

DOI:10.13210/j.cnki.jhmu.20170810.027

网络出版地址: <http://kns.cnki.net/kcms/detail/46.1049.R.20170810.1133.054.html> .

枸地氯雷他定联合布地奈德混悬液对行鼻窦内窥镜手术 CRS 患者血清 IgE、EOS 和炎症因子的影响

毕 梦,王 丛[✉],杨 飞

(四川省德阳市人民医院耳鼻咽喉头颈外科,四川 德阳 618000)

[摘要] **目的:**观察枸地氯雷他定联合布地奈德混悬液在行鼻窦内窥镜手术慢性鼻-鼻窦炎(chronic rhinosinusitis, CRS)患者中的临床应用,分析患者血清免疫球蛋白 E(IgE)、嗜酸粒细胞(EOS)和炎症因子水平的变化。**方法:**将收治的 90 例 CRS 患者按照抽签法随机分为对照组($n=45$)和观察组($n=45$),两组均行鼻窦内窥镜手术治疗。在此基础上,对照组给予布地奈德雾化混悬液治疗,观察组给予枸地氯雷他定联合布地奈德混悬液治疗,检测所有受试者治疗前后血清 IgE、EOS 和炎症因子指标的变化。**结果:**治疗前,对照组和观察组血清 IgE 和 EOS 水平均无明显差异($P>0.05$);治疗后,两组血清 IgE 和 EOS 水平均明显低于治疗前本组水平($P<0.05$);且治疗后,观察组低于同期对照组,差异有显著性($P<0.05$)。治疗前,对照组和观察组炎症因子水平均无显著性差异($P>0.05$);治疗后,两组血清 IL-6、IL-8、TNF- α 和 hs-CRP 均明显低于治疗前本组水平($P<0.05$);且治疗后,观察组低于同期对照组,差异有显著性($P<0.05$)。**结论:**在鼻窦内窥镜手术和布地奈德雾化混悬液治疗基础上,联合枸地氯雷他定治疗 CRS 患者,能更有效降低患者血清 IgE 和 EOS 水平,抑制炎症反应,是辅助治疗 CRS 患者潜在有效方案。

[关键词] 枸地氯雷他定;布地奈德混悬液;鼻窦内窥镜手术;慢性鼻-鼻窦炎

[中图分类号] R765.4 **[文献标识码]** A **[文章编号]** 1007-1237(2017)15-2075-03

Effects of Desloratadine Citrate Disodium combined with Budesonide Nasal Spray on serum IgE, EOS and inflammatory factors in patients with CRS after endoscopic sinus surgery

BI Meng, WANG Cong[✉], YANG Fei

(Department of Otolaryngology Head and Neck Surgery, People's Hospital of Deyang City, Deyang 618000, China)

[Foundation Project]: This study was supported by Research Project of Sichuan Provincial Health Bureau (Grant No. 100308)

[Author]: BI Meng (1981-), Male, M.B., Attending Physician, Tel: 15883421314, E-mail: bimeng367@163.com.

[Correspondence to]: WANG Cong (1963-), Associate Chief Physician, Research Orientation: Diagnosis and Treatment of Rhinology and Ear Diseases

Received: 2017-07-18 Revised: 2017-07-26

JHMC, 2017; 23(15): 2075-2077

View from specialist: It is creative, and of certain scientific and educational value.

[ABSTRACT] **Objective:** To observe the clinical application of Desloratadine Citrate Disodium combined with Budesonide Nasal Spray in patients with CRS after endoscopic sinus surgery, and to analyze the changes of serum immunoglobulin E (IgE), eosinophils (EOS) and inflammatory factors in patients. **Methods:** A total of 90 patients with CRS who received endoscopic sinus surgery were randomly divided into control group ($n=45$) and observation group ($n=45$) according to the lottery method. The patients in the control group were treated with the Budesonide Nasal Spray, while those who were in the observation group were treated with Desloratadine Citrate Disodium combined with Budesonide Nasal Spray. The changes of serum IgE, EOS and inflammatory factors were measured before and after operation in all subjects. **Results:** Before treatment, there was no significant difference in IgE and EOS levels between the control group and the observation group ($P>0.05$), while after treatment, the levels of serum IgE and EOS in the two groups were significantly lower than those before treatment ($P<0.05$), and the levels of serum IgE and EOS of the observation group were significantly lower than those of the control

