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Original Article

Risk factors of preoperative bowel dysfunction in acute Stanford B aortic dissection

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Abstract: Objective: To investigate the risk factors for preoperative bowel dysfunction in patients with acute Stanford Type B aortic dissection. Methods: A retrospective analysis was conducted on 184 patients diagnosed with Stanford Type B aortic dissection between January 2023 and December 2024. These patients were divided into two groups: the bowel dysfunction group (n = 49) and the non-bowel dysfunction group (n = 135). Baseline characteristics, echocardiographic findings, myocardial enzyme levels, dietary habits, and psychological status were compared between the two groups. Univariate and multivariate logistic regression analyses were performed to identify risk factors. A nomogram was developed to facilitate clinical prediction. Results: Preoperative constipation was observed in 26.63% (49/184) of patients. Logistic regression analysis identified older age, higher Self-Rating Depression Scale (SDS) score and Self-Rating Anxiety Scale (SAS) score as independent risk factors for preoperative bowel dysfunction. Conversely, higher intake of fruits, vegetables, and water was associated with a reduced risk. The nomogram demonstrated good predictive performance, with an AUC of 0.930 in the training cohort and 0.884 in the validation cohort. Conclusions: Preoperative bowel dysfunction is common among patients with acute Stanford Type B aortic dissection. Age, dietary habits, and psychological status are significant risk factors. Close monitoring and targeted management of these factors may help reduce the incidence of preoperative bowel dysfunction.

Keywords: Stanford type B aortic dissection, defecation dysfunction, current status, risk factors

Introduction

Aortic dissection (AD) is characterized by a tear in the aortic intima, allowing blood to enter the media through the rupture site, leading to separation of the aortic wall layers and the formation of true and false lumens. AD accounts for approximately 80%-90% of acute aortic syndromes [1] and is associated with rapid progression and high mortality, posing a significant threat to patients' lives [2]. Despite advancements in diagnostic and therapeutic techniques, AD remains a major focus in cardiovascular research due to its complex pathophysiology, often ambiguous initial symptoms, and a high rate of misdiagnosis with serious consequences. Statistics show that approximately 80% of AD patients have coexisting hypertension, recognized as the primary risk factor for this life-threatening condition [3].

Current research indicates that the development of AD primarily involves two pathological processes: medial degeneration and mechanical shear stress on the aortic wall. The most common histopathological feature is degeneration of the intermediate layer, characterized by fragmentation of elastic fibers, thinning, and accumulation of mucopolysaccharide-rich extracellular matrix [4, 5]. Acute Stanford type B aortic dissection is a severe macrovascular disease, with more than 70% of patients classified as high-risk and an in-hospital mortality rate exceeding 27% [6], presenting significant challenges for clinical management.

Bowel dysfunction, often overlooked in AD patients, can lead to serious complications if not promptly addressed. Constipation, a common form of gastrointestinal dysfunction, is characterized by reduced bowel movement frequency, difficulty in defecation, and a sensation of incomplete evacuation. It is a recognized risk factor for adverse cardiovascular events and even sudden death in patients with cardiovascular disease. AD patients are particularly sus-

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ceptible to constipation due to various predisposing factors [7]. Constipation or straining during defecation can elevate intra-abdominal and arterial blood pressure, potentially exacerbating dissection tears, inducing postoperative dissection recurrence, or even rupture of the dissection hematoma. These issues not only impair patients' quality of life but also pose significant threats to their survival [8]. Therefore, implementing effective nursing interventions promptly is crucial for the rehabilitation of AD patients.

This study aims to analyze the preoperative data from patients with Stanford Type B aortic dissection to identify risk factors for preoperative bowel dysfunction. While previous research has focused on the pathogenesis, treatment, and postoperative management of AD, limited attention has been given to preoperative bowel dysfunction. By identifying key predictors, this study seeks to provide evidence-based guidance for clinical nurses to develop tailored bowel care plans before surgery. Such interventions could help minimize complications, promote recovery, and improve patients' long-term quality of life.

