

doi: 10.13241/j.cnki.pmb.2021.11.026

痰热清注射液联合头孢他啶对心力衰竭合并肺部感染患者的疗效探讨*

包美珍¹ 韩惠^{2Δ} 高乐¹ 关宏¹ 韩伟¹

(内蒙古医科大学附属医院 1 心血管内科; 2 呼吸内科 内蒙古 呼和浩特 010050)

摘要 目的:研究痰热清注射液联合头孢他啶对心力衰竭合并肺部感染患者的疗效。**方法:**选择 2019 年 1 月~2019 年 12 月我院收治的 81 例心力衰竭合并肺部感染患者,随机奇偶法分为两组。均给予抗感染、抗心律失常、吸氧、利尿、扩血管、平喘和强心等治疗。对照组静脉滴注头孢他啶,每天两次,每次 2.0 g;观察组在头孢他啶的基础上加用痰热清注射液,每天静脉滴注 1 次,每次 20 mL。检测两组的血清 C 反应蛋白(C-reactive protein, CRP)、白细胞介素-1 β (interleukin-1 β , IL-1 β)、降钙素原(procalcitonin, PCT)和白细胞介素-8(interleukin-8, IL-8)水平、左心室舒张期末内径(Left ventricular end diastolic diameter, LVEDD)、6 min 步行试验(6 min walking test, 6MWT)、左心室射血分数(Left ventricular ejection fraction, LVEF)。**结果:**观察组的有效率为 95.00%,明显高于对照组的 73.17%($P<0.05$);治疗前,两组的血清 CRP、IL-1 β 、PCT 和 IL-8 水平无差异($P>0.05$),治疗后,两组的上述指标均明显降低($P<0.05$),且观察组更低($P<0.05$);治疗前,两组的 LVEDD、6MWT 和 LVEF 无差异($P>0.05$),治疗后,两组的上述指标明显改善($P<0.05$),观察组更为明显($P<0.05$)。**结论:**痰热清注射液联合头孢他啶对心力衰竭合并肺部感染患者有比较显著的疗效,能明显降低其血清炎症指标,有效控制感染,改善心功能,值得进行推广。

关键词:痰热清注射液;头孢他啶;心力衰竭;肺部感染;炎症因子;心功能

中图分类号:R541.61;R563.1 **文献标识码:**A **文章编号:**1673-6273(2021)11-2117-04

Tanreqing Injection Combined with Ceftazidime in the Treatment of Heart Failure Complicated with Pulmonary Infection*

BAO Mei-zhen¹, HAN Hui^{2Δ}, GAO Le¹, GUAN Hong¹, HAN Wei¹

(1 Department of Cardiology; 2 Department of Respiratory Medicine, Affiliated Hospital of Inner Mongolia Medical University, Hohhot, Inner Mongolia, 010050, China)

ABSTRACT Objective: To investigate the effect of Tanreqing injection combined with ceftazidime in the treatment of heart failure complicated with pulmonary infection. **Methods:** Selected 81 cases of patients with heart failure complicated with pulmonary infection who were treated in our hospital from January 2019 to December 2019, random parity method is divided into two groups. All were given anti-infection, anti-arrhythmia, oxygen inhalation, diuretic, vasodilator, asthma, and cardiotonic therapy. The control group was intravenously infused with ceftazidime twice a day, 2.0 g each time. The observation group was added with Tanreqing injection on the basis of ceftazidime, and was intravenously infused once a day, 20 mL each time. Detection of serum CRP, IL-1 β , PCT, and IL-8 level, LVEDD, 6MWT, and LVEF. **Results:** The effective rate of the observation group was 95.00 %, which was significantly higher than that of the control group 73.17 % ($P<0.05$). Before treatment, there was no difference in serum CRP, IL-1 β , PCT and IL-8 levels between the two groups ($P>0.05$). After treatment, the above indexes of the two groups were significantly reduced ($P<0.05$), and the observation group was lower ($P<0.05$). Before treatment, there was no difference in LVEDD, 6MWT and LVEF between the two groups ($P>0.05$). After treatment, The above indicators of the two groups were significantly improved ($P<0.05$), the observation group was more obvious ($P<0.05$). **Conclusion:** Tanreqing injection combined with ceftazidime has a significant effect on patients with heart failure complicated with pulmonary infection. It can significantly reduce the serum inflammatory index, effectively control infection and improve cardiac function, which is worthy of promotion.

