

• 临床病例 •

恙虫病以左心衰竭为主要表现伴多器官功能损害

1 例报告及文献复习

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【摘要】 恙虫病(TD)是由恙虫病东方体(*Ot*)感染引起的人畜共患且具有自然疫源性的传染病,通过恙螨叮咬在人与啮齿动物之间传播。2025 年 8 月 17 日,武汉市金银潭医院收治 1 例急性左心衰竭伴多器官功能损害的 TD 患者。患者因“发热、心悸、气促、咳嗽 10 d”急诊入院。既往有野外作业史;查体示体温 39.2 °C,心率 79 次/min(呈相对缓脉),右侧腋中线与脐水平线交点处可见 0.5 cm×0.6 cm 焦痂,躯干可见皮疹。实验室检查示嗜酸粒细胞计数降至 0,肌钙蛋白 T 1.31 μg/L, N 末端 B 型利钠肽前体 2 912.60 ng/L,降钙素原升高;心电图示 Q-T 及 Q-Tc 间期延长;胸部 CT 示双肺间质性肺水肿及双侧胸腔积液。血液下一代测序检出 *Ot* 核酸片段,血清 *Ot* 免疫球蛋白 M(IgM)抗体阳性,确诊为 TD 合并心肌炎、急性左心衰竭及多器官功能损害。临床予以多西环素联合利福平抗感染及对症支持治疗,并实施胸腔穿刺引流、支气管肺泡灌洗等局部干预,患者体温恢复正常,心功能改善,肺水肿及胸腔积液吸收,心肌酶恢复正常,临床治愈出院。本病例提示 TD 可累及心血管系统,表现为急性左心衰竭及心肌炎;对于发热、相对缓脉伴多器官功能损害的患者,应将 TD 纳入鉴别诊断,早期识别焦痂并启动病原学治疗是改善预后的关键。

【关键词】 恙虫病;左心衰竭;Q-T 间期延长;双侧胸腔积液;多器官功能损害

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Tsutsugamushi disease with left heart failure as the main manifestation complicated by multiple organ dysfunction: a case report and literature review

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【Abstract】 Tsutsugamushi disease (TD) is a zoonotic and naturally focal infectious disease caused by *Orientia tsutsugamushi* (*Ot*), transmitted between humans and rodents through the bite of chigger mites. On August 17, 2025, a patient with TD complicated by acute left-sided heart failure and multiple organ dysfunction was admitted to Wuhan Jinyintan Hospital. The patient presented to the emergency department with a 10-day history of fever, palpitations, dyspnea, and cough, and had a history of outdoor exposure. Physical examination revealed a temperature of 39.2 °C, a heart rate of 79 beats/min (showing relative bradycardia), an eschar of 0.5 cm×0.6 cm at the intersection of the right mid-axillary line and the umbilical horizontal line, and a truncal rash. Laboratory findings showed an eosinophil count of 0, troponin T 1.31 μg/L, N-terminal pro-B-type natriuretic peptide 2 912.60 ng/L, and elevated procalcitonin. Electrocardiography revealed prolonged Q-T and Q-Tc intervals, and chest CT demonstrated bilateral interstitial pulmonary edema and bilateral pleural effusion. Next-generation sequencing of blood detected *Ot* nucleic acid fragments, and serum *Ot* immunoglobulin M (IgM) antibody was positive, confirming the diagnosis of TD complicated by myocarditis, acute left-sided heart failure, and multiple organ dysfunction. The patient was treated with doxycycline combined with rifampicin for anti-infection, along with symptomatic and supportive care, as well as local interventions including thoracentesis drainage and bronchoalveolar lavage. Subsequently, the patient's body temperature normalized, cardiac function improved, pulmonary edema and pleural effusion resolved, and myocardial enzymes returned to normal levels; the patient was discharged with clinical cure. This case indicates that TD can affect the cardiovascular system, presenting as acute left-sided heart failure and myocarditis. For patients with fever, relative bradycardia, and multiple organ dysfunction, TD should be considered in the differential diagnosis, and early recognition of the eschar together with

prompt initiation of etiological therapy are crucial for improving prognosis.

