

# 腹型过敏性紫癜的临床特征及消化道出血危险因素分析

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**摘要** 目的 对腹型过敏性紫癜(HSP)患者的临床特征进行分析,提高其诊断水平,并探究HSP患者消化道出血的危险因素。方法 回顾性分析98例腹型HSP患者的临床表现、实验室检查资料、影像学、内镜及病理学特点,并依据是否发生消化道出血将98例患者分成出血组和非出血组,分析HSP患者发生消化道出血的危险因素。结果 腹型HSP常表现为腹痛、呕吐、呕血、黑便及便血;影像学常见十二指肠及空回肠肠壁水肿增厚,周围淋巴结肿大;内镜下常见十二指肠降部及空肠黏膜广泛充血水肿伴糜烂,末端回肠可见溃疡;病理学常见黏膜急慢性炎伴充血水肿、局部糜烂。消化道出血患者白细胞计数(WBC)、中性粒细胞计数(NEUT)、C反应蛋白(CRP)、D-二聚体(D-D)和纤维蛋白降解产物(FDP)水平高于非出血患者( $P < 0.05$ ),红细胞计数(RBC)、血红蛋白(HGB)和白蛋白(ALB)水平低于非出血患者( $P < 0.05$ )。Logistic回归分析显示ALB下降和FDP升高是腹型HSP患者发生消化道出血的独立危险因素( $P < 0.05$ )。ALB和FDP的ROC曲线下面积分别为( $AUC = 0.877, 95\% CI: 0.794 \sim 0.960, P < 0.01$ )和( $AUC = 0.806, 95\% CI: 0.722 \sim 0.890, P < 0.01$ )。ALB的约登指数最大值为0.734,灵敏度和特异度分别为89.6%和83.9%,临界值是38.2 g/L;FDP的约登指数最大值为0.577,灵敏度和特异度分别为64.2%和93.5%,临界值是18.14  $\mu\text{g/ml}$ 。两者ROC曲线比较无统计学差异。结论 对于以腹痛为首发症状的HSP,影像学及内镜检查有助于早期诊断。ALB下降和FDP升高是成人腹型HSP患者发生消化道出血的独立危险因素。

**关键词** 腹型过敏性紫癜;消化道出血;临床特征;白蛋白;纤维蛋白降解产物

**中图分类号** R 725.9

**文献标志码** A **文章编号** 1000-1492(2024)12-2198-06

doi:10.19405/j.cnki.issn1000-1492.2024.12.019

过敏性紫癜(Henoch-Schönlein purpura, HSP),也称为免疫球蛋白A血管炎(immunoglobulin A vasculitis, IgAV),是儿童期最常见的血管炎。成年人群中的HSP通常病情较重,这与儿童中典型的良性和自限性过程形成鲜明对比<sup>[1]</sup>。腹型HSP最常见表现为腹痛,其他腹部症状包括呕吐、腹泻和便血。由于HSP经常误诊为急性胃肠炎、阑尾炎、胆道疾病、消化道溃疡等,对于腹部影像学检查提示管壁增厚、水肿等表现,有条件者宜尽早行内镜检查,避免误诊、漏诊或延迟诊断<sup>[2]</sup>。此外,研究<sup>[3]</sup>显示,血清C-反应蛋白(C-reactive protein, CRP)升高为腹型HSP患儿发生重度黏膜损害的独立危险因素,且其水平与HSP患儿胃肠道黏膜损伤程度呈正相关。在成人腹型HSP合并消化道出血患者的CRP值高于无消化道出血患者<sup>[4]</sup>,提示实验室指标可能能够预测HSP的消化道出血情况,有助于临床上预测患者的病情变化。该研究回顾性分析腹型HSP患者

