

A Comparison of Multidrug Resistance Rates of *Pseudomonas Aeruginosa* Strains in Burn Patients in Iran in 2006 and 2015

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Dear Editor

Burn patients are specifically threatened by nosocomial infections [1]. In these patients, the body's first line of defense is destroyed and immune system functions are decreased, especially in the first week after the burn. As a result, opportunist pathogens quickly attack the patient's body [2]. One such pathogen that greatly threatens the life of a burn patient is *Pseudomonas aeruginosa* [3, 4]. This study was done on 151 positive-cultured burn patients (with samples taken from the burn scars) hospitalized in Sina Hospital in Tabriz, the only burn treatment hospital in northwestern Iran, from early March 2015 until the end of that year. Among these patients, 60 (39.7%) had *Pseudomonas aeruginosa*, 37 cases (24.5%) had

Acinetobacter, 29 cases (19.2%) had *Staphylococcus aureus*, 14 cases (9.3%) had *Klebsiella*, 6 cases (4%) were of *E. coli*, and 5 cases (3.3%) had *Enterobacteriaceae*.

This study compared the results of this study and those obtained by Dr. Nahaei et al. regarding the multidrug resistance of isolated *Pseudomonas aeruginosa* [5] tested on 135 isolated bacteria in the same hospital in the past 10 years (2006). After 10 years, unfortunately, a noticeable increase in resistance to the nine essential, common antibiotics used to treat these strains was observed in both studies (Figure 1). The highest rates of increase were seen with the 3 antibiotics imipenem (25 times), amikacin (4.5 times), and ciprofloxacin (3.7 times), and ceftazidim and piperacillin showed the lowest increase.

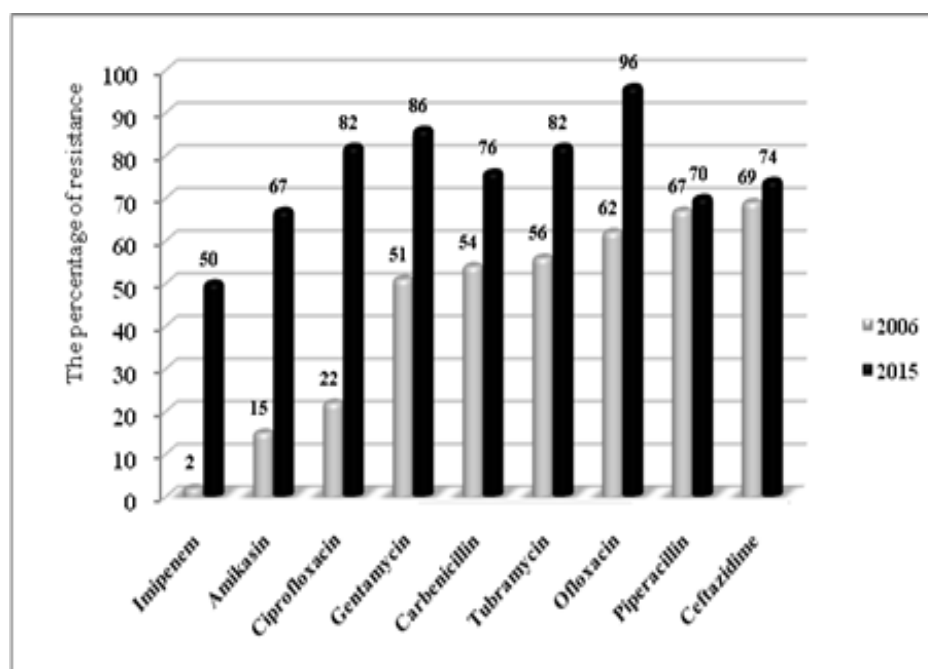


Figure 1. The percentage of multidrug-resistance of *Pseudomonas aeruginosa* strains, a comparison in the years of 2006 & 2015

To identify resistant strains, it seems necessary to periodically survey the burn patients' hospital equipment, based on the culturing process, and the use of *Pseudomonas* polyvalent anti-sera in treatment is essential to reducing the rate of increase in the drug resistance of this bacterium.

Sadly, it must be confessed that the production of new generation drugs used to fight against this deadly microorganism seriously lags behind the rate of its face-off against antibiotics.

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Authors' Contributions

All Authors have equal role in this paper.

Conflicts of Interest

All authors declare that there are no conflicts of interest.

References

1. Lari AR, Alaghebandan R. Nosocomial infections in an Iranian burn care center. *Burns*. 2000;26(8):737-40. doi: [10.1016/S0305-4179\(00\)00048-6](https://doi.org/10.1016/S0305-4179(00)00048-6)
2. Karimi Estahbanati H. Frequency of different serotypes of *Pseudomonas Aeruginosa* in burned wound infections. *Razi J Med Sci*. 2003;10(34):283-9.
3. Salimi H, Owlia P, Yakhchali B, Lari AR. Characterization of *pseudomonas aeruginosa* in burn patients using PCR-restriction fragment length polymorphism and random amplified polymorphic DNA analysis. *Iran J Med Sci*. 2015;35(3):236-41.
4. Fitzwater J, Purdue GF, Hunt JL, O'Keefe GE. The risk factors and time course of sepsis and organ dysfunction after burn trauma. *J Trauma Acute Care Surg*. 2003;54(5):959-66. doi: [10.1097/01.TA.0000029382.26295.AB](https://doi.org/10.1097/01.TA.0000029382.26295.AB)
5. Nahaei M, Bohlooli Khiavi R, Asgarzadeh M, Hasani A, Sadeghi J, Akbari Dibavar M. Antibiotic resistance and plasmid profiles of *pseudomonas aeruginosa* strains isolated from in-patients of Sina Hospital-Tabriz. *J Ardabil Univ Med Sci*. 2007;7(1):90-8.