Key words: Tanreqing Injection; Ceftazidime; Heart Failure; Pulmonary Infection; Inflammatory Factors; Cardiac Function

Chinese Library Classification(CLC): R541.61; R563.1 **Document code:** A

Article ID:1673-6273(2021)11-2117-04

前言

心力衰竭是由于各种心脏疾病造成机体心功能不全的一

种临床综合征,患者发病后的症状以呼吸困难、液体潴留和乏力等为主^[1-3]。治疗原则主要是扩张血管,去除病因,利尿以降低心脏负荷,强心以促进心排血量的增加^[4,5]。在绝大多数情况下,

* 基金项目:国家中医临床研究基地开放课题资助项目(JD201508)

作者简介:包美珍(1986-),女,硕士研究生,主治医师,研究方向:心内科疾病的治疗,电话:15661157662, E-mail: bao20205200@163.com

Δ 通讯作者:韩惠(1988-),女,硕士研究生,主治医师,研究方向:呼吸内科,电话:18547186271, E-mail: 864597956@qq.com

(收稿日期:2020-08-28 接受日期:2020-09-23)

心力衰竭指的是心肌的收缩力明显降低,造成心脏的排血量无法满足机体的代谢所需,组织以及器官的血流灌注明显不足,而且出现体循环淤血和(或)肺循环淤血的临床表现,而肺循环淤血会造成肺部的抵抗力降低,极易合并肺部感染,导致心力衰竭患者的病情明显加重,甚至是造成心力衰竭患者死亡的主要原因之一^[6]。有研究发现,在引起老年心力衰竭患者死亡的诸多因素中,最为常见的因素为肺部感染^[7]。因此,改善心力衰竭,提高生活质量,降低病死率,需要高度重视心力衰竭合并肺部感染的治疗。临床多采取抗生素对心力衰竭合并肺部感染患者的病情进行控制,但是如果长时间应用抗生素,会造成耐药率升高,因此临床治疗比较棘手,疗效常常不甚理想。近年来的研究表明,痰热清注射液具有抗病毒、止咳、抗菌、化痰以及消炎等多种效果,能有效治疗多种呼吸系统疾病^[8]。本研究在头孢他

啉的基础上,创新性地联合应用痰热清注射液,以分析其对于心力衰竭合并肺部感染的疗效。

1 资料与方法

1.1 一般资料

选择 2019 年 1 月~2019 年 12 月我院收治的 81 例心力衰竭合并肺部感染患者,纳入标准:均参照相关的诊断标准和病原学检查、肺部 X 线检查确诊^[9],均知情同意。排除标准:(1)合并支气管炎以及肺癌等其他呼吸道病变患者;(2)对痰热清注射液和头孢他啶过敏的患者;(3)患有其他的感染性疾病患者;(4)精神疾病患者。

81 例患者经过随机奇偶法分为两组。两组的基线资料具有可比性($P>0.05$),见表 1。

表 1 两组一般资料对比

Table 1 Comparison of two sets of general information

Groups	n	Male/female	Average age (years)	Average duration (years)	Average duration of pulmonary infection (d)	Primary disease(Expanding the Heart/Coronary heart disease/ Cardiac valve disease/Hypertension/ Other)
Control group	41	21/20	59.78±6.34	2.53±0.79	2.43±0.54	2/18/5/14/2
Observation group	40	21/19	60.29±5.73	2.57±0.63	2.49±0.57	2/18/6/13/1

1.2 治疗方法

按照两组的具体情况给予抗感染、抗心律失常、吸氧、利尿、扩血管、平喘和强心等治疗。对照组静脉滴注头孢他啶(深圳华润九新药业,国药准字 H20003261),每天两次,每次 2.0 g;观察组在头孢他啶的基础上加用痰热清注射液(上海凯宝药业,国药准字 Z20030054),每天静脉滴注 1 次,每次 20 mL。共给药 1 w。

1.3 观察指标

比较两组的治疗效果,评估标准^[10]:(1)显效:患者的 X 线检查没有发现肺部阴影,心功能改善幅度大于 2 级,且症状基本消失;(2)有效:患者的 X 线检查发现肺部阴影明显减少,心功能改善幅度大于 1 级,且症状明显减轻;(3)无效:患者的 X 线检查发现肺部阴影没有明显的改变,心功能和症状体征没有