的临床特征,特别是其影像学、内镜及病理表现,并探讨腹型HSP患者消化道出血的危险因素,为该病的正确诊断及合理治疗提供参考。

## 1 材料与方法

**1.1 研究对象** 选取安徽医科大学第一附属医院消化内科2016年1月—2024年3月收治的98例腹型HSP住院患者,其中男性70例,女性28例,男女比例为2.5:1。发病年龄14~85岁,平均年龄为(33.93 ± 19.49)岁。

**1.2 诊断标准** 参照2006年欧洲风湿联合会及儿科风湿病学会标准<sup>[5]</sup>,可触性皮炎(必要条件)伴以下之一:①弥漫性腹痛或其他消化道症状;②任何部位病理活检提示IgA沉积物;③关节炎/关节痛;④肾脏损害(蛋白尿和或血尿)。其中其他消化道症状定义为恶心、呕吐、腹泻或消化道出血等;消化道出血表现为呕血、便血、黑便或粪便隐血实验阳性。

**1.3 纳入排除标准** 纳入标准:①年龄14~85岁;②入院前未使用激素类药物及无急性感染性疾病。排除其他原因导致血管炎及紫癜,例如原发性血小板减少症、血友病、白血病、结节性多动脉炎、ANCA相关性血管炎等。

2024-08-11 接收

基金项目:国家自然科学基金项目(编号:81700521)

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**1.4 方法** 采用回顾性方法,统计分析患者的临床特征、实验室检查、影像学、内镜及病理表现。根据有无消化道出血表现将 98 例患者分为非出血组( $n=31$ )和出血组( $n=67$ ),分析患者的实验室检查指标差异。

**1.5 统计学处理** 采用 SPSS 17.0 软件进行数据分析,计量资料以  $\bar{x} \pm s$  表示,计数资料以频数(百分比)表示,两组之间比较采用  $t$  检验,计数资料组间比较采用  $\chi^2$  检验或 Fisher 确切概率法,采用 Logistic 回归分析探讨 HSP 患者消化道出血的危险因素并进行 ROC 曲线分析, $P < 0.05$  为差异有统计学意义。

## 2 结果

### 2.1 腹型 HSP 患者临床特点

**2.1.1 临床表现** 98 例腹型 HSP 患者病程中均出现典型皮疹和不同程度的腹痛,腹痛部位以中上腹多见,其他表现如消化道出血共 67 例(68.37%),伴腹泻 10 例(10.20%)、呕吐 6 例(6.12%)、关节肿痛 3 例(3.06%)、全身酸痛 2 例(2.04%)、咽痛 1 例(1.02%)。未见肠套叠、穿孔和肠道狭窄等临床表现。

**2.1.2 实验室检查结果** 腹型 HSP 患者实验室检查表现为 D-二聚体(D-dimer, D-D)增高(92 例,93.88%)、纤维蛋白降解产物(fibrin degradation products, FDP)增高(81 例,82.65%)、外周血中性粒细胞(neutrophils, NEUT)增高(74 例,75.51%)、白细胞(white blood cell, WBC)增高(69 例,70.41%)、CRP 增高(67 例,68.37%)、白蛋白(albumin, ALB)降低(72 例,73.47%)、纤维蛋白原(fibrinogen, FIB)增高(56 例,57.14%)、血红蛋白(hemoglobin, HB)降低(35 例,35.71%)、血小板(platelet, PLT)增高(29 例,29.59%)。

**2.1.3 影像学检查结果** 73 例患者行腹部 CT/腹腔 CTA/小肠 CT 等影像学检查。影像学检查主要表现为空回肠肠壁增厚(46 例,63.01%)、腹腔或肠系膜淋巴结肿大(17 例,23.29%)、十二指肠肠壁增厚(16 例,21.92%)、结肠肠壁增厚(12 例,16.44%)、腹盆腔积液(9 例,12.33%)及胃壁增厚(4 例,5.48%)等。CT 未见明显异常 11 例(15.07%)。见图 1。

**2.1.4 内镜检查结果** 58 例患者行胃镜检查,胃镜下最常见累及部位为十二指肠球降部(54 例,93.10%),主要表现为弥漫性充血水肿、糜烂,局部



图 1 腹型 HSP 患者的影像学表现

Fig. 1 Imaging findings of patients with abdominal HSP

A: Duodenal bulb-horizonta tube wall edema and thickening; B: The wall of the transitional section of duodenum and jejunum was thickened and edema, and the surrounding lymph nodes were enlarged; C: CT of the small intestine showed thickening and strengthening of the left proximal jejunum tube wall; D: Abdominal CTA, edema and thickening of the wall of the empty ileum intestine, enlargement of mesenteric and retroperitoneal lymph nodes.

