

Inhalierbare Glucocorticoide der dritten Generation

Ciclesonid

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Literatur

1. Agertoft L, Pedersen S. Short-term lower-leg growth rate and urine cortisol excretion in children treated with ciclesonide. *J Allergy Clin Immunol* 2005;115:940–5.
2. Allen DB. Safety of inhaled corticosteroids in children. *Pediatr Pulmonol* 2002;33:208–20.
3. Allen DB, Bielory L, Derendorf H, Dluhy R, et al. Inhaled corticosteroids: past lessons and future issues. *J Allergy Clin Immunol* 2003;112(Suppl 3):S1–40.
4. Barry PW, O'Callaghan C. Inhalational drug delivery from seven different spacer devices. *Thorax* 1996;51:835–40.
5. Belvisi MG, Bundschuh DS, Stoeck M, Wicks S, et al. Preclinical profile of ciclesonide, a novel corticosteroid for the treatment of asthma. *J Pharmacol Exp Ther* 2005;314:568–74.
6. Bernstein JA, Noonan MJ, Rim C, Fish J, et al. Ciclesonide has minimal oropharyngeal side effects in the treatment of patients with moderate-to-severe asthma. *J Allergy Clin Immunol* 2004;113:S113.
7. Bethke TD, Boudreau RJ, Hasselquist BE, Davidson P, et al. High lung deposition of ciclesonide in 2D- and 3D-imaging. *Eur Respir J* 2002;20(Suppl 38):109s.
8. Buhl R, et al. Once daily ciclesonide is as effective as fluticasone propionate given twice daily in treating patients with asthma. *Am J Respir Crit Care Med* 2004;169:A91.
9. Bundesinstitut für Arzneimittel und Medizinprodukte (BfArM) www.Bfarm.de/de/Arzneimittel/am_sicher/stufenp1/NasGlukokortikoide.pdf; 11.1. 2005
10. Chapman KR, Patel P, Boulet LP, D'Urzo AD, et al. Efficacy and long-term safety of ciclesonide in asthmatic patients as demonstrated in a 52 week long study. *Eur Respir J* 2002;20(Suppl 38):373s.
11. Chapman KR, Patel P, D'Urzo AD, Alexander M, et al. Maintenance of asthma control by once-daily inhaled ciclesonide in adults with persistent asthma. *Allergy* 2005;60:330–7.
12. Ciclesonide: BY 9010, ciclesonide-DPI, ciclesonide-MDI, EL 876. *Drugs R&D* 2002;3: 407–10.
13. Derendorf H. Pharmacokinetic and pharmacodynamic properties of inhaled corticosteroids in relation to efficacy and safety. *Respir Med* 1997;91:22–8.
14. Derendorf H. Relevant pharmacokinetic parameters for determining efficacy and safety in inhaled corticosteroids. *Eur Respir Rev* 2004;13:62–5.
15. Derendorf H, Hochhaus G. What is the best marker for inhaled corticosteroid safety? *Allergy Asthma Proc* 2005;26:89–93.
16. Derom E, Van De Velde V, Marissens S, Engelstätter R, et al. Effects of inhaled ciclesonide and fluticasone propionate on cortisol secretion and airway responsiveness to adenosine 5'-monophosphate in asthmatic patients. *Pulm Pharmacol Ther* 2005;18:328–36.
17. Dietzel K. BY9010: ciclesonide – investigator's brochure. Konstanz: Byk Gulden, Lomberg Chemische Fabrik GmbH, 2000.
18. Dubus JC, Mely L, Huiart L, Marguet C, et al.; réseau de recherche clinique en pneumologie pédiatrique. Cough after inhalation of corticosteroids delivered from spacer devices in children with asthma. *Fundam Clin Pharmacol* 2003;17:627–31.
19. Engelstätter R, Banerji D, Steinijans VW, Wurst W. Low incidence of oropharyngeal adverse events in asthma patients treated with ciclesonide: results from a pooled analysis. *Am J Respir Crit Care Med* 2004;169:A92.