Material and methods

Data source

This retrospective study included 184 patients with acute Stanford Type B aortic dissection, who were admitted to The Affiliated Wuxi People's Hospital of Nanjing Medical University between January 2022 and December 2024. This study was approved by the Ethics Committee of The Affiliated Wuxi People's Hospital of Nanjing Medical University.

Inclusion criteria: diagnosis of Stanford type B aortic dissection via aortic CT angiography (CTA); symptom onset within 14 days, meeting the diagnostic criteria for acute aortic dissection; age ≥ 18 years; and complete clinical records as required for this study. Exclusion criteria: severe hepatic or renal failure with a very limited life expectancy; pre-existing organic lesions affecting defecation, such as rectal tumors or anal fistula; and pre-existing chronic defecation dysfunction unrelated to the aortic dissection.

Clinical data collection

Data were collected from patients' medical records, including baseline characteristics (sex, age, hypertension, diabetes mellitus, smoking history, alcohol consumption history, poor organ perfusion, aortic regurgitation, and extent of dissection), echocardiographic parameters (interventricular septum (IVST), left ventricular end diastolic diameter (LVEDd), left ventricular end systolic diameter (LVESd), left atrial diameter (LAD), right ventricular diameter (RVD), left ventricular ejection fraction (LVEF)), myocardial enzymes (creatine kinase (CK), creatine kinase-MB (CK-MB), lactate dehydrogenase (LDH)), dietary intake (fruit, vegetable, and water), and psychological status (Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS)). To ensure data accuracy, all records were independently reviewed and cross-checked by two investigators. Any discrepancies were promptly resolved through consultation with attending clinicians, ensuring the reliability and completeness of data collection.

Construction and verification of the model

The predictive model was constructed using R version 4.2.1 software. Patients were randomly assigned to a training set (n = 128) and a validation set (n = 56) at a 7:3 ratio. The training set was used to develop the model, while the validation set was used to assess its predictive performance. The presence of preoperative bowel dysfunction served as the outcome variable. A nomogram model was constructed using the 'rms' package in R. The model's performance was evaluated in both the training and validation sets using receiver operating characteristic (ROC) curves, calibration curves, and decision curve analysis (DCA).

Statistical methods

Statistical analyses were performed using SPSS 23.0 software. Descriptive statistics were used to summarize baseline characteristics. Categorical variables were presented as frequency (n) and percentage (%). In the univariate analysis, the chi-square test was used to assess the relationships between different variables and preoperative bowel dysfunction.

