

Off-label use of nebulized corticosteroids in pediatric practice

Utilizarea off-label a corticosteroizilor inhalatori în pediatrie

Valentina Daniela Comănici^{1,2}, Iustina Violeta Stan^{1,3}, Mihai Craiu^{1,2}

1. "Alessandrescu-Rusescu" National Institute for Mother and Child Health, Bucharest, Romania

2. Second Pediatric Clinic, "Alessandrescu-Rusescu" National Institute for Mother and Child Health, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

3. First Pediatric Clinic, "Alessandrescu-Rusescu" National Institute for Mother and Child Health, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

Corresponding author: Iustina Violeta Stan, E-mail: iustinas@yahoo.com

Nebulized medication is very popular among Romanian parents and doctors in the last years. Many parents used as treatment for their children, at least once, wet-nebulized medication, in various settings.

The main reason for this *Letter to the Editor* was the worrisome aspect that dedicated inhaled steroids for pediatric use (Budesonide or Fluticasone) have been provided in only 64.9% of children that received medication via a nebulizer, according to a questionnaire provided in a nation-wide pediatric social media group ("Spitalul Virtual de Copii" – "Virtual Children Hospital"). This suboptimal approach was associated with various side effects (oral candidiasis, weight gain, increased blood pressure, electrolyte and glucose imbalance) documented in children presented at our emergency department.

About 94.4% of 1509 parents reported the use of nebulized medication in various out-patient settings, most of the time for an acute flare-up of a respiratory disease. A significant proportion of reported treatments were medium- and long-term (23.6% of patients used medication several weeks or months). More than one third of children who received such a treatment were always given dexamethasone and 67.4% stated that they used it at least once. 6.9% were given such a prescription, but parents declined. It was delivered as an artisanal home-made mixture of the content from injectable dexamethasone phosphate ampule and normal saline.

A PubMed enquiry using "dexamethasone AND nebulized" as search words provided only 19 publications⁽¹⁾ and most of these papers were referring on croup or laryngeal diseases, not lower-airway diseases. Where did this idea (to use dexamethasone as nebulized medi-

cation) come from? From dexamethasone 21-isonicotinate (*Auxilason; Auxilson; Auxilstone; Voren*), a drug used in children more than forty years ago⁽²⁾, that isn't any longer licensed and carries serious hazard warnings regarding fertility, unborn and breast-fed children. This drug is currently used only in veterinary medicine⁽³⁾. This off-label usage represents probably a surrogate replacement generated by constant shortage of nebulized ICS in the last years in our country.

Because this very popular and frequently used off-label treatment carries a high side-effect risk, such an approach should be discouraged. Warnings should be presented as continuous medical education posts in pediatric and family physician's sites. Also, an update of Romanian national pediatric guidelines^(4,5) could be of help in order to stop this dangerous approach of switching ICS with nebulized dexamethasone (ampules of phosphate salt for injectable use). ■

References

1. <https://www.ncbi.nlm.nih.gov/pubmed/?term=dexamethasone+AND+nebulised>, accessed on 10 July 2017.
2. Zapletal A, Spicak V, Zbojan J, Samanek M. Effect of a single inhalation of dexamethasone-21-isonicotinate (*Auxilason*) on the obstruction of respiratory pathways in childhood asthma. *Cesk Pediatr.* 1979; 34(7):399-404.
3. Couetil LL, Art T, de Moffarts B, Becker B et al. Effect of beclomethasone dipropionate and dexamethasone isonicotinate on lung function, bronchoalveolar lavage fluid cytology, and transcription factor expression in airways of horses with recurrent airway obstruction. *J Vet Intern Med.* 2006; 20(2):399-406.
4. Tatar S. Astmul bronsic. În: *Protocoale de diagnostic și tratament în pediatrie*, București, 2017, 49-55.
5. Chereches-Panta P. Wheezingul recurent la copil. În: *Protocoale de diagnostic și tratament în pediatrie*. București, 2017, 56-59.