20. Gauvreau GM, Boulet LP, Postma DS, Kawayama T, et al. Effect of low-dose ciclesonide on allergen-induced responses in subjects with mild allergic asthma. *J Allergy Clin Immunol* 2005;116:285–91.
21. Hansel T, Engelstätter R, Benezet O, Kafé H, et al. Once daily ciclesonide (80 µg or 320 µg) is equally effective as budesonide 200 µg given twice daily: a 12-week study of asthma patients. *Eur Respir J* 2003;22(Suppl 45):410s.
22. Kannies F, Richter K, Bohme S, Jorres RA, et al. Effect of inhaled ciclesonide on airway responsiveness to inhaled AMP, the composition of induced sputum and exhaled nitric oxide in patients with mild asthma. *Pulm Pharmacol Ther* 2001;14:141–7.
23. Kardos P, Berdel D, Buhl R, Criée CP, Kroegel C, et al. Leitlinie zur Diagnostik und Therapie von Asthma bronchiale. Kurzfassung. Stuttgart: Thieme-Verlag, 2005.
24. Kroegel C, Mock B, Reißig A, Hengst U, et al. Therapie des Asthma bronchiale im Erwachsenenalter. *Z Arztl Fortbild Qualitätssich* 2001;95:699–706.
25. Kroegel C. Asthma bronchiale. Pathogenetische Grundlagen, Diagnostik und Therapie. 2. überarbeitete und erweiterte Auflage. Stuttgart, New York: Georg Thieme Verlag, 2003.
26. Kroegel C, Bartuschka B, Henzgen M. Allergie – Pathomechanismen und Krankheitsbilder. In: Matthys H, Seeger W (Hrsg.). *Klinische Pneumologie*. Berlin, Heidelberg, London, New York: Springer-Verlag, 2001: 115–7.
27. Kroegel C, Foerster M, Workalemahu G, Mock B. Grundlagen der asthmatischen Entzündung. *Z Arztl Fortbild Qualitätssich* 2001;95:677–83.
28. Kroegel C, Buhl R, Gillissen A, Petro W. Asthma bronchiale versus chronisch-obstruktive Lungenkrankheit (COPD): Von der Pathogenese zur Differentialdiagnostik und Differentialtherapie. *Dtsch Med Wochenschr* 2005;130: 812–8.
29. Kroegel C. Asthmatherapie. Leitfaden einer pathogenetisch begründeten Behandlung. 2., vollständig überarbeitete und ergänzte Auflage. Steinen: Zett-Verlag, 2005.
30. Kroegel C. Asthma. Eine Krankheit beherrschen lernen – und unbeschwert leben. Stuttgart: TRIAS Verlag in MVS, 2005.
31. LaForce CF, Baker JW, Amin D, Rohatagi S, et al. Ciclesonide, a novel inhaled steroid, has no effect on hypothalamic-pituitary-adrenal (HPA)-axis function in mild-to-moderate asthmatics. *J Allergy Clin Immunol* 2003;111: S218.
32. Langdon CG, Adler M, Mehra S, Alexander M, et al. Once-daily ciclesonide 80 or 320 µg for 12 weeks is safe and effective in patients with persistent asthma. *Respir Med* 2005;99: 1275–85.
33. Larsen BB, Nielsen LP, Engelstätter R, Steinijans V, et al. Effect of ciclesonide on allergen challenge in subjects with bronchial asthma. *Allergy* 2003;58:207–12.
34. Lee DK, Haggart K, Currie GP, Bates CE, et al. Effects of hydrofluoroalkane formulations of ciclesonide 400 µg once daily vs. fluticasone 250 µg twice daily on methacholine hyper-responsiveness in mild-to-moderate persistent asthma. *Br J Clin Pharmacol* 2004;58:26–33.
35. Leung SY, Eynott P, Nath P, Chung KF. Effects of ciclesonide and fluticasone propionate on allergen-induced airway inflammation and remodeling features. *J Allergy Clin Immunol* 2005;115:989–96.