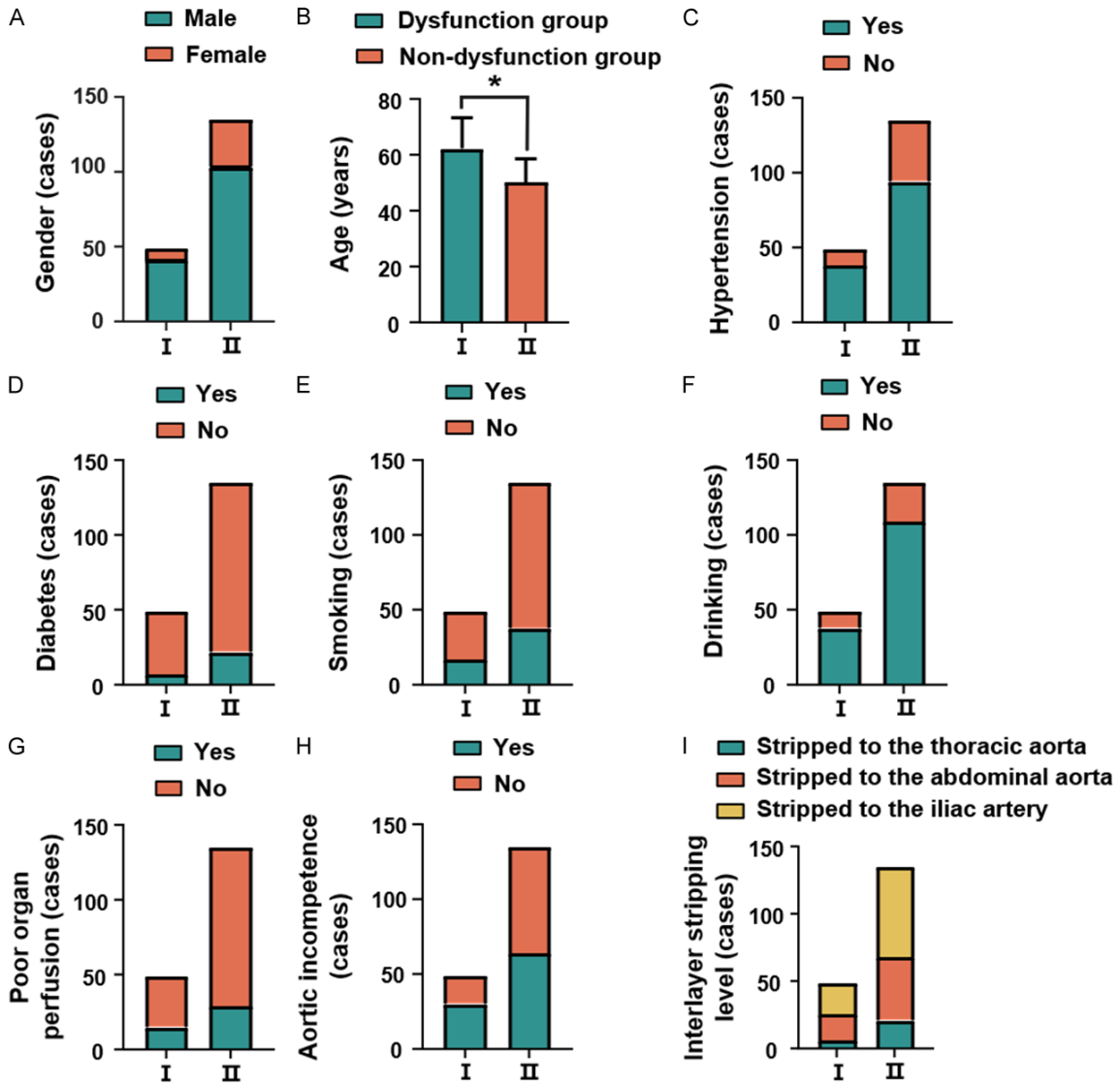

Figure 1. Baseline characteristics. I: Dysfunction group, II: Non-dysfunction group. *P < 0.05.

Subsequently, variables with p-values < 0.05 in the univariate analysis were included in multivariate logistic regression to identify independent risk factors. A p-value < 0.05 was considered statistically significant.

Results

Analysis of current status

Among the 184 patients included in the study, 49 patients (26.63%) developed preoperative bowel dysfunction. Patients in the bowel dysfunction group were significantly older than those without dysfunction. No significant differences were observed between groups regarding sex, hypertension, diabetes, and other baseline characteristics (**Figure 1**). There was no significant difference in echocardiographic parameters and myocardial enzyme levels between the two groups (**Figures 2** and **3**). Significant differences were found in dietary habits and psychological status. Patients with bowel dysfunction reported lower intake of fruit, vegetables, and water, and exhibited higher SDS and SAS scores (P < 0.05). These findings suggest that inadequate dietary intake and poor psychological state may contribute to the development of bowel dysfunction in patients with acute Stanford Type B aortic dissection (**Figures 4** and **5**).