改善。

治疗前后,空腹采集 3 mL 上肢静脉血,用 ELISA 法检测血清 CRP、IL-1 β 、PCT 和 IL-8 水平,试剂盒均购自国药集团化学试剂有限公司,并检测两组的 LVEDD、6MWT 和 LVEF。

1.4 统计学分析

应用 SPSS 23.00,经正态性检验和方差齐性检验,计量资料用($\bar{x}\pm s$)示,行 t 检验,计数资料用 n(%)示,行 χ^2 检验, $P<0.05$ 有统计学意义。

2 结果

2.1 两组疗效对比

观察组的有效率为 95.00 % (38/40), 明显高于对照组的 73.17 % (30/41, $P<0.05$), 见表 2。

表 2 两组疗效比较[例(%)]

Table 2 Comparison of the effect between two groups [n(%)]

Groups	n	Effective	Valid	Invalid	The total effect rate
Control group	41	19(46.34)	11(26.83)	11(26.83)	30(73.17)
Observation group	40	24(60.00)	14(35.00)	2(5.00)	38(95.00)*

Note: Compared with the control group, * $P<0.05$.

2.2 两组血清 CRP、IL-1 β 、PCT 和 IL-8 水平对比

治疗前,两组的血清 CRP、IL-1 β 、PCT 和 IL-8 水平对比无差异($P>0.05$),治疗后,两组的上述指标均明显降低($P<0.05$),且观察组更低($P<0.05$),见表 3。

2.3 两组心功能对比

治疗前,两组的 LVEDD、6MWT 和 LVEF 无明显的差异($P>0.05$),治疗后,两组的 LVEDD、6MWT 和 LVEF 明显改善

($P<0.05$), 观察组的 LVEDD、6MWT 和 LVEF 更为明显($P<0.05$), 见表 4。

2.4 不良反应

观察组出现胃肠道反应 2 例,皮肤过敏 1 例,胸闷 1 例,发生率为 10.0 %;对照组发出现胃肠道反应 3 例,皮肤过敏 1 例,胸闷 1 例,发生率为 12.2 %,两组对比无差异($P>0.05$)。

表 3 两组血清 CRP、IL-1 β 、PCT 和 IL-8 水平对比($\bar{x}\pm s$)Table 3 Comparison of serum CRP, IL-1 β , PCT and IL-8 levels between the two groups($\bar{x}\pm s$)

Groups	n		CRP/(mg/L)	IL-1 β /(pg/mL)	PCT/(μ g/L)	IL-8/(μ g/L)
Control group	41	Before treatment	27.34 $\pm$ 4.59	147.35 $\pm$ 24.78	4.36 $\pm$ 1.14	9.63 $\pm$ 1.57
		After treatment	10.29 $\pm$ 2.64 [#]	75.42 $\pm$ 13.49 [#]	1.09 $\pm$ 0.34 [#]	5.73 $\pm$ 1.15 [#]
Observation group	40	Before treatment	26.83 $\pm$ 5.47	145.93 $\pm$ 26.41	4.32 $\pm$ 1.07	9.62 $\pm$ 1.34
		After treatment	3.47 $\pm$ 1.06 ^{*#}	37.82 $\pm$ 10.14 ^{*#}	0.42 $\pm$ 0.07 ^{*#}	4.38 $\pm$ 0.92 ^{*#}

Note: Compared with the control group, * P <0.05; compared with before treatment, [#] P <0.05.

表 4 两组心功能对比($\bar{x}\pm s$)Table 4 Comparison of cardiac function between the two groups($\bar{x}\pm s$)

Groups	n		LVEDD (mm)	6MWT (m)	LVEF (%)
Control group	41	Before treatment	51.39 $\pm$ 11.24	407.63 $\pm$ 136.54	36.23 $\pm$ 5.64
		After treatment	45.67 $\pm$ 8.31 [#]	465.73 $\pm$ 127.82 [#]	42.57 $\pm$ 7.69 [#]
Observation group	40	Before treatment	50.25 $\pm$ 12.17	409.59 $\pm$ 132.14	36.32 $\pm$ 4.57
		After treatment	41.69 $\pm$ 6.24 ^{*#}	514.27 $\pm$ 145.31 ^{*#}	49.57 $\pm$ 8.26 ^{*#}