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36. Lipworth BJ, Kaliner MA, LaForce CF, Baker JW, et al. Effect of ciclesonide and fluticasone on hypothalamic-pituitary-adrenal axis function in adults with mild-to-moderate persistent asthma. *Ann Allergy Asthma Immunol* 2005;94:465–72.
37. Mutch E, et al. Esterases involved in the hydrolysis of ciclesonide in human tissues. *Eur Respir J* 2003;22(Suppl 45):267s.
38. Nave R, et al. Pharmacokinetics of 14C-ciclesonide after oral and intravenous administration in healthy subjects. *Eur Respir J* 2002;20(Suppl 38):109s.
39. Nave R, Fisher R, Zech K. In vitro metabolism of ciclesonide in the human lung and liver as determined by use of precision-cut tissue slices. *Am J Respir Crit Care Med* 2003;167(Suppl):A771.
40. Nave R, et al. Oropharyngeal deposition of inhaled ciclesonide and budesonide in healthy subjects. *J Allergy Clin Immunol* 2003;111(Suppl 2):S220.
41. Nave R, et al. Differences between pharmacokinetics of ciclesonide-active principle and budesonide following repeated dose inhalations. *Eur Respir J* 2003;22(Suppl 45):P333.
42. Nave R, Bethke TD, van Marle SP, Zech K. Pharmacokinetics of 14C-ciclesonide after oral and intravenous administration to healthy subjects. *Clin Pharmacokinet* 2004;43:479–86.
43. Nave R, Zech K, Bethke TD. Lower oropharyngeal deposition of inhaled ciclesonide via hydrofluoroalkane metered-dose inhaler compared with budesonide via chlorofluorocarbon metered-dose inhaler in healthy subjects. *Eur J Clin Pharmacol* 2005;61:203–8.
44. Newman SP, Brown J, Steed KP, Reader SJ, et al. Lung deposition of fenoterol and flunisolide delivered using a novel device for inhaled medicines: comparison of RESPIMAT with conventional metered-dose inhalers with and without spacer devices. *Chest* 1998;113:957–63.
45. O'Connor BJ, Kilfeather S, Cheung D, et al. Treatment of moderate to severe asthma with ciclesonide: long-term investigation over 52 weeks. *Eur Respir J* 2002;20(Suppl):S406.
46. Panhuysen CI, Vonk JM, Koeter GH, et al. Adult patients may outgrow their asthma: a 25-year follow-up study. *Am J Respir Crit Care Med* 1997;155:1267–72.
47. Pauwels RA, et al. Effects of inhaled ciclesonide and fluticasone propionate on cortisol secretion a PC20 for adenosine in asthma patients. *Am J Respir Crit Care Med* 2002;165:A768.
48. Pedersen S, Steffensen G, Ohlsson SV. The influence of orally deposited budesonide on the systemic availability of budesonide after inhalation from a Turbuhaler. *Br J Clin Pharmacol* 1993;36:211–4.
49. Postma DS, Sevette C, Martinat Y, Schlosser N, et al. Treatment of asthma by the inhaled corticosteroid ciclesonide given either in the morning or evening. *Eur Respir J* 2001;17:1083–8.
50. Price J, Hindmarsh P, Hughes S, Efthimiou J. Evaluating the effects of asthma therapy on childhood growth: what can be learnt from the published literature? *Eur Respir J* 2002;19:1179–93.
51. Rabe KF, Adachi M, Lai CKW, et al. Worldwide severity and control of asthma in children and adults: the global asthma insights and reality surveys. *J Allergy Clin Immunol* 2004;114:40–7.
52. Reynolds NA, Scott LJ. Ciclesonide. *Drugs* 2004;64:511–21.
53. Richter K, Kannies F, Biberger C, Nave R, et al. Comparison of the oropharyngeal deposition of inhaled ciclesonide and fluticasone propionate in patients with asthma. *J Clin Pharmacol* 2005;45:146–52.
54. Rohatagi S, Derendorf H, Zech K, Nave R, et al. PK/PD of inhaled corticosteroids: the risk/benefit of inhaled ciclesonide. *J Allergy Clin Immunol* 2003;111:S218.