【Key words】 Tsutsugamushi disease; Left heart failure; Q-T interval prolongation; Bilateral pleural effusion; Multiple organ dysfunction

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恙虫病 (tsutsugamushi disease, TD) 是由恙虫病东方体 (*Orientia tsutsugamushi*, Ot) 感染引起的人畜共患且具有自然疫源性的传染病, 通过恙螨叮咬在人与啮齿动物之间传播^[1-4]。Ot 进入血液后, 可引发 Ot 血症和脓毒症, 并进一步感染内皮细胞、巨噬细胞和单核细胞, 将 Ot 播散至全身。其病理学表现为局灶性或播散性多器官血管炎, 该病变由血管内皮细胞 (vascular endothelial cell, VEC) 破坏及白细胞血管周围浸润引起。TD 主要流行于 “TD 三角区” (包括东南亚、东亚、太平洋岛屿及澳大利亚部分地区), 约 10 亿人面临 Ot 感染威胁, 每年新发病例约 100 万例^[5-7]。我国 TD 报告县市区的数量及患病人数均快速增长, 几乎全国均有病例报道^[8-10], 这与我国 TD 传染源的监测结果一致^[11]。Ot 进入人体后主要感染 VEC, 因此心血管系统在理论上最易受累。然而, 直至 2016 年 Ray 等^[12]才报道 1 例以急性右心衰竭伴双侧胸腔积液为主要表现的 TD 患者, 国内以左心衰竭为主要表现的病例鲜见报道^[13]。武汉市金银潭医院收治 1 例以急性左心衰竭、心电图异常及双侧胸腔积液为主要表现, 并伴多器官功能损害的 TD 病例, 现报告如下。

1 病例介绍

1.1 患者基本情况: 患者男性, 62 岁, 因 “发热、心悸、气促、咳嗽 10 d” 于 2025 年 8 月 17 日急诊入院。患者 10 d 前不明原因出现高热 (最高体温 39.5 ℃), 每日发作 1~2 次, 热前畏寒; 轻度活动出现心悸、气促, 休息后可缓解; 咳嗽, 咳脓痰; 当地县医院予以抗炎治疗无效, 心悸、气促不能平卧, 静止状态下亦有气促, 遂急转本院。既往高血压病史 10 年, 冠心病、脑卒中病史 5 年, 慢性肾功能不全病史 3 年, 痛风、高尿酸血症病史 2 年。籍贯为湖北省咸宁市通山县, 发病前有野外工作史。

1.2 入院体格检查: 体温 39.2 ℃, 脉搏 80 次/min, 呼吸频率 27 次/min, 血压 111/63 mmHg (1 mmHg=0.133 kPa); 意识清楚, 呼吸急促, 超力体型, 体质量指数 (body mass index, BMI) 30.39 kg/m²。于右侧腋中线与脐水平线交点处可见一 0.5 cm×0.6 cm 的焦痂, 周围皮肤呈火山口样脱屑 (图 1); 躯干部位皮疹; 全身皮肤、黏膜无黄染, 浅表未触及肿大淋巴结; 双肺呼吸音粗, 未闻及干湿性啰音, 双下肺呼吸音弱; 心律齐, 未闻及病理性杂音; 腹软, 肝脾肋下未触及, 全腹无压痛及反跳痛。

1.3 入院实验室及辅助检查: 白细胞计数 (white blood cell count, WBC) $8.27 \times 10^9/L$, 血红蛋白 (hemoglobin, Hb) 89.00 g/L, 血小板计数 (platelet count, PLT) $94.00 \times 10^9/L$, 嗜酸粒细胞计数 (eosinophil count, EOS) $0.00 \times 10^9/L$; 红细胞沉降率 44 mm/h; D-二聚体 2.12 mg/L FEU, 纤维蛋白原 4.3 g/L; 尿蛋白定性 (++) ; 白细胞介素-6 (interleukin-6, IL-6) 10.49 ng/L, 降钙素原 (procalcitonin, PCT) 1.21 μg/L;



图 1 1 例 62 岁男性急性左心衰竭伴多器官功能损害的恙虫病 (TD) 患者急诊入院时右侧腹部皮肤情况 右侧腋中线与脐水平线交点处可见一 0.5 cm×0.6 cm 的焦痂, 周围皮肤呈火山口样脱屑