[基金项目] 四川省卫生厅科研项目(100308)

[作者简介] 毕梦(1981-),男,本科,主治医师,电话:15883421314,邮箱:bimeng367@163.com。

[通讯作者] 王丛,主任医师,研究方向:鼻科、耳科方面疾病的诊治工作。

[收稿日期] 2017-07-18 **[修回日期]** 2017-07-26 **网络出版时间:** 2017-08-10 11:33:44

group ($P < 0.05$). Before treatment, there was no significant difference in the level of inflammatory factors between the control group and the observation group ($P > 0.05$), while after treatment, the levels of serum IL-6, IL-8, TNF- α and hs-CRP were significantly lower than those before treatment ($P < 0.05$) and the levels of serum IL-6, IL-8, TNF- α and hs-CRP in the observation group were significantly lower than those of the control group ($P < 0.05$). Conclusions: Based on endoscopic sinus surgery and Budesonide Nasal Spray treatment, combinations of Desloratadine Citrate Disodium treatment for CRS patients can reduce the serum IgE and EOS levels and decrease the inflammatory response. Therefore, it is a potential effective treatment for patients with CRS.

[KEY WORDS] Desloratadine Citrate Disodium; Budesonide nasal spray; Endoscopic sinus surgery; Chronic rhinosinusitis

慢性鼻-鼻窦炎(CRS)是一种慢性炎症性疾病,病因复杂,病情顽固^[1,2]。临床常用抗炎药物糖皮质激素、抗菌素和抗组胺等药物治疗,但单纯的药物治疗效果不佳^[3-5]。近年来,随着鼻窦内窥镜手术的发展,其临床应用价值越来越大^[6,7]。鼻窦内窥镜手术在治疗 CRS 炎症上有局限性,提高手术临床效果需要联合药物治疗^[8]。枸地氯雷他定和布地奈德混悬液是 CRS 患者鼻窦内窥镜手术常用的辅助治疗用药^[9]。本研究选取 90 例行鼻窦内窥镜手术 CRS 患者,分析两药联合对其血清 IgE、EOS 和炎性因子的影响。

1 资料与方法

1.1 一般资料

选择 90 例本院 2015 年 5 月~2016 年 6 月收治的 CRS 患者,按照抽签法随机分为对照组和观察组,各 45 例。对照组男性 23 例,女性 22 例;年龄 18~56 岁;病程 2~10 年;嗅觉正常。观察组男性 25 例,女性 20 例;年龄 19~55 岁;病程 2~8 年;嗅觉正常。对照组完全控制病情 31 例,部分控制病情 10 例,未控制病情 4 例;观察组完全控制病情 33 例,部分控制病情 9 例,未控制病情 3 例。两组性别、年龄、病程和病情比较,差异无统计学意义($P > 0.05$),实验具有可比性。鼻窦内窥镜手术纳入标准^[10]:(1)具有黏脓性鼻涕,鼻塞症状;(2)鼻黏膜充血、水肿或有息肉;(3)病程 1 年以上,药物治疗效果不明显;(4)伴有眶内、颅内等并发症。本人签订知情同意书,本研究获得医院伦理委员会批准。

1.2 治疗方法

所有受试者行鼻窦内窥镜手术治疗,即 Messerklinger 技术。手术操作步骤:患者局部麻醉后,依靠鼻窦内窥镜视野,切除钩突,修整中鼻甲,切除鼻息肉,开放病变鼻窦,治疗不同程度鼻腔阻塞。对照组给予布地奈德雾化混悬液(澳大利亚阿斯利康有限公司生产,注册证号 H20140475),雾化吸入,1~2 mg/次,2 次/d,术前、术后均服用 4 周。观察组在对照组的基础上,给予枸地氯雷他定(扬子江药业集团广州海瑞药业有限公司,国药准字 H20090138),口服,5 mg/次,1 次/d,术前连续口服 4 周。

1.3 观察指标

取所有受试者治疗前和治疗 4 周后外周血 2~3 mL,低温离心取上层血清,存于 -20℃ 备用。采用全自动血液细胞分析仪(XFA6100,北京普朗新技术有限公司)检测血清嗜酸粒细胞(EOS);采用酶联免疫吸附法检测免疫球蛋白 E(IgE)。炎性因子检测指标:白细胞介素-6(IL-6)、白细胞介素-8(IL-8)、肿瘤坏死因子- α (TNF- α)和超敏 C 反应蛋白