伴溃疡形成,表面覆白苔及血痂,也有呈颗粒状或结节状增生。胃部充血、糜烂 32 例(55.17%),食管黏膜充血、糜烂 2 例(3.45%)。2 例(3.45%)患者胃镜检查未见明显异常。2 例患者完成经口小肠镜检查,十二指肠降段至十二指肠水平部远端近空肠上段可见黏膜广泛充血水肿伴糜烂,部分黏膜可见血肿,易自发出血。17 例患者行肠镜检查,末端回肠糜烂、溃疡 11 例(64.71%),大肠充血、糜烂 9 例(52.94%),2 例患者肠镜未见明显异常(11.76%)。表明十二指肠降部、末端回肠病变在腹型 HSP 中常见。见图 2。

**2.1.5 病理组织学检查结果** 32 例患者行病理组织学检查,最常见表现为黏膜急慢性炎伴糜烂(28 例,87.50%)(图 3A-3E),2 例表现为十二指肠降部缺血损伤模式,可见局部腺体萎缩,间质玻璃样变性,黏膜下层小血管增生,管腔内可见透明血栓,伴有微脓肿形成(图 3F)。

**2.2 消化道出血患者与非出血患者实验室指标比较** 对两组患者 WBC、NEUT、淋巴细胞(lymphocyte, LYMPH)、中性粒细胞淋巴细胞比率(neutrophil

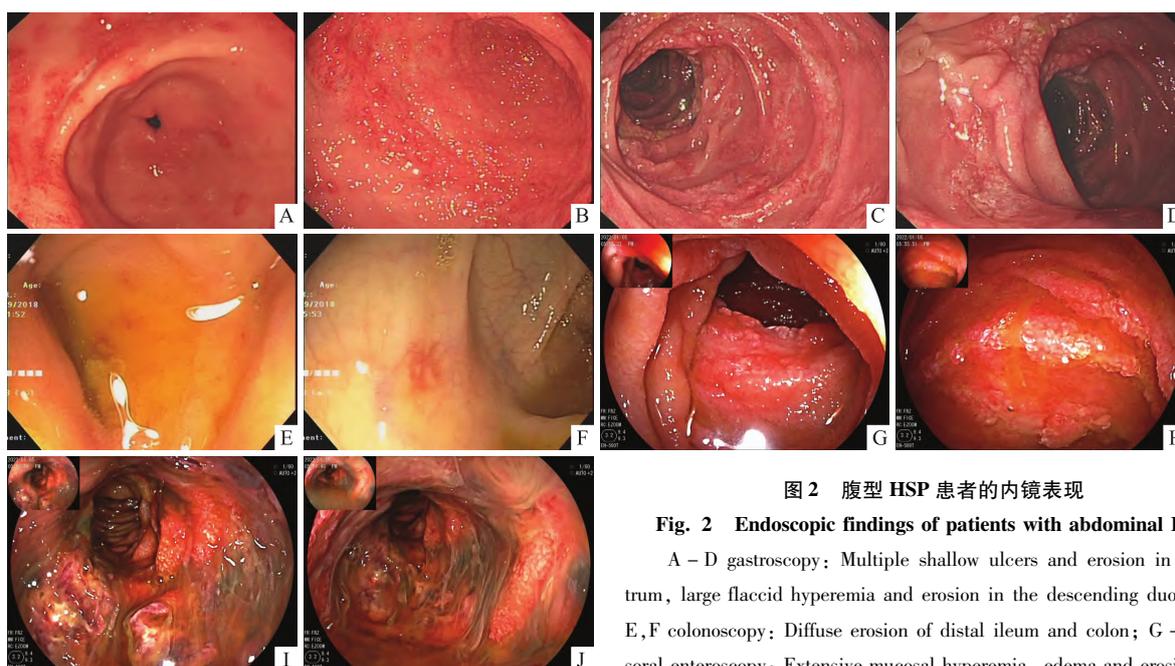


图2 腹型 HSP 患者的内镜表现

Fig. 2 Endoscopic findings of patients with abdominal HSP

A - D gastroscopy: Multiple shallow ulcers and erosion in the antrum, large flaccid hyperemia and erosion in the descending duodenum; E, F colonoscopy: Diffuse erosion of distal ileum and colon; G - J transoral enteroscopy: Extensive mucosal hyperemia, edema and erosion were

seen from descending duodenum to distal proximal upper jejunum of horizontal duodenum, and hematoma was seen in part of the mucosa, which was prone to spontaneous bleeding.