总蛋白 56.9 g/L, 白蛋白 (albumin, Alb) 29.9 g/L; 血尿素氮 (blood urea nitrogen, BUN) 11.78 mmol/L, 肌酐 (creatinine, Cr) 206.9 μmol/L, 血糖 8.17 mmol/L, 肌钙蛋白 T (troponin T, TnT) 1.31 μg/L、肌酸激酶同工酶 76 U/L、乳酸脱氢酶 (lactate dehydrogenase, LDH) 300 U/L、C-反应蛋白 (C-reactive protein, CRP) 95.4 mg/L, 血清淀粉样蛋白 A (serum amyloid A, SAA) 688.4 mg/L; N 末端 B 型利钠肽前体 (N-terminal B-type natriuretic peptide precursor, NT-proBNP) 2 912.60 ng/L。心电图显示 (图 2), 窦性心律 (心率 79 次/min), 部分导联 ST-T 改变, Q-T 和 Q-Tc 间期延长。胸部多层螺旋 CT (multislice computed tomography, MSCT) 显示 (图 3A; 图 3C), 双肺间质性肺水肿, 双侧胸水合并双肺下叶膨胀不全, 左心增大, 心包少量积液, 考虑间质性肺水肿可能; 双侧腋窝、纵隔及双肺门淋巴结增多, 部分增大; 主动脉及冠状动脉 (冠脉) 钙化。心脏彩色多普勒超声检查显示, 升主动脉稍宽, 左心增大, 二尖瓣轻度反流, 三尖瓣轻度反流, 肺动脉主干稍宽, 室间隔、左室后壁增厚, 心包腔极少量积液。血液下一代测序 (next-generation sequencing, NGS) 检出 Ot 核酸片段; Ot 抗体免疫球蛋白 M (immunoglobulin M, IgM) 阳性。

1.4 诊断和治疗过程: 入院诊断为 “TD, 心肌炎、左心衰竭, 凝血功能障碍, 肺炎伴胸腔积液, 肝损伤, 肾功能不全”。在抗感染治疗 (多西环素联合利福平) 的基础上, 针对心肌炎、左心衰竭、凝血功能障碍、肺炎、肝损伤、肾功能不全使用肾上腺皮质激素等治疗。8 月 18 日, 超声引导下右侧胸腔积液抽出术, 抽出胸腔积液 280 mL; 胸水化验结果显示, 胸水微黄色、清亮, 李凡他 (Rivalta) 试验 (+), WBC $1\ 838.0 \times 10^6/L$ 。8 月 19 日, 纤维支气管镜检查显示, 双侧支气管内大量脓性分泌物, 双侧支气管通畅, 黏膜光滑, 予以分泌物抽吸, 支气管肺泡灌洗。8 月 20 日, 患者体温降至正常, 心悸、气促、咳嗽症状逐渐减轻。