(hs-CRP);检测仪器:酶联仪(美国 Beckman 有限公司)。所有操作严格遵循说明书。

1.4 统计学处理

用软件 SPSS20.0 分析所有数据,各组检测指标值以均数士标准差($\bar{x} \pm s$)表示,组间差异比较采用 t 检验, $P < 0.05$ 表示有统计学差异。

2 结果

2.1 两组 CRS 患者治疗前后血清 IgE 和 EOS 水平比较

治疗前,对照组和观察组血清 IgE 和 EOS 水平无明显差异($P > 0.05$);治疗后,对照组血清 IgE 和 EOS 水平分别为(63.28 \pm 7.13)kU/L 和(3.89 \pm 0.84)%,观察组血清 IgE 和 EOS 水平分别为(55.24 \pm 6.85)kU/L 和(3.03 \pm 0.69)%,均明显低于治疗前本组水平($P < 0.05$);且治疗后,观察组低于同期对照组,差异有显著性($P < 0.05$),见表 1。

表 1 两组行鼻窦内窥镜手术 CRS 患者治疗前后血清 IgE 和 EOS 水平比较($n = 45, \bar{x} \pm s$)

组别	时间	IgE (kU/L)	EOS (%)
对照组	治疗前	84.29 \pm 8.37	5.71 \pm 1.21
	治疗后	63.28 \pm 7.13 [#]	3.89 \pm 0.84 [#]
观察组	治疗前	86.43 \pm 8.72	5.69 \pm 1.08
	治疗后	55.24 \pm 6.85 ^{#*}	3.03 \pm 0.69 ^{#*}

注:与本组治疗前相比,[#] $P < 0.05$;与同期对照组相比,^{*} $P < 0.05$ 。

2.2 两组 CRS 患者治疗前后血清炎性因子的变化

治疗前,对照组和观察组炎性因子水平无显著性差异($P > 0.05$);治疗后,对照组 IL-6、IL-8、TNF- α 和 hs-CRP 分别为(11.26 \pm 2.94)pg/mL、(331.74 \pm 36.44)ng/mL、(2.73 \pm 0.62)ng/mL 和(4.15 \pm 0.52)ng/L,观察组 IL-6、IL-8、TNF- α 和 hs-CRP 分别为(7.43 \pm 1.38)pg/mL、(281.13 \pm 30.52)ng/mL、(1.45 \pm 0.38)ng/mL 和(2.85 \pm 0.47)ng/L,均明显低于治疗前本组水平($P < 0.05$);且治疗后,观察组低于同期对照组,差异有显著性($P < 0.05$),见表 2。

表 2 两组行鼻窦内窥镜手术 CRS 患者治疗前后血清炎性因子的变化($n = 45, \bar{x} \pm s$)

组别	时间	IL-6 (pg/mL)	IL-8 (ng/mL)	TNF- α (ng/mL)	hs-CRP (ng/L)
对照组	治疗前	16.47 \pm 4.19	415.61 \pm 54.83	3.97 \pm 0.81	6.02 \pm 0.73
	治疗后	11.26 \pm 2.94 [#]	331.74 \pm 36.44 [#]	2.73 \pm 0.62 [#]	4.15 \pm 0.52 [#]
观察组	治疗前	15.92 \pm 4.23	413.97 \pm 51.76	4.03 \pm 0.79	5.94 \pm 0.66
	治疗后	7.43 \pm 1.38 ^{#*}	281.13 \pm 30.52 ^{#*}	1.45 \pm 0.38 ^{#*}	2.85 \pm 0.47 ^{#*}