3 讨论

心力衰竭是高血压心脏病、急性心肌梗死和先天性心脏病等疾病发展的最终阶段,也是机体的心脏失去代偿功能的一个较为严重的阶段,其主要特征为心室功能障碍、外周血流分布异常和神经内分泌激活^[10-13]。心力衰竭的症状包含呼吸困难、心悸、肺部啰音和下肢水肿等,具有病情逐渐加剧、预后差、反复发作、花费高的特点^[14-16]。心力衰竭患者伴有神经内分泌系统和细胞因子的过度激活,心脏充盈及泵血能力下降,5年存活率与恶性肿瘤相似^[17,18],大部分的心血管疾病病人最终都会死于心力衰竭^[19]。长期心力衰竭导致的营养状态下降低会对机体的免疫功能造成不利的影响,且其造成的组织器官血液灌注不足容易导致肺循环淤血,使得心力衰竭患者容易发生肺部感染^[20]。而心力衰竭以及肺部感染二者互为因果,会使其病情进一步加重,对其生存质量产生严重的威胁。

头孢他啶的抗菌作用主要是利用头孢他啶对于细菌胞壁形成的抑制效果,且该药对 β -内酰胺反应具有比较高度的稳定性^[21-24]。痰热清注射液的成分有熊胆粉、山羊角、黄芩、连翘和金银花。其中,山羊角能产生解热和镇静的效果;黄芩能产生清热解毒和化痰解痉的效果;金银花可以有效解热毒和抗炎;熊胆粉能有效镇咳、祛痰平喘和解毒解痉;连翘主治温热,可以有效散结和清热解毒;诸药合用,共奏清热解毒以及化痰平喘的效果^[25]。现代药理学研究发现,熊胆粉中的有效成分胆汁酸类具有显著的抗惊厥、解痉利胆、抑菌、抗过敏、抗炎、平喘以及镇咳等作用;黄芩苷具有比较强的抗变态反应、抗菌抗病毒、解热镇静及抗炎的效果;连翘具有显著的解热、抗病原微生物、保肝以及抗炎的作用;金银花的有效成分包括异绿原酸以及绿原酸,具有较强的抗菌作用,尤其是对溶血性链球菌和伤寒沙门菌的抑制作用极强,且金银花具有加强防御白细胞以及吞噬白细胞的功能^[26,27]。安俊涛^[28]采取抗生素联合痰热清注射液治疗,心力衰竭合并肺部感染患者的有效率升高至 95.65%(44/46)。与本研究结果相一致。

有研究认为^[29],血清 CRP、IL-1 β 、PCT 和 IL-8 代表的炎症因子水平与肺部感染患者的病情度呈正相关,可以有效评估预后情况。治疗后,观察组的血清 CRP、IL-1 β 、PCT 和 IL-8 水平明显低于对照组。表明痰热清注射液联合头孢他啶能更加显著的促进炎症指标的好转,有效控制肺部感染,与胡杰等^[29]的研究结果相一致。其原因为,痰热清注射液能明显抑制机体的炎症渗出物性水肿,有效减少炎症细胞的浸润^[30]。治疗后,观察组的 LVEDD、6MWT 和 LVEF 明显更优。表明痰热清注射液联合头孢他啶能更好的改善机体的心功能。其原因为,通过采取痰热清注射液联合头孢他啶对肺部感染进行有效的控制,可以使心力衰竭合并肺部感染患者体内的环境维持相对稳定的状态,且肺部感染症状的减轻有助于降低心室负荷,减轻肺部感染对机体心室所造成的负担,从而有助于促进患者心功能的恢复。

综上所述,痰热清注射液联合头孢他啶对心力衰竭合并肺部感染患者有比较显著的疗效,能明显降低其血清炎症指标,有效控制感染,改善心功能,值得进行推广。

参考文献(References)