lymphocyte ratio, NLR)、单核细胞 (monocyte, MONO)、单核细胞淋巴细胞比率 (monocyte lymphocyte ratio, MLR)、红细胞 (red blood cell, RBC)、PLT、血小板淋巴细胞比率 (platelet lymphocyte ratio, PLR)、平均血小板体积 (mean platelet volume, MPV)、血小板分布宽度 (platelet distribution width, PDW)、HGB、ALB、CRP、FIB、D-D 及 FDP 水平进行比较,结果显示,出血组患者 WBC、NEUT、CRP、D-D 和 FDP 水平高于非出血患者 (均  $P < 0.05$ ), RBC、HGB 和 ALB 水平明显低于非出血患者 (均  $P < 0.001$ )。见表 1。

**2.3 腹型 HSP 消化道出血相关因素分析** 对 WBC、NEUT、RBC、HGB、ALB、CRP、D-D 和 FDP 进行多因素 Logistic 回归分析,结果显示 ALB ( $OR = 0.812, 95\% CI: 0.723 \sim 0.914, P < 0.01$ ) 和 FDP ( $OR = 1.064, 95\% CI: 1.004 \sim 1.127, P < 0.05$ ) 有统计学意义,提示 ALB 下降和 FDP 升高是腹型 HSP 消化道出血的危险因素, Homser-Lemeshow 检验 Logistic 回归模型拟合优度好 ( $P = 0.729$ )。见表 2。

**2.4 ROC 曲线分析** ALB 和 FDP 的 ROC 曲线下面积分别为 ( $AUC = 0.877, 95\% CI: 0.794 \sim 0.960, P < 0.01$ ) 和 ( $AUC = 0.806, 95\% CI: 0.722 \sim 0.890, P < 0.01$ )。ALB 的约登指数最大值为 0.734, 敏感度和特异度分别为 89.6% 和 83.9%, 临界值是 38.2 g/L; FDP 的约登指数最大值为 0.577, 敏感度和特

表 1 出血组和非出血组患者实验室指标比较 ( $\bar{x} \pm s$ )

Tab. 1 Comparison of laboratory indicators between bleeding group and non-bleeding group patients ( $\bar{x} \pm s$ )

Project	Non-bleeding group (n = 31)	Bleeding group (n = 67)	$\chi^2/t$ value	P value
Gender			2.284	0.131
Male	19	51		
Female	12	16		
Age	32.10 ± 17.17	34.78 ± 20.54	0.631	0.530
WBC( $10^9/L$ )	10.61 ± 2.93	13.38 ± 5.60	3.204	0.002
NEUT( $10^9/L$ )	7.92 ± 2.69	10.55 ± 5.16	3.322	0.001
LYMPH( $10^9/L$ )	1.96 ± 0.90	1.92 ± 0.80	0.211	0.833
NLR	4.87 ± 3.01	6.46 ± 4.05	1.943	0.055
MONO( $10^9/L$ )	0.63 ± 0.23	0.67 ± 0.34	0.647	0.519
MLR	0.38 ± 0.19	0.38 ± 0.20	0.189	0.850
RBC( $10^{12}/L$ )	4.73 ± 0.53	4.20 ± 0.62	4.055	<0.001
PLT( $10^9/L$ )	301.19 ± 103.44	320.22 ± 104.40	0.842	0.402
PLR	175.15 ± 74.74	196.73 ± 106.24	1.019	0.311
MPV(fl)	10.55 ± 1.07	10.53 ± 1.16	0.081	0.936
PDW(fl)	12.47 ± 2.36	12.39 ± 2.66	0.157	0.875
HGB(g/L)	141.00 ± 15.49	124.93 ± 17.85	4.315	<0.001
ALB(g/L)	41.15 ± 5.54	32.07 ± 5.84	7.273	<0.001
CRP(mg/L)	21.49 ± 24.42	39.01 ± 42.93	2.564	0.012
FIB(g/L)	4.20 ± 1.21	4.44 ± 1.24	0.896	0.372
D-D( $\mu g/ml$ )	3.03 ± 2.41	8.99 ± 6.58	6.535	<0.001
FDP( $\mu g/ml$ )	9.21 ± 5.96	32.28 ± 27.90	6.458	<0.001