注:与本组治疗前相比,[#] $P < 0.05$;与同期对照组相比,^{*} $P < 0.05$ 。

3 讨论

慢性鼻-鼻窦炎(CRS)是耳鼻咽喉科的多发病之一,是一种慢性炎症性疾病^[11]。CRS 病因复杂,包括:环境污染、纤毛功能异常、感染等因素。近年来 CRS 发病率逐渐升高,且易反复,影响人们的生活质量^[12-14]。CRS 临床上常用药物综合治疗。包括抗炎药糖皮质激素、抗菌素及抗组胺药物等。但单独药物治疗 CRS 的效果不佳。根据《慢性鼻-鼻窦炎诊断和治疗指南》,患者出现严重临床症状可接受鼻窦内窥镜手术治疗^[10]。鼻窦内窥镜手术的兴起是鼻科学的巨大进步,已逐渐从治疗慢性鼻窦炎、鼻息,拓展到鼻颅相关疾病^[15]。鼻窦内窥镜手术可帮助医疗人员直视病变,判定手术精确位置,局部解剖,从而彻底清除病变组织。此手术创伤小、视野清晰、精确性明显提高,临床应用可以显著改善 CRS 患者临床症状^[16]。但手术并不能直接治疗炎症性疾病,只是为机体炎症恢复创造条件,需要辅以药物治疗^[17]。已有报道,枸地氯雷他定和布地奈德混悬液单独联合鼻窦内窥镜手术的临床疗效,少有报道联合用药的作用机理^[9,18]。故本文选取 90 例行鼻窦内窥镜手术的 CRS 患者,初步探讨枸地氯雷他定联合布地奈德混悬液的作用机理。

CRS 患者体内 EOS 增多,并逐渐向鼻粘膜病变部位聚集,加重病变^[19]。IgE 是人体免疫球蛋白 E,在机体受刺激时产生^[20]。临床已证明,CRS 患者血清 EOS、IgE 含量高^[19,20]。IL-6 主要由 B 细胞、T 细胞等分泌产生,能与 TNF- α 形成炎症级联网络,在机体抗感染免疫中起重要作用,能抑制 CRS 患者免疫功能。TNF- α 可启动和促进多种炎症反应^[21,22]。IL-8 具有趋化作用,诱导炎症因子聚集。hs-CRP 是一种肝细胞合成的急性蛋白,作为急性炎症指标之一^[23]。已报道,CRS 患者血清炎症因子水平高于健康人群,不利于 CRS 治疗。因此,降低 CRS 患者外周血炎症因子水平至关重要。本研究显示:治疗后,两组 IgE 和 EOS 水平明显降低,且观察组下降程度显著大于对照组。治疗后,两组炎症因子水平均降低,且观察组降低程度显著大于对照组。枸地氯雷他定联合布地奈德混悬液用药治疗鼻窦内窥镜手术 CRS 患者,使其血清 IgE、EOS 和炎症因子的水平下降程度明显优于单独使用布地奈德混悬液的患者。分析原因认为^[9,18],由于布地奈德属于糖皮质激素,具有局部抗炎作用,能缓解 CRS 患者炎症反应,降低炎症因子水平;此外,布地奈德能减轻平滑肌的收缩反应,增强内皮细胞和溶酶体膜的稳定性,缓解 CRS 临床症状,降低 IgE 和 EOS 水平。枸地氯雷他定体内代谢为地氯雷他定,为三环类抗组胺药,可抑制组胺释放,缓解慢性鼻炎

等相关症状。两者联合用药,有可能发挥协同作用,在改善患者临床症状,降低 IgE、EOS 和炎症因子释放方面更具有优势。

综上所述,相对于布地奈德混悬液,枸地氯雷他定联合布地奈德混悬液用药治疗,鼻窦内窥镜手术 CRS 患者血清 IgE、EOS 和炎症因子的水平下降程度更明显,是联合鼻窦内窥镜手术治疗 CRS 患者的潜在有效方案。