- [1] Oriana C, Massimo P, Neil S, et al. Validation of Exercise Capacity as a Surrogate Endpoint in Exercise-Based Rehabilitation for Heart Failure: A Meta-Analysis of Randomized Controlled Trials [J]. Jacc Heart Failure, 2018, 6(7): e596
- [2] Yancy CW, Jessup M, Bozkurt B, et al. 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure [J]. Journal of cardiac failure, 2017, 23(8): 1476-1488
- [3] Kosiborod M, Cavender MA, Fu AZ, et al. Lower Risk of Heart Failure and Death in Patients Initiated on Sodium-Glucose Cotransporter-2 Inhibitors Versus Other Glucose-Lowering Drugs Clinical Perspective: The CVD-REAL Study (Comparative Effectiveness of Cardiovascular Outcomes in New Users of Sodium-Glucose Cotransporter-2 Inhibitors)[J]. Circulation, 2017, 136(3): 249-259
- [4] Kim HL, Kim MA, Choi DJ, et al. Gender Difference in the Prognostic Value of N-Terminal Pro-B Type Natriuretic Peptide in Patients With

- Heart Failure - A Report From the Korean Heart Failure Registry (KorHF)[J]. *Circulation Journal*, 2017, 81(9): 1329-1336
- [5] Sedlar N, Lainscak M, M Rtensson J, et al. Factors related to self-care behaviours in heart failure: A systematic review of European Heart Failure Self-Care Behaviour Scale studies [J]. *European Journal of Cardiovascular Nursing Journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology*, 2017, 16(4): e147
- [6] Ying Z, Hong LI, Ji-Dong Y, et al. The Significance of Serum Procalcitonin Level in the Treatment of Senile Heart Failure Complicated with Pulmonary Infection and Its Influence on Serum WBC, CRP and ESR [J]. *Labeled Immunoassays and Clinical Medicine*, 2018, 25(5): 630-633
- [7] Jianguo Z, Ming D, Nana Y, et al. Relationship among BNP, inflammatory factors and heart function in patients with pulmonary infection complicated by heart failure [J]. *Chinese Journal of Evidence-Based Cardiovascular Medicine*, 2017, 9(11): 1357-1359
- [8] 李静 杜伟平. 痰热清注射液治疗慢阻肺急性发作及对 C 反应蛋白、肿瘤坏死因子- α 、降钙素原的影响[J]. *川北医学院学报*, 2016, 31(5): 699-699
- [9] Vestbo J, Hurd SS, Agustí AG, et al. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: GOLD executive summary [J]. *Am J Respir Crit Care Med*, 2013, 187(4): 347-365
- [10] Tampaki EC, Tampakis A, Pantos C. Letter by Tampaki et al Regarding Article, "Lower Risk of Heart Failure and Death in Patients Initiated on Sodium-Glucose Cotransporter-2 Inhibitors Versus Other Glucose-Lowering Drugs: The CVD-REAL Study (Comparative Effectiveness of Cardiovascular Outcomes in New Users of Sodium-Glucose Cotransporter-2 Inhibitors)" [J]. *Circulation*, 2018, 137(9): 982-983
- [11] Bechthold A, Boeing H, Schwedhelm C, et al. Food groups and risk of coronary heart disease, stroke and heart failure: A systematic review and dose-response meta-analysis of prospective studies [J]. *Critical Reviews in Food Science & Nutrition*, 2019, 59(7): e1071
- [12] Felker GM, Anstrom KJ, Adams KF, et al. Effect of Natriuretic Peptide-Guided Therapy on Outcomes in High-Risk Patients with Heart Failure and Reduced Ejection Fraction: A Randomized Clinical Trial[J]. *Journal of Cardiac Failure*, 2017, 23(11): e830
- [13] Jin-Shan H, Xue-Bin L. Letter by Jin-shan and Xue-bin Regarding Article, "Lower Risk of Heart Failure and Death in Patients Initiated on Sodium-Glucose Cotransporter-2 Inhibitors Versus Other Glucose-Lowering Drugs: The CVD-REAL Study (Comparative Effectiveness of Cardiovascular Outcomes in New Users of Sodium-Glucose Cotransporter-2 Inhibitors)"[J]. *Circulation*, 2018, 137(9): 988-988