异度分别为 64.2% 和 93.5%, 临界值是 18.14  $\mu g/ml$ 。两者 ROC 曲线比较无统计学差异 ( $Z = 1.400, P = 0.161$ )。见图 4。

表2 腹型HSP消化道出血相关因素 Logistic 回归分析

Tab.2 Logistic regression analysis of factors related to gastrointestinal bleeding in abdominal HSP

Variates	$\beta$	SE	Wals	P Value	OR	95% CI
WBC	0.268	0.288	0.869	0.351	1.308	0.744 - 2.299
NEUT	0.106	0.308	0.118	0.731	0.899	0.492 - 1.646
RBC	0.829	1.414	0.343	0.558	2.290	0.143 - 36.583
HGB	0.049	0.049	1.026	0.311	0.952	0.865 - 1.047
ALB	0.208	0.060	12.048	0.001	0.812	0.723 - 0.914
CRP	0.020	0.014	1.908	0.167	0.980	0.953 - 1.008
D-D	0.313	0.261	1.442	0.230	0.731	0.439 - 1.219
FDP	0.062	0.030	4.317	0.038	1.064	1.004 - 1.127

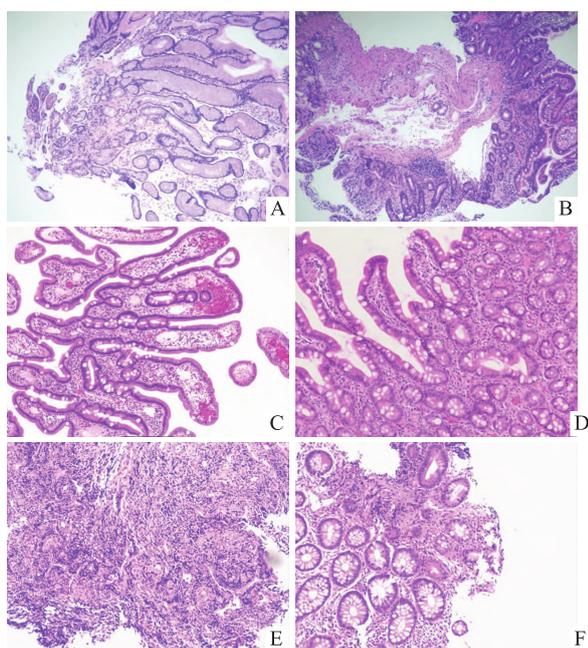


图3 腹型HSP患者的病理学表现

Fig. 3 Pathological findings of patients with abdominal HSP

A: (Gastric antrum) mild chronic mucosal inflammation with hyperemia and edema  $\times 40$ ; B: (Descending duodenum) acute and chronic mucosal inflammation with hyperemia and edema, local erosion  $\times 40$ ; C: (Descending duodenum) chronic mucosal inflammation with erosion  $\times 100$ ; D: (Descending duodenum) mucosa chronic inflammation with activity, erosion  $\times 100$ ; E: (Distal ileum) microscopic examination showed that the structure of mucosal glands was generally normal, with slightly increased lymph and plasma cells in the lamina propria of mucosa, mainly in the superficial mucosa. A small number of neutrophil infiltrates were observed locally. Mucosal local erosions were observed, and villous lymphatic vessels were slightly dilated  $\times 100$ ; F: (Ascending colon) microscopic examination showed slight atrophy of mucosal glands, reduced goblet cells, a few gland branches, increased lymph and plasma cells in mucous lamina propria, mainly in the base of mucous membrane, and local proliferative granulation tissue  $\times 100$ .