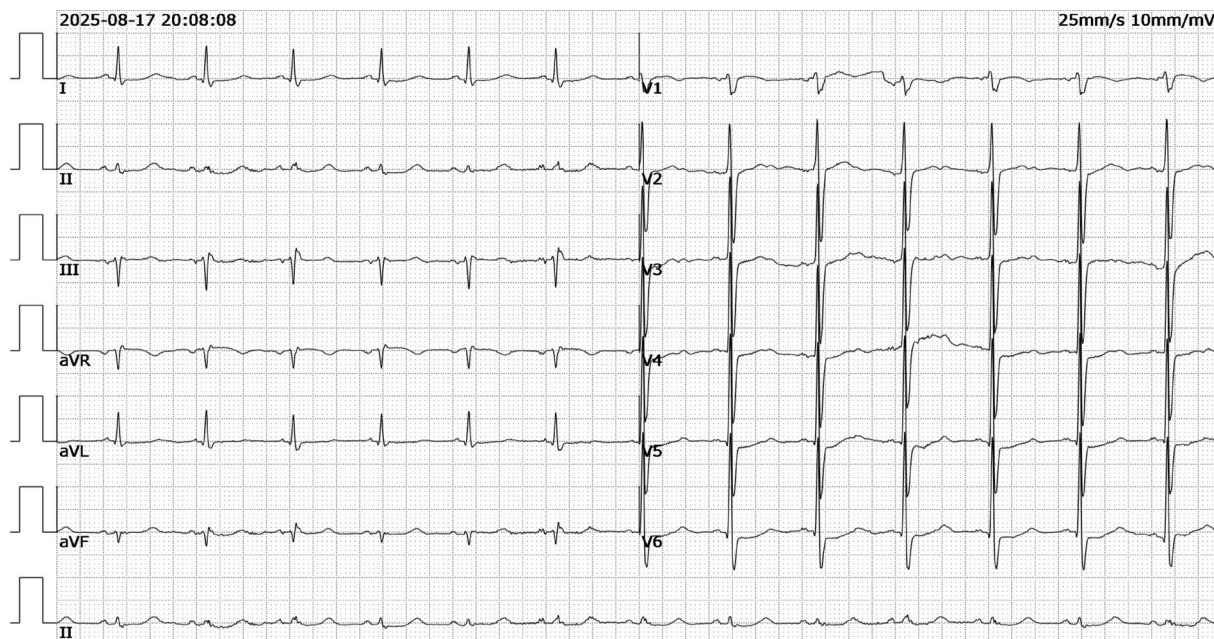


图2 1例62岁男性急性左心衰竭伴多器官功能损害的恙虫病(TD)患者急诊入院时心电图 心电图示窦性心律,心率79次/min;Q-T和Q-Tc间期延长(分别为467 ms和535 ms);ST-T改变

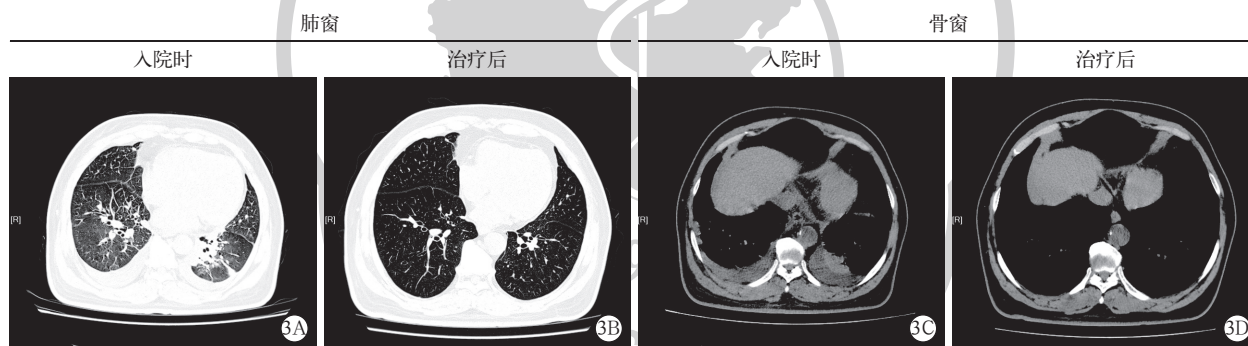


图3 1例62岁男性急性左心衰竭伴多器官功能损害的恙虫病(TD)患者急诊入院时及治疗后胸部多层螺旋CT(MSCT) 3A 双肺间质性肺水肿,双侧胸水合并双肺下叶膨胀不全,心包少量积液;主动脉及冠脉钙化 3B 双肺间质性肺水肿、双侧胸水完全吸收;余同前 3C 双侧胸水 3D 双侧胸水完全吸收

1.5 实验室及辅助检查复查:8月25日复查显示,WBC $6.20 \times 10^9/L$, Hb 107 g/L, PLT $226 \times 10^9/L$, EOS $0.15 \times 10^9/L$; D-二聚体 0.63 mg/L FEU;尿蛋白定性(+);IL-6 6.50 ng/L, PCT 0.05 $\mu g/L$;总蛋白 65.4 g/L, Alb 32.5 g/L;BUN 10.50 mmol/L, Cr 191.5 $\mu mol/L$,血糖 6.17 mmol/L,LDH 219 U/L,CRP 10.2 mg/L, SAA 99.6 mg/L,NT-proBNP 520.50 ng/L。胸部 MSCT 显示(图 3B;图 3D),双肺间质性肺水肿消失,双侧胸水完全吸收、肺复张,余同前。心电图显示(图 4),窦性心动过缓并不齐;部分导联 ST-T 改变。8月29日,患者临床治愈出院。

2 讨论

本例患者主要表现为发热相关急性左心衰竭,因发热及心功能衰竭病情进展,由基层医院转入本院治疗。急性心力衰竭是全球性重大公共卫生问题,可由冠脉急性缺血、心肌炎等引起,针对病因治疗是控制急性心力衰竭的关键^[14-15]。