参考文献

- 1 王洪锋. 中西医结合治疗慢性鼻炎 76 例疗效观察[J]. 北京中医药, 2015, 34(1):52-53.
- 2 Qazi Z U, Latif S, Awan S M. Orbital Involvement In Sinonasal Diseases[J]. J Ayub Med Coll Abbottabad, 2016, 28(4):687-693.
- 3 Beswick D M, Ramadan H, Baroody FM, et al. Practice patterns in pediatric chronic rhinosinusitis: A survey of the American Rhinologic Society[J]. Am J Rhinol Allergy, 2016, 30(6):418-423.
- 4 Kohli P, Schlosser RJ, Storck K, et al. Olfactory cleft computed tomography analysis and olfaction in chronic rhinosinusitis [J]. Am J Rhinol Allergy, 2016, 30(6):402-406.
- 5 Over DR. Clinical Inquiry: Which treatments are safe and effective for chronic sinusitis? [J]. J Fam Pract, 2016, 65(11):829-831.
- 6 Alanin MC, Aanaes K, Høiby N, et al. Sinus surgery can improve quality of life, lung infections, and lung function in patients with primary ciliary dyskinesia [J]. Int Forum Allergy Rhinol, 2017, 7(3):240-247.
- 7 Jain R, Kumar H, Tawhai M, et al. The impact of endoscopic sinus surgery on paranasal physiology in simulated sinus cavities [J]. Int Forum Allergy Rhinol, 2017, 7(3):248-255.
- 8 Patel ZM, Thamboo A, Rudmik L, et al. Surgical therapy vs continued medical therapy for medically refractory chronic rhinosinusitis: a systematic review and meta-analysis [J]. Int Forum Allergy Rhinol, 2017, 7(2):119-127.
- 9 冶娟, 王菲. 枸地氯雷他定联合鼻窦内窥镜手术治疗慢性鼻窦炎疗效及对患者血清 TIgE、ECP 和炎症因子的影响[J]. 中国内镜杂志, 2017, 23(2):21-25.
- 10 中华耳鼻咽喉头颈外科杂志编委会. 慢性鼻-鼻窦炎诊断和治疗指南[J]. 中国临床医生杂志, 2010, 38(4):21-22.
- 11 Montone KT, Livolsi VA. Inflammatory and infectious lesions of the sinonasal tract [J]. Surg Pathol Clin, 2017, 10(1):125-154.
- 12 Capelli M, Gatti P. Radiological study of maxillary sinus using CBCT: relationship between mucosal thickening and common anatomic variants in chronic rhinosinusitis [J]. J Clin Diagn Res, 2016, 10(11):MC07-MC10.
- 13 Badr DT, Gaffin JM, Phipatanakul W. Pediatric Rhinosinusitis [J]. Curr Treat Options Allergy, 2016, 3(3):268-281.
- 14 Slovick A, Cornet M, Surda P, et al. Chronic rhinosinusitis: New understanding of specific and general Quality of life scores [J]. Rhinology, 2016, 54(4):289-291.
- 15 朱敏. 鼻内窥镜手术治疗慢性鼻-鼻窦炎临床疗效及影响因素 [J]. 心理医生, 2017, 23(4):142-143.
- 16 Steele TO, Mace JC, Dedhia R, et al. Health utility values for patients with recurrent acute rhinosinusitis undergoing endoscopic sinus surgery: a nested case control study [J]. Int Forum Allergy Rhinol, 2016, 6(11):1182-1187.