### 3 讨论

1837年,德国医生Johann Lukas Schönlein在一

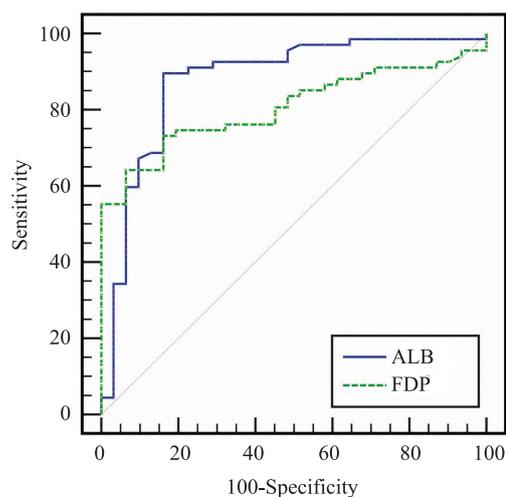


图4 ALB与FDP的ROC曲线

Fig. 4 ROC curves of ALB and FDP

份出版物中首次描述了紫癜、关节痛和关节炎的临床关联<sup>[6]</sup>。1874年, Schönlein的学生Eduard Henoch报告了儿童紫癜、腹痛、便血和关节疼痛的病例<sup>[6]</sup>。HSP,现在被称为IgAV,是一种全身性、免疫复合物介导的小血管白细胞破裂血管炎,其特征是紫癜、关节炎和腹痛。腹痛通常是绞痛,严重到可以出现急腹症。大约三分之一的患者会出现呕吐和胃肠道出血。肠套叠在极少数情况下会发生。IgAV是儿童最常见的血管炎,但也可能发生在成人身上。法国一项多中心回顾性调查显示,260名成人IgAV患者中137例(53%)患者有胃肠道受累。最常见的表现是腹痛(99%)、消化道出血(31%)、腹泻(26%)和急性腹部手术(4%)。腹部影像显示肠壁增厚(61%),内镜检查显示异常(87%),主要是黏膜溃疡。表明胃肠道受累在成人IgAV中很常见<sup>[7]</sup>。

本研究对腹型HSP的影像、内镜及病理组织学方面的特征进行了分析。有报道<sup>[8]</sup>称,HSP可累及胃肠道的任何部位,以小肠受累最为常见,因其较易发生缺血性损伤,好发于十二指肠降段和末端回肠,较少见于胃部。本研究与之相符。影像学研究结果显示受累的胃肠壁增厚是腹型HSP的基本CT征象。CT与其他检查方法相比,具有能显示受累肠管的范围及肠管外改变的优势。本研究显示部分病例伴腹盆腔积液及淋巴结增大。但CT对轻度腹型HSP患者胃肠道病变的检出欠佳,需结合内镜及肠镜以更好地检出胃肠壁的早期病变(黏膜糜烂及浅溃疡)。本研究通过回顾性分析发现腹型HSP内镜下特点是:① 消化道黏膜有不同程度的充血水肿、

糜烂或形状不规则的小溃疡,部分病例呈颗粒状或结节状增生;②临床表现与内镜下病变严重程度基本一致;③对于病变部位,上消化道在十二指肠降部出现率最高且最严重,下消化道为末端回肠。符合腹型 HSP 的内镜特征相关报道<sup>[9-10]</sup>。病理组织学最常见表现为黏膜急性慢性炎症伴糜烂,也与以往报道一致<sup>[11-12]</sup>。