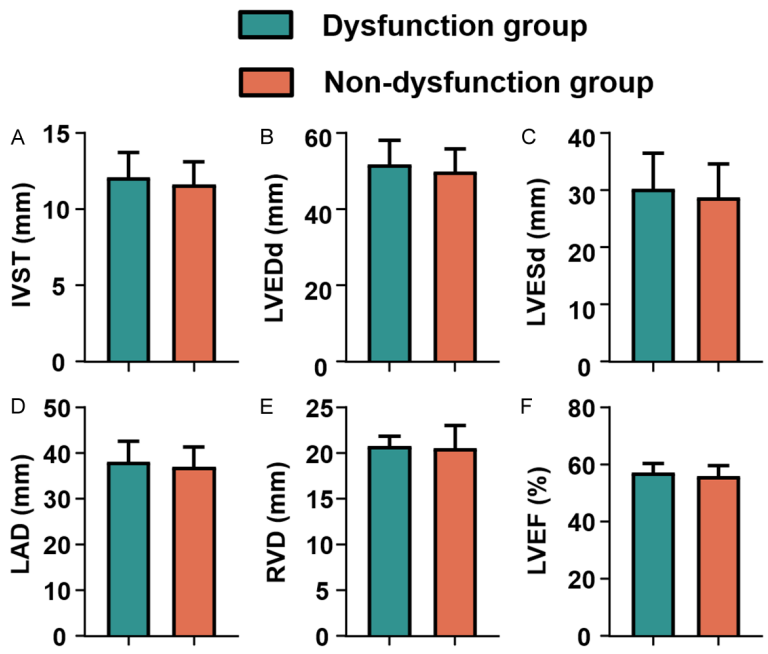

Figure 2. Comparison of echocardiographic parameters between the two groups. IVST: interventricular septum, LVEDd: left ventricular end diastolic diameter, LVESd: left ventricular end systolic diameter, LAD: left atrial diameter, RVD: right ventricular diameter, LVEF: left ventricular ejection fraction.

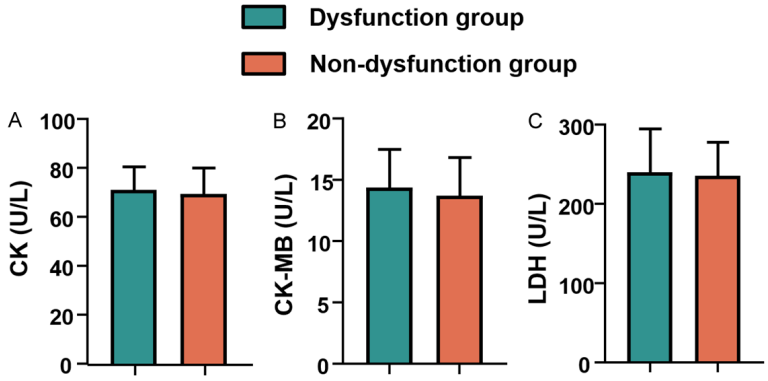

Figure 3. Comparison of myocardial enzyme levels between the two groups. CK: creatine kinase, CK-MB: creatine kinase-MB, LDH: lactic dehydrogenase.

Six methods for relieving constipation were analyzed in this study. Among these, glycerin suppositories, lactulose, and polyethylene glycol were prescribed by doctors, while the others - such as honey water, bananas, and carrot juice - were self-selected by patients. As shown in **Table 1**, glycerin suppositories were the most effective and rapid measure for relieving constipation, followed by polyethylene glycol. Other methods, including lactulose, honey water, banana, and carrot juice, were also effective but had a slower onset of action.

Analysis of risk factors

Multivariate logistic regression analysis was performed, taking preoperative bowel dysfunction as the dependent variable (no dysfunction = 0, dysfunction = 1), and variables that were significant in univariate analysis (age, fruit intake, vegetable intake, water intake, SDS score, and SAS score) as independent variables. The specific parameters for data input are shown in **Table 2**.