该患者具有典型的“发热、焦痂、皮疹”三联征及野外工作史,实验室检查示 WBC 正常、EOS 降至 0、PCT 升高,影像学及实验室指标提示心血管、呼吸、消化、泌尿及血液系

统均受累,依据 TD 积分诊断量表^[16-18]可作出临床诊断。病原学检查是传染病确诊的依据,本病例 NGS 检出 Ot 核酸片段,且血清 Ot IgM 抗体阳性,进一步验证了临床诊断^[19-21]。因此,从临床和病原学角度均可确诊为 TD。本例为当地首次报告的 TD 病例,因医务人员对其认识不足,导致诊断延误。患者以急性左心衰竭、心电图异常、双侧胸腔积液,并伴血液、呼吸、消化及泌尿系统多器官功能损害为主要表现,国内外均鲜见此类报道。

患者入院时体温 39.2 $^{\circ}C$,心率仅 79 次/min,存在相对缓脉,与既往文献报道一致^[22-23]。值得注意的是,相对缓脉常见于伤寒沙门菌等革兰阴性菌及细胞内寄生微生物感染疾病^[24]。在我国,伤寒和 TD 均是急性发热的主要原因^[25]。伤寒的玫瑰疹有时与 TD 皮疹相似,当 TD 合并相对缓脉时,要注意鉴别诊断。本例患者有 TD 特征性焦痂、血培养阴性,NGS 未检出伤寒沙门菌,且肥大反应阴性,故可以排除伤寒。