本研究结果显示,腹型 HSP 患者 D-D、FDP、NEUT、WBC、CRP 增高,ALB 降低。其中消化道出血患者 WBC、NEUT、CRP、D-D 和 FDP 水平高于非出血患者,RBC、HGB 和 ALB 水平明显低于非出血患者。以往的研究<sup>[13-14]</sup>显示,WBC、D-D、CRP 和 NEUT 升高与成年 IgAV 患者胃肠道受累相关。众所周知,炎症反应引起的血管壁破坏是 IgAV 常见的病理变化,其结果是高凝和继发性高纤溶。因此,D-D、FDP 理论上能够提示 IgAV 的严重程度。D-D、FDP 升高也被提议作为胃肠道急性疾病预后的标志物,这与上消化道出血密切相关,并且具有指示需要紧急内镜检查的潜在能力。另外,本研究显示部分患者 PLT 增多,其原因可能是:①全身的变态反应使得血管壁通透性增加,外渗增加使得血小板的浓度增高,并且缓慢的血流速度、粘滞的状态使得血小板更容易聚合;②聚合的血小板、高粘滞的状态更容易使血管内皮细胞损伤从而刺激血小板的生成<sup>[13]</sup>。以往的研究提示 NLR<sup>[15]</sup>、PLR<sup>[16]</sup>及 MPV<sup>[17]</sup>可预测消化道出血,本研究结果显示这些指标和腹型 HSP 患者消化道出血无关,而 ALB 下降和 FDP 升高是腹型 HSP 患者发生消化道出血的独立危险因素。ROC 曲线分析表明,ALB 和 FDP 的临界水平分别为 38.2 g/L 和 18.14 μg/ml,对 HSP 患者的消化道出血具有最佳诊断效果。

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## Analysis of clinical characteristics and risk factors for gastrointestinal bleeding in abdominal Henoch-Schönlein purpura

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**Abstract Objective** To analyze the clinical characteristics of patients with abdominal type allergic purpura (HSP), to improve their diagnostic level, and to explore the risk factors for gastrointestinal bleeding in HSP patients. **Methods** A retrospective analysis was conducted on the clinical manifestations, laboratory data, imaging, endoscopic, and pathological characteristics of 98 patients with abdominal type HSP. Based on the occurrence of gastrointestinal bleeding, 98 patients were divided into a bleeding group and a non-bleeding group, and the risk factors for gastrointestinal bleeding in HSP patients were analyzed. **Results** Abdominal HSP often presented with abdominal pain, vomiting, vomiting blood, black stools, and bloody stools. Imaging often showed edema and thickening of the duodenum and jejunum, as well as enlargement of surrounding lymph nodes. Under endoscopy, the descending part of the duodenum and jejunum mucosa were commonly congested and edematous with erosion, and ulcers were seen in the distal ileum. Pathology commonly involved acute and chronic inflammation of the mucosa with congestion, edema, and local erosion. Patients with gastrointestinal bleeding had significantly higher levels of white blood cell count (WBC), neutrophil count (NEUT), C-reactive protein (CRP), D-dimer (D-D), and fibrinolytic products (FDP) compared to non-bleeding patients ( $P < 0.05$ ), while levels of red blood cell count (RBC), hemoglobin (HGB), and albumin (ALB) were significantly lower than those of non-bleeding patients ( $P < 0.05$ ). Logistic regression analysis showed that decreased ALB and increased FDP were independent risk factors for gastrointestinal bleeding in patients with abdominal HSP ( $P < 0.05$ ). The areas under the ROC curves of ALB and FDP were ( $AUC = 0.877$ ,  $95\% CI: 0.794 - 0.960$ ,  $P < 0.01$ ) and ( $AUC = 0.806$ ,  $95\% CI: 0.722 - 0.890$ ,  $P < 0.01$ ), respectively. The maximum value of the Jordan index for ALB was 0.734, with sensitivity and specificity of 89.6% and 83.9%, respectively, and had a critical value of 38.2 g/L. The maximum value of the Jordan index for FDP was 0.577, with sensitivity and specificity of 64.2% and 93.5%, respectively, and had a critical value of 18.14  $\mu\text{g/ml}$ . There was no statistically significant difference in the ROC curves between ALB and FDP. **Conclusion** For HSP with abdominal pain as the initial symptom, imaging and endoscopic examination are helpful for early diagnosis. Decreased ALB and elevated FDP are independent risk factors for gastrointestinal bleeding in adult patients with abdominal HSP.

**Key words** abdominal Henoch-Schönlein purpura; gastrointestinal bleeding; clinical features; albumin; fibrin degradation products

**Found program** National Natural Science Foundation of China (No. 81700521)

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