total of 3205 cases of trichophytosis were diagnosed in Tashkent region, an annual increase in the number of newly detected cases was observed in 942 patients in 2015, 1164 in 2017 (Table 1). The intensive indicator per 100,000 of the population was 34.1 in 2015, 39.3 in 2016, and 41.1 in 2017. Male patients prevailed (61.7%) (Table 1).

From the number of patients, children averaged 40.37%, adolescents – 11.36%, adult patients – 48.38%. The vast majority of patients lived in rural areas – 2,640 (82.3%), but there is a tendency of an annual increase in the number of urban residents. The share of the urban population increased from 14.4% in 2015 to 21.1% in 2017. Prospective clinical and epidemiological observations were carried out among 250 patients with zooanthroponic trichophytosis aged from 3 months to 40

years (166 men and 84 women) who received inpatient treatment at Tashkent Regional skin and venereal diseases dispensary in 2015-2017. The age structure was 55 (22.0%) children of preschool and primary school age up to 8 (including newborns), at the age of 8-13 – 45 (18.0%), adolescents 14-18 – 42 (16.8%) and adults over 18 years old 108 (43.2%).

Affection of smooth skin was observed in 132 (52.8%) patients, in 58 (23.2%) pathological lesions were located on the scalp, in 15 (6.0%) there was a combined lesion of smooth skin and internal part of the head, 25 (10.0%) – the lesion was localized in the forehead part, in 20 (8.0%) in the forehead, on the smooth skin of the perineum and other localizations. During mycological examination in scrapings from lesions, the mycelium of the fungus *Trichophyton ectotrix* was found in all patients. The growth of fungi in bacteriological seeding was obtained in 112 (44.8%) patients. *Tr. verrucosum* (faveforme) dominated in cultures and was sown in 78.6% (88 patients), *Tr. Mentagrophytes var. gypseum* – in 21.4% (24 patients). Sources of infection were detected in 195 (78.0%), in 76 (30.4%) infections occurred during the care of infected animals. 60% of patients, in their personal farmstead had cattle, in other cases with direct close contact with sick family members, acquaintances, or through household items (clothing, sports equipment). In 45 (18.0%) patients infection occurred from the sexual partner.

The surface spotted form of the disease was established in 102 (40.8%), infiltrative in 52 (20.8%), infiltrative-suppurative in 96 (38.4%). With superficial form on smooth skin, only in 21 (21.44%) patients had single rashes, most of which had multiple (up to 10 or more) rounded foci ranging in size from 2x3 cm to 6x7 cm in diameter, with clear boundaries, marked peripheral papular-vesicular roller covered with scales and crusts. In the central part of the foci, small-plate peeling was noted. At the confluence, large foci with geographic outlines were formed (Fig. 1). The surface form of mycosis was more frequently observed on smooth skin, the infiltrative and suppurative forms on the scalp, as well as in the forehead in adults.

In the infiltrative form in the foci, inflammation was more observed, small papules and pustules were noted. Foci in the amount of 1-5 different sizes, protruding above the skin, hair easily epilated, with pressure from the expanded follicles abundant purulent discharge (Figure 2).

Regional lymphadenitis was observed in 12% of children with suppurative trichophytia and 25% of patients with pubic localization. In 32% of patients, the process was accompanied by symptoms of intoxication with an increase in body temperature up to 38-39° and severe pain in the lesions. Various concomitant diseases (anemia, pregnancy, pyoderma, eczematization, allergic dermatitis) were detected in 59 (23.6%) patients, including urogenital infections (gonorrhea, trichomoniasis, urogenital candidiasis) in various combinations in patients with atypical location.

The majority of patients 129 (51.6%) were brought to treatment in the first 7-14 days from the moment they detected signs of disease in the period from 15 to 30 days

71 (28.4%), after 1-2 months 38 appealed (15,2%), over 2 months 12 (4.8%). During self-address, the disease was detected in 97 (38.8%), during examination of contact persons in 73 (29.2%), including 19 patients with pubic localization of the process during examination of sexual partners. The “family” nature of the disease was noted in family members (parents –children, husband – wife, siblings) was observed in 47 families. More than half of patients without a doctor’s prescription applied externally ointments containing steroid and antifungal components. Diagnostic mistakes were made in 9 patients (seborrhea, Zhiber's pink lichen, microbial eczema, exudative diathesis, pyoderma, sycosis) (Fig. 3).

**Table.1** Morbidity rates of trichophytosis in Tashkent region in 2015-2017

Indicators	2015	2016	2017	Total
The morbidity with trichophytosis (abs; per 100,000 population)	942(34,1)	1099(39,3)	1164(41,1)	3205
Men (abs,%)	586(62%)	656(60%)	729(63%)	1971(61,5%)
Women(abs,%)	356(38%)	443(40%)	435(37%)	1234(38,5%)
Children(abs,%)	404(43%)	402(37%)	488(42%)	1294(40,37%)
Adolescents (abs,%)	112(12%)	110(10%)	142(12%)	364(11,36%)
Adults(abs,%)	426(45%)	587(53,41%)	534(46%)	1547(48,38%)
Urban(abs,%)	136(14,4%)	184(16,7%)	246(21,1%)	566(17,7%)
Rural(abs,%)	806(85,6%)	915(83,3%)	919(78,9%)	2640(82,3%)

**Figure.1** Surface-spotted form of zoo-anthropictrichophytia with atypical localization and multiple foci in a child



**Figure.2** Infiltrative-suppurative form of zoo-anthropotrichophytia on the scalp (KerionCelci) and the skin of the forehead



**Figure.3** Surface-spotted form of zoo-anthropotrichophytosis, diagnosed as seborrhea, zhyber's pink lichen, microbial eczema



The main reasons for such mistakes were inadequate history and epid anamnesis, failure of timely mycological examination, as well as distortion of the clinical picture due to irrational therapy.

The analysis of the obtained results indicates an unfavorable epidemiological situation with a wide involvement of preschoolers, students of schools and colleges, as well as adults with a primary lesion of the pubic area. The species spectrum of causative agents of zooanthropotrichophytosis with *Tr. verrucosum* dominance, less often *Tr. Mentagrophytes var. gypseum* indicates the need for strengthening sanitary and epidemiological measures – medical and sanitary control in children's educational and sports institutions, veterinary supervision of cattle personal farms and farms as well as timely deratization in natural foci.

Clinical and therapeutic aspects require further attention, as well as further study of pathogenetic mechanisms from common and complicated forms of the disease.

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