55. Rohatagi S, Appajosyula S, Derendorf H, Szeffler S, et al. Risk-benefit value of inhaled glucocorticoids: a pharmacokinetic/pharmacodynamic perspective. *J Clin Pharmacol* 2004;44:37–47.
56. Panhuysen CI, Vonk JM, Koeter GH, et al. Adult patients may outgrow their asthma: a 25-year follow-up study. *Am J Respir Crit Care Med* 1997;155:1267–72.
57. Schatz M. Asthma and pregnancy. *Lancet* 1999;353:1202–4.
58. Schmidt BM, Timmer W, Georgens AC, Hilt M, et al. The new topical steroid ciclesonide is effective in the treatment of allergic rhinitis. *J Clin Pharmacol* 1999;39:1062–9.
59. Stoeck M, Riedel R, Hochhaus G, Haefner D, et al. In vitro and in vivo anti-inflammatory activity of the new glucocorticoid ciclesonide. *J Pharmacol Exp Ther* 2004;309:249–58.
60. Szeffler SJ, Herron J, Lloyd M, Rohatagi S, et al. High doses of the novel inhaled steroid ciclesonide have no effect on HPA-axis function in patients with moderate-to-severe persistent asthma. *J Allergy Clin Immunol* 2003;111:S216.
61. Szeffler S, Rohatagi S, Williams J, Lloyd M, et al. Ciclesonide, a novel Inhaled steroid, does not affect hypothalamic-pituitary-adrenal axis function in patients with moderate-to-severe persistent asthma. *Chest* 2005;128:1104–14.
62. Suissa S, Ernst P, Benayoun S, Baltzan M, et al. Low-dose inhaled corticosteroids and the prevention of death from asthma. *N Engl J Med* 2000;343:332–6.
63. Taylor DA, Jensen MW, Kanabar V, Engelstatter R, et al. A dose-dependent effect of the novel inhaled corticosteroid ciclesonide on airway responsiveness to adenosine-5'-monophosphate in asthmatic patients. *Am J Respir Crit Care Med* 1999;160:237–43.
64. Tulic MK, Hamid Q. The role of the distal lung in asthma. *Semin Respir Crit Care Med* 2002;23:347–59.
65. Tunek A, Sjödin K, Hallström G. Reversible formation of fatty acid esters of budesonide, an antiasthma glucocorticoid, in human lung and liver microsomes. *Drug Metab Dispos* 1997;25:1311–7.
66. Ukena D, et al. Ciclesonide significantly improves pulmonary function when compared with budesonide: a randomized 12-week study. *Eur Respir J* 2003;22(Suppl 45):411s.
67. Van den Toorn LM, Overbeek SE, De Jongste JC, et al. Airway inflammation is present during clinical remission of atopic asthma. *Am J Respir Crit Care Med* 2001;164:2107–2113.
68. van den Toorn LM. Clinical implications of airway inflammation in mild intermittent asthma. *Ann Allergy Asthma Immunol* 2004;92:589–94.
69. Weinbrenner A, Hüneke D, Zschiesche M, Engel G, et al. Circadian rhythm of serum cortisol after repeated inhalation of the new topical steroid ciclesonide. *J Clin Endocrinol Metab* 2002;87:2160–3.
70. Weißbuch Lunge 2005. Deutsche Atemwegsliga und Deutsche Gesellschaft für Pneumologie. Konietzko N, Fabel H (Hrsg.). Stuttgart, New York: Thieme Verlag, 2005.
71. Wettenberg R, Bredel D, Hofmann D, Krause J, Kroegel C, et al. Asthmatherapie bei Kindern und Erwachsenen. Empfehlungen der Deutschen Gesellschaft in der Gesellschaft für Pneumologie. *Med Klinik* 1998;93:639–50.
72. Winkler J, Hochhaus G, Derendorf H. How the lung handles drugs: pharmacokinetics and pharmacodynamics of inhaled corticosteroids. *Proc Am Thorac Soc* 2004;1:356–63.