



Inhalaciona terapija – značaj i primena

Inhalation Therapy – Importance and Application

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Apstrakt

Astma i hronična opstruktivna bolest su hronični inflamatorni poremećaji disajnih puteva koje karakteriše opstrukcija, i ona pogađa oko 10% populacije. Najnovija preporučena terapija je, prema glavnim smernicama, inhalaciona terapija. Inhalaciona primena omogućava isporuku leka direktno na ciljno mesto delovanja, što omogućava primenu manjih doza i smanjenje sistemskih neželjenih efekata. Na tržištu su danas dostupne tri vrste uređaja: preparati za inhalaciju pod pritiskom sa dozatorom („pumpice” engl. *pressurized metered dose inhaler*, pMDI), inhalatori za praškove (engl. *dry powder inhalers*, DPI) i nebulizatori. Inhalatori pod pritiskom sa dozatorom se najčešće primenjuju. Sastoje se od dozatora sa raspršivačem i komore sa rastvorom ili suspenzijom lekovite supstance i potisnim gasom u tečnom obliku. Imaju najkomplikovaniji način primene, jer treba istovremeno (sporo i duboko) udahnuti i aktivirati pumpicu. U slučaju da pacijenti ne mogu pravilno da ih koriste, mogu se koristiti zajedno sa komorama (spejserima) ili se mogu koristiti novi pMDI preparati koji se aktiviraju udahom. Inhalatori za praškove sadrže lekovitu supstancu u suvom obliku. Dostupni su jednodozni i višedozni inhalatori. Prednost ovih uređaja u odnosu na pMDI jeste lakša tehnika primene, jer ne zahtevaju koordinaciju aktivacije preparata sa udahom. Većina preparata zahteva snažan i dubok udisaj. Nebulizatori (raspršivači) koriste komprimovan vazduh ili kiseonik za raspršivanje rastvora ili suspenzije lekovite supstance. Kod primene nebulizatora, disanje treba da bude sporo i pravilno, sa povremenim dubokim udisajem. Dostupni su i uređaji za kućnu upotrebu, koji se prevashodno upotrebljavaju kod pacijenata koji ne mogu da koriste druge inhalatore (npr. stari pacijenti ili deca). Lekovi prvog izbora u terapiji akutnog pogoršanja astme su inhalacioni beta 2 agonisti i kortikosteroidi. Inhalacija kratkododelujućim beta 2 agonistima (SABA) je obično dovoljna i efikasna za brzu reverzibilnost bronhoopstrukcije, kod blage ili umerene egzacerbacije (4–10 udaha svakih 20 minuta u toku prvog sata). Nakon prvog sata se procenjuje odgovor i, ukoliko se simptomi održavaju, preporučuje se dodatna primena SABA (4–10 inhalacija na 3–4 h ili 6–10 inhalacija na 1–2 h) u zavisnosti od simptoma i plućne funkcije. Inhalacioni kortikosteroidi su najefikasniji lekovi za kontrolu astme, a njihova rana upotreba je značajno unapredila terapiju astme. Inhalatorni kortikosteroidi smanjuju broj inflamatornih ćelija i njihovu aktivaciju u disajnim putevima. Obično se primenjuju dva puta dnevno, ali kod pacijenata sa blagim simptomima mogu biti efikasni i kada se daju jednom dnevno. Brojne studije pokazuju da pacijenti izvode neispravnu tehniku inhalacije. Sprovedena je studija u kojoj je učestvovalo 995 pacijenata sa hroničnom opstruktivnom bolešću pluća u 20 zdravstvenih centara, gde je pokazano da je 906 pacijenata sprovelo neispravnu inhalacionu tehniku. Najčešće greške u izvođenju su bile povezane sa niskom kognitivnom sposobnošću, niskim vršnim protokom izdisaja i manjem broju medicinskih konsultacija sa pulmologom.

Abstract

Asthma and chronic obstructive disease are chronic inflammatory disorders of the airways characterized by an obstruction, affecting about 10% of the population. The latest recommended therapy, according to the main guidelines, is inhalation therapy. Inhalation administration enables the delivery of the drug directly to the target site of action, which enables the administration of smaller doses and the reduction of systemic side effects. There are three types of devices available on the market today: pressurized metered dose inhalers (pMDI), dry powder inhalers (DPI), and nebulizers. Pressure inhalers with a dispenser are most commonly used. They consist of a dispenser with a sprayer and a chamber with a solution or suspension of the medicinal substance and a pressure gas in liquid form. They have the most complicated method of application because it is needed to inhale (slowly and deeply) and activate the pump at the same time. In case patients cannot use them properly, they can be used together with chambers (spacers) or new inhalation-activated pMDI preparations can be used. Powder inhalers contain a medicinal substance in dry form. Single-dose and multi-dose inhalers are available. The advantage of these devices compared to pMDI is an easier application technique because they do not require coordination of the activation of the preparation with inhalation. Most preparations require a strong and deep inhalation. Nebulizers use compressed air or oxygen to disperse a solution or suspension of a medicinal substance. When using a nebulizer, breathing should be slow and regular, with occasional deep breaths. Devices for home use are also available, which are primarily used by patients who cannot use other inhalers (e.g. elderly patients or children). The drugs of first choice in the therapy of acute exacerbation of asthma are inhaled beta 2 agonists and corticosteroids. Inhalation of short-acting beta 2 agonists (SABA) is usually sufficient and effective for rapid reversibility of bronchus-obstruction, in mild or moderate exacerbations (4–10 breaths every 20 minutes during the first hour). After the first hour, the response is assessed and, if symptoms persist, additional administration of SABA is recommended (4–10 inhalations over 3–4 hours or 6–10 inhalations over 1–2 hours) depending on symptoms and lung function. Inhaled corticosteroids are the most effective drugs for asthma control, and their early use has significantly improved asthma therapy. Inhaled corticosteroids reduce the number of inflammatory cells and their activation in the airways. They are usually given twice a day, but in patients with mild symptoms, they can be effective when given once a day. Numerous studies show that patients perform incorrect inhalation techniques. A study was conducted involving 995 patients with chronic obstructive pulmonary disease in 20 health centers, where it was shown that 906 patients performed incorrect inhalation techniques. The most common performance errors were associated with low cognitive ability, low peak expiratory flow, and fewer medical consultations with a pulmonologist.