- [14] Stehlik J, Estep JD, Selzman CH, et al. Patient-Reported Health-Related Quality of Life Is a Predictor of Outcomes in Ambulatory Heart Failure Patients Treated With Left Ventricular Assist Device Compared With Medical Management[CLINICAL PERSPECTIVE][J]. *Circulation: Heart Failure*, 2017, 10(6): e003910
- [15] Dondo TB, Hall M, West RM, et al. β -Blockers and Mortality After Acute Myocardial Infarction in Patients Without Heart Failure or Ventricular Dysfunction [J]. *Journal of the American College of Cardiology*, 2017, 69(22): 2710-2720
- [16] Givertz MM, Stevenson LW, Costanzo MR, et al. Pulmonary Artery Pressure-Guided Management of Patients With Heart Failure and Reduced Ejection Fraction [J]. *Journal of the American College of Cardiology*, 2017, 70(15): 1875-1886
- [17] Tung YC, Chang GM, Chang HY, et al. Relationship between Early Physician Follow-Up and 30-Day Readmission after Acute Myocardial Infarction and Heart Failure [J]. *Plos One*, 2017, 12(1): e0170061
- [18] Byrne NJ, Parajuli N, Levasseur JL, et al. Empagliflozin Prevents Worsening of Cardiac Function in an Experimental Model of Pressure Overload-Induced Heart Failure [J]. *JACC: Basic to Translational Science*, 2017, 2(4): 347-354
- [19] Francisco González-Vílchez, Manuel Gómez-Bueno, Almenar- Bonet L, et al. Spanish Heart Transplant Registry. 28th Official Report of the Spanish Society of Cardiology Working Group on Heart Failure (1984-2016) [J]. *Revista Espanola de Cardiologia*, 2017, 70 (12): e1098
- [20] 余微, 程幼夫, 张汝. 老年心力衰竭合并肺部感染患者 BNP、NT-proBNP、PCT、NT-proBNP/BNP 比值水平变化及意义[J]. *四川医学*, 2017, 38(11): 1314-1317
- [21] Shields RK, Nguyen MH, Chen L, et al. Ceftazidime-avibactam is superior to other treatment regimens against carbapenem-resistant *Klebsiella pneumoniae* bacteremia [J]. *Antimicrobial Agents & Chemotherapy*, 2017, 61(8): AAC.00883-17
- [22] Humphries RM, Hemarajata P. Resistance to Ceftazidime-Avibactam in *Klebsiella pneumoniae* Due to Porin Mutations and the Increased Expression of KPC-3 [J]. *Antimicrobial Agents & Chemotherapy*, 2017, 61(6): AAC.00537-17
- [23] Kirk Nelson, Peera Hemarajata, Dongxu Sun. Resistance to ceftazidime-avibactam is due to transposition of KPC in a porin-deficient strain of *Klebsiella pneumoniae* with increased efflux activity [J]. *Antimicrobial Agents & Chemotherapy*, 2017, 61 (10): AAC.00989-17
- [24] Haidar G, Clancy CJ, Shields RK, et al. Mutations in blaKPC-3 That Confer Ceftazidime-Avibactam Resistance Encode Novel KPC-3 Variants That Function as Extended-Spectrum β -Lactamases [J]. *Antimicrob Agents Chemother*, 2017, 61(5): AAC.02534-16
- [25] 周静, 石振东. 痰热清注射液治疗老年重症肺炎的临床疗效及对血清超敏 C 反应蛋白、降钙素原的影响[J]. *检验医学与临床*, 2017, 14(11): 1637-1639
- [26] 王绚, 张永, 许静, 等. 痰热清注射液治疗小儿支气管炎疗效和安全性的系统评价[J]. *中国医院药学杂志*, 2017, 37(3): 264-269, 282.
- [27] 乔智灏, 刘昶, 张梦雅. 痰热清注射液联合噻托溴铵对尘肺病合并慢性阻塞性肺病患者呼吸功能的影响 [J]. *中华全科医学*, 2019, 17(3): 409-412
- [28] 安俊涛. 痰热清注射液联合头孢哌酮及舒巴坦治疗心力衰竭合并肺部感染的临床研究[J]. *内蒙古医学杂志*, 2019, 051(005): 588-589
- [29] 胡杰, 许瑞卿, 吕祥龙. 痰热清灌洗治疗重症脑梗死并发肺部感染的疗效及对血清炎症因子和氧化应激的影响 [J]. *中国内镜杂志*, 2018, 24(12): 83-89
- [30] 付海卫, 李小波, 孔一名, 等. 痰热清注射液联合布地奈德福莫特罗对稳定期 COPD 患者炎症及免疫功能的影响 [J]. *中华全科医学*, 2018, 16(1): 19-21