

Increasing Proportion of MRSA in *S aureus* and Non-Albicans *Candida* Among *Candida* spp, Colonizing Adolescent Refugees to Greece May Be a Signal of Overpopulation of Migrant Facilities and Camps

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Original Article

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Abstract:

Emergence of MRSA among *S aureus* isolates may be a signal of deteriorating hygienic conditions and other public health problems in facilities, suffering from overcrowding, such as prisons, camps, orphanages, nursing homes, etc. Emergence of Non-Albicans *Candida* in addition to overcrowding and humidity, may be a signal of overuse of local or systemic antifungals and antimicrobials, both risk factors in large concentrations of potential patients and social work clients. The aim of this survey is to analyze continuous increases of a proportion of MRSA among *S aureus* and Non-Albicans *Candida* spp among yeasts in refugee camps on the Greek / Turkish border. The results suggest a shift in *S aureus* from MSSA to MRSA (12.5% to 50% in 5 years) and Non-Albicans *Candida* spp from 12.5% to 100% in 2019) which may indicate a worsening in the public health situation due to overpopulation of some refugee camps on Aegean Islands.

Introduction

Refugee and migrant health deals with serious public health problems due to a 5 years migration crisis in the EU mainly in Italy and Greece, where the majority of migrants enter the EU on boats and stay in refugee camps until their asylum process is facilitated. Currently, refugees from Iraq and Syria are being replaced by adolescents from Afghanistan and Sub-Saharan Africa, including minor children and their families. A marker of overcrowding and other public health problems are at least two organisms, *C albicans* and *S aureus*, which are transmitted by hands, kissing, towels, all with daily and casual contact, and are markers of overpopulation in prisons, camps, orphanages, nursing homes (1-5). The aim of this survey was to analyze changes in etiology of respiratory and skin isolates of *S aureus* and *Candida* spp, in victims of war, mainly minors, escaping from Middle East to the EU via the Balkan Route (Greek / Turkish border).

Patients and Methods

From 2015 (Mainland Greece - Veroia) until 2019 (Lesbos Island) bacterial isolates from skin swabs and respiratory tract from minors were analyzed for antimicrobial susceptibility. Of 233 strains from 102 minor adolescents and their family members, isolates were obtained and transported to the Natural Reference Lab of ATB Resistance in Nitra in Amyes. The liquid medium was analyzed for phenotypic antimicrobial susceptibility; years 2015-2019 were compared.

Results and Discussion

The proportion of MRSA among *S aureus* increased from 12.5% while clients localized in an open refugee camp in Veroia and Alexandria in mainland Greece to 25% in 2017, 50% in 2018 and 2019 (Lesbos); which means that one half of all *S aureus* strains isolated from skin wounds and respiratory secretions of refugees were resistant to all betalactam antimicrobials (MRSA).

In addition, the proportion of Non-Albican *Candida* spp (*C tropicalis*, *C parapsilosis*, *C rugosa*, *C kefir*, etc.) among all *Candida* spp increased from 25% in 2015-2016 to 100% in 2019, an indication a major shift from *C albicans* to Non-Albicans *Candida* spp. Both findings may indicate public health problems from overcrowding, overpopulation, deteriorating hygienic conditions among populations of refugees in 2019 in comparison to 2015-2016. While in 2015-2016, the population studied was in open camps on mainland Greece, in 2018-2019 all isolates came from the semi-closed camps on Lesbos Island which had been reported as overpopulated (original capacity of 4,000 has been increased to more than 10,000 in 2019). Similar shifts related to either overcrowding or misuse of antimicrobials and antifungals have been described in prisons, orphanages and nursing homes. (2-5) Another reason may be a change of the spectrum of geographic origin of the adolescents, from Syria and Iraq, in favor of e.g. Sub-Saharan Africa, where Non-Albicans *Candida* spp is more common.

Conclusions

In conclusion, monitoring of etiology and antimicrobial susceptibility in micro-organisms colonizing or infecting refugees is mandatory, and those colonized with MRSA and other MR organisms e.g. colimycin or carbapenem resistant enterobacteriaceae should be registered and those findings have to be recorded both in the health-care systems for refugee migrant facilities as well in patients' personal health records before being transferred to mainland Greece or to other EU countries. When symptomatic disease e.g. wound infection appears cohortation of those patients is advisable.

References:

1. HARDY M, BARTKOVJAK M, BERESOVA A, KNOSKOVA E, RADKOVA L, OTRUBOVA J, RABAROVA L, TOPOLSKA A, POLONOVA J, KALATOVA D, MIKOLASOVA G, PROCHAZKOVA K., STANKOVA P, MRAZOVA M, VALACH M, OLAH M, JACKULIKOVA M, DRGOVA J, PALENIKOVA M, BARKASI D, OTRUBOVA J, HOFBAUEROVA B, SCHIFFERDECKEROVA M, HATAPKOVA Z, KOVAC R (2019) *Is the homeless shelter population a public Health Threat?* Lek Obz (Med Horizon) 68, 2019, 4, 151-152.
2. SHAHUM A, SLADECKOVA V, BENCA J, DUDOVA Z, MIKLOSKOVA M, BIELOVA M (2017) *Respiratory isolates from the Orphanage in Phnompenh*. Clin Soc Work & Health Intervention, 8, 2017, 1, 17.
3. HERDICS G, PROCHAZKOVA K, MIKOLASOVA G, MIKLOSKOVA M, OLAH M, KARVAJ M, OTRUBOVA J, BUCKO L, RADKOVA L, TOMANEK P (2017) *A daily low threshold shelter for the homeless population*, Clin Soc Wrok health Intervention, 8, 2017, 1, 11-13.
4. KIMULI D, KOMLOSI M, SABO I, BAUER F, KARVAJ M, OTRUBOVA J, JANCOVIC M, JANKECHOVA M, PAUEROVA K, POLONOVA K, MATEICKA F, BARTKOVJAK M, MIKOLASOVA G, SMREKOVA E, BENCA J, DURCOVA B, DORKO D, BEDNARIKOVA M, SCHIFFERDECKEROVA M, BARKASI D, OKOTH V, MULERA M (2019) *Highlands malaria among internally displaced refugees in mountain areas of Kenya, Rwanda and Burundi*. Lek Obz (Med Horizon) 68. 2019, 5-6, 149-150.
5. TOMANEK P, HARDY M, POLONOVA J, MIKLOSKOVA M, MIKOLASOVA G, BUCKO L, MRAZOVA M, KARVAJ M, JOBOVA M, VALLOVA J, HULKOVA V, BOZIK J, SLOVAK J, VLCEK R, BENCA J, SKOPOVA M, JANKECHOVA M, SHAHUM A (2017) *St. Louise Hospital for Marginalized and Homeless Population*. Clin Soc Work & Health Intervention, 8, 2017, 1.13.

Table 1 Proportion of MRSA among refugee minors and adolescents and their families in mainland versus islands of Greece

Years	2015	2016	2017	2018	2019
S aureus all	8	5	5	14	20
MRSA	1 (12.5%)	1	1 (20%)	7 (50%)	10 (50%)
Candida spp.	8	16	14	4	4
Non-Albicans C	1 (12.5%)	4 (25%)	7 (50%)	3 (75%)	4 (100%)