心肌炎是 TD 最常见的心脏损害^[26]。本例患者有左心功能不全的临床表现及体征,心肌酶谱及 TnT 水平升高,影

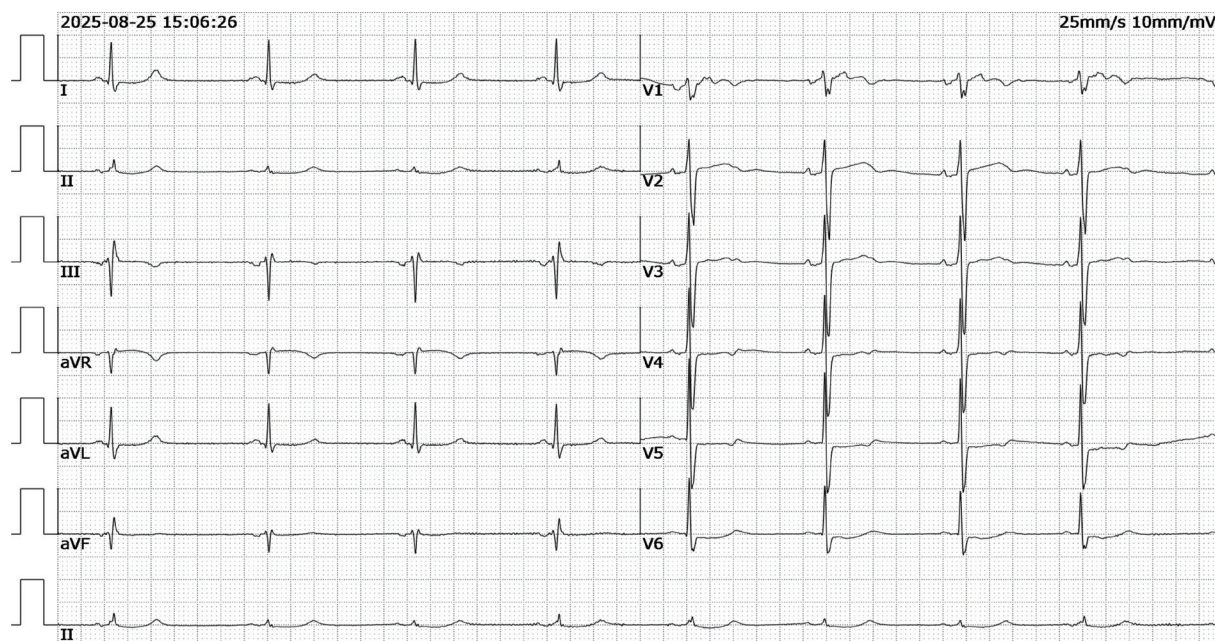


图4 1例62岁男性急性左心衰竭伴多器官功能损害的恙虫病(TD)患者治疗后心电图 心电图示窦性心动过缓及不齐,心率50次/min;ST-T改变

像学提示肺淤血、胸腔积液,心电图示Q-T和Q-Tc间期延长、相对缓脉及ST-T改变。经敏感抗菌药物治疗后,患者临床症状消失,肺淤血及胸腔积液吸收,心肌酶及TnT恢复正常。急性心肌炎是一种严重但常被低估的疾病。既往认为心肌活检是诊断“金标准”,但目前高敏肌钙蛋白联合心脏磁共振成像已逐渐取代心肌活检,成为急性心肌炎的主要诊断方法^[27-28]。本例的不足之处在于缺乏病理学证据。患者虽有心肌酶和TnT升高,且有心脏病基础,但无胸痛、无心电图急性缺血性改变及动态演变,故可排除急性冠脉综合征。

TD患者心电图可表现为Q-T间期延长、阵发性心房颤动、房室传导阻滞及窦性停搏等多种心律失常^[29-33],对Ot感染所致冠脉损伤亦有提示价值。本例患者入院时心电图显示Q-T及Q-Tc间期显著延长,Q-T间期延长是致命性心律失常的危险因素。经敏感抗菌药物治疗后,Q-T及Q-Tc间期均恢复正常,推测其延长与Ot感染相关。既往文献报道,TD可致Q-T间期延长,治疗期间应避免使用延长Q-T间期的药物^[34]。TD的一线治疗药物(如阿奇霉素)可能对Q-T及Q-Tc间期产生不良影响^[35],因此应谨慎用于Q-T及Q-Tc间期延长的患者。本例患者采用多西环素联合利福平治疗,未使用阿奇霉素。Chen等^[36]报道1例33岁男性TD患者,心电图提示急性心肌梗死,经抗菌药物、激素及呼吸机辅助通气效果不佳,最终经支架植入后症状缓解。文献^[37-39]各报道1例TD患者心电图呈ST段抬高型心肌梗死表现,但冠脉造影均未发现冠脉闭塞;其中Pradeesh等^[37]、张小朵和李荣^[39]报道的病例经抗菌药物治疗临床治愈,而Lee等^[38]报道的病例因心包积血和颅内出血死亡。上述提示,及时使用敏感抗菌药物是治疗TD冠脉损伤最主要的措施。

随着TD发病率上升,TD伴急性心肌炎较以往更常见,需提高临床对该病的认识^[40-42]。尤其是暴发性心肌炎,治

疗难度大、治疗费用飙升,已有使用体外膜肺氧合救治成功的报道^[38,43]。对于TD心肌炎(尤其是暴发性心肌炎)等重症感染病例,有文献提出增加多西环素剂量、选择性使用替加环素及辅助使用糖皮质激素,是提高疗效的关键^[44]。本例患者采用多西环素联合利福平治疗,与此策略一致。

本例患者胸部MSCT示双侧胸腔积液,胸水生化及血清总蛋白检测结果提示胸水性介于渗出液与漏出液之间,考虑为左心衰竭与感染共同导致,经治疗后积液完全消退。治疗后,患者EOS、D-二聚体及PCT水平均恢复正常,胸部MSCT示肺部心力衰竭及感染指征消失,达到临床治愈标准^[45-46]。本例存在心血管、呼吸、消化、泌尿及血液5个系统损害,符合多器官功能障碍综合征。Ot经血流及血管向全身播散,是TD多器官功能损害的病理基础^[47]。

鉴于TD的流行现状,当临床发现发热、左心功能不全伴多器官功能损害病例时,应将TD纳入鉴别诊断并积极排查,确诊后及时启动病原学治疗,以改善预后。

利益冲突 所有作者声明不存在利益冲突

作者贡献声明 张霞:实施研究、起草文章;杨军杰:采集数据、分析/解释数据、起草文章;杨明:实施研究、采集数据、分析/解释数据、起草文章;龙克娇:采集数据、分析/解释数据、统计分析;何苗:采集数据、起草文章;毛静:分析/解释数据、统计分析;钟炎平:分析/解释数据、起草文章;雷旭:分析/解释数据、对文章的知识性内容作批评性审阅;王娟:采集数据、起草文章;董璇:对文章的知识性内容作批评性审阅、指导;谭华炳:酝酿和设计实验、实施研究、采集数据、分析/解释数据、对文章的知识性内容作批评性审阅、指导

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