- remifentanil and sevoflurane compared with propofol, remifentanil and rocuronium: A randomised, prospective, clinical trial [J]. *BMC Anesthesiol*, 2014, 14(1):1-8.
- 8 Hernándezpalazón J, Izura V, Fuentesgarcía D, et al. Comparison of the effects of propofol and sevoflurane combined with remifentanil on transcranial electric motor-evoked and somatosensory-evoked potential monitoring during brainstem surgery [J]. *J Neurosurg Anesthesiol*, 2015, 27(4):282-8.
- 9 张艳杰, 王俊莲, 刘新蕊, 等. 瑞芬太尼联合丙泊酚麻醉对脑外科手术患者血流动力学及炎症因子的影响[J]. *中国实用神经疾病杂志*, 2015, 18(15):95-96.
- 10 冯兴龙, 伍志超, 冯麟, 等. 两种不同药物在脑外科麻醉诱导中对血流动力学的影响比较[J]. *立体定向和功能神经外科杂志*, 2015, 26(3):160-162.
- 11 中国医师协会神经外科医师分会, 中国神经创伤专家委员会, 中国颅脑创伤外科手术指南[J]. *中华神经外科杂志*, 2015, 25(1):100-101.
- 12 蒋艳东, 赵素敏. 瑞芬太尼联合丙泊酚麻醉对腹腔镜胆囊切除术患者应激反应、血气指标的影响[J]. *海南医学院学报*, 2016, 22(7):677-679.
- 13 Shoushtarian M, Sahinovic MM, Absalom AR, et al. Comparisons of electroencephalographically derived measures of hypnosis and antinociception in response to standardized stimuli during target-controlled propofol-remifentanil anesthesia [J]. *Anesth Analg*, 2016, 122(2):382-92.
- 14 Badenes R, Gruenbaum S E, Bilotta F. Cerebral protection during neurosurgery and stroke[J]. *Curr Opin Anaesthesiol*, 2015, 28(5):532-6.
- 15 Brinkman EN, Stolwijk LJ, Lemmers PM, et al. A survey of the dose of inhalational agents used to maintain anaesthesia in infants[J]. *Eur J Anaesthesiol*, 2017, 34(3):158-162.
- 16 Johansen N, Kjaergaard KD, Peters CD, et al. Brain swelling during dialysis: A randomized trial comparing low-flux hemodialysis with pre-dilution hemodiafiltration [J]. *Clin Nephrol*, 2017, 87(5):221-230.
- 17 黄国勇, 梁宁, 马利, 等. 清醒镇痛术在门急诊患者局麻手术中的应用[J]. *现代医药卫生*, 2012, 28(10):1456-1458.
- 18 武元星, 郝京京, 王强. 血清及脑脊液降钙素原在神经外科术后颅内感染早期诊断中的应用[J]. *中国临床神经外科杂志*, 2017, 22(4):237-238.
- 19 Bilgin I A, Hatipoglu E, Aghayeva A, et al. Predicting value of serum procalcitonin, C-reactive protein, drain fluid culture, drain fluid interleukin-6, and tumor necrosis factor- α levels in anastomotic leakage after rectal resection [J]. *Surg Infect (Larchmt)*, 2017, 18(3):350-356.
- 20 魏小川, 熊学辉, 罗杰. 法舒地尔注射液辅助手术治疗脑外伤对应激激素及炎症因子的影响[J]. *海南医学院学报*, 2017, 23(7):954-957.
- 21 Sun GQ, Gao BF, Li GJ, et al. Application of remifentanil for conscious sedation and analgesia in short-term ERCP and EST surgery[J]. *Medicine (Baltimore)*, 2017, 96(16):e6567.
- 22 Cao SE, Gao BQ, Zhan YQ, et al. Clinical application of remifentanil in local anesthesia for tumor resection in functional brain area[J]. *Eur Rev Med Pharmacol Sci*, 2014, 18(21):3212-3216.
- 23 Necib S, Tubach F, Peuch C, et al. Recovery from anesthesia after craniotomy for supratentorial tumors: comparison of propofol-remifentanil and sevoflurane-sufentanil (the PROMI-FLUNIL trial)[J]. *J Neurosurg Anesthesiol*, 2014, 26(1):37-44.
- 24 Park J S, Kim K J, Lee J H, et al. A randomized comparison of remifentanil target-controlled infusion versus dexmedetomidine single-dose administration: a better method for smooth recovery from general sevoflurane anesthesia[J]. *Am J Ther*, 2016, 23(3):505-510.
- 25 Soehle M, Wolf C F, Priston M J, et al. Comparison of propofol pharmacokinetic and pharmacodynamic models for awake craniotomy: A prospective observational study[J]. *Eur J Anaesthesiol*, 2015, 32(8):527-534.
- 21 Plewka D, Grzanka A, Drzewiecka E, et al. Differential expression of tumor necrosis factor α , interleukin 1 β , nuclear factor κ B in nasal mucosa among chronic rhinosinusitis patients with and without polyps[J]. *Postepy Dermatol Alergol*, 2017, 34(3):199-206.
- 22 Wang CS, Adam Honeybrook MD, Mhs NC, et al. Sinusitis in patients on tumor necrosis factor alpha inhibitors[J]. *Int Forum Allergy Rhinol*, 2017, 7(4):380-384.
- 23 Pałac J, Bratek S, Partyka R, et al. The usefulness of evaluation of: ferritin, ultrasensitive CRP and tissue specific polypeptide 18th (TPS) in assessment of therapy efficacy in patients with nasal polyps[J]. *Otolaryngol Pol*, 2014, 68(1):34-41.

(上接第 2077 页)

- 17 Behera S, Mohindra S, Patro SK, et al. Comparison by objective parameters in patients with chronic rhinosinusitis managed medically and surgically (with and without powered instruments)[J]. *Allergy Rhinol (Providence)*, 2016, 7(3):121-126.
- 18 李大军. 鼻窦内窥镜手术联合布地奈德混悬液治疗慢性鼻-鼻窦炎临床观察[J]. *北方药学*, 2017, 14(2):127-128.
- 19 Brescia G, Barion U, Zanotti C, et al. The prognostic role of serum eosinophil and basophil levels in sinonasal polyposis[J]. *Int Forum Allergy Rhinol*, 2017, 7(3):261-267.
- 20 张茜. 香菊胶囊对变应性鼻炎患者 IgE、IL-4、IL-8 及 EOS 的影响[J]. *海南医学院学报*, 2016, 22(5):490-492.