The analysis identified age, fruit intake, vegetable intake, water intake, SDS score, and SAS score as independent risk factors for preoperative bowel dysfunction in patients with acute Stanford Type B aortic dissection (all $P < 0.05$). Specifically, each additional year of age increased the risk by 1.134 times (OR = 1.134). Conversely, higher intake of fruits, vegetables, and water was associated with a reduced risk: for each gram increase in fruit and vegetable intake, and every milliliter increase in water intake, the risk of bowel dysfunction was reduced to 0.962 times (fruit), 0.983 times (vegetable), and 0.998 times (water), respectively (OR_{fruit} = 0.962, $OR_{vegetables}$ = 0.983, OR_{water} = 0.998). In terms of psychological status, each one-point increase in SDS and SAS scores was associated with a 1.098- and 1.161-fold increase in risk, respectively (OR_{SDS} = 1.098, OR_{SAS} = 1.161). These results are detailed in **Table 3**.

Construction and validation of the nomogram model

Based on the six influencing factors identified through logistic regression analysis, a nomogram model was constructed using the training set data (**Figure 6A**). For example, consider a

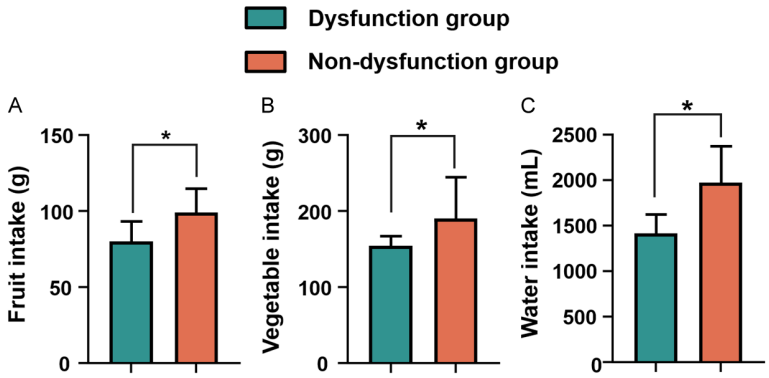

Figure 4. Comparison of dietary intake between the two groups. *$P < 0.05$.

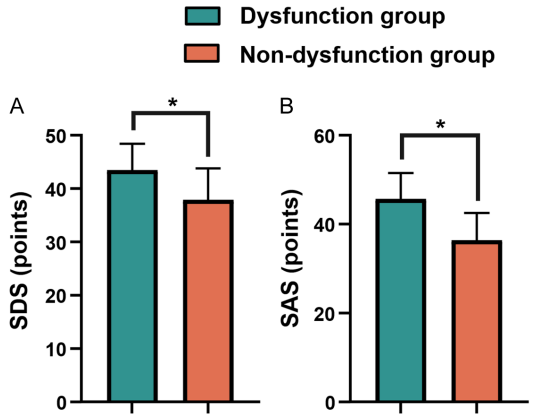

Figure 5. Comparison of psychological status between the two groups. SDS: Self-rating depression scale, SAS: Self-rating anxiety scale. *$P < 0.05$.

patient aged 60 years with a daily fruit intake of 110 g, vegetable intake of 180 g, water intake of 1,000 mL, an SDS score of 25, and an SAS score of 30. The corresponding nomogram scores for these factors are approximately 52, 7, 31, 75, 8, and 16 points, respectively, yielding a total score of 189 points. This corresponds to an estimated incidence of preoperative bowel dysfunction of about 18%.

ROC curve analysis revealed that the nomogram had an area under the curve (AUC) of 0.930 [95% CI (0.873, 0.986)] in the training set, with a specificity at 0.937 and sensitivity at 0.848. In the validation set, the AUC was 0.884 [95% CI (0.778, 0.990)], with a specificity of 0.800 and a sensitivity of 0.875 (**Figure 6B**, **6C**). Calibration curve analysis indicated that the predicted probabilities closely aligned with the actual outcomes (**Figure 6D**, **6E**). Additionally, the DCA showed that the net clinical benefit of the nomogram exceeded that of the extreme strategies (treat-all or treat-none), suggesting strong clinical utility (**Figure 6F**, **6G**).

Discussion

Aortic dissection (AD) typically results from a tear in the aortic intima, allowing blood to flow into the arterial wall and leading to stratification and separation of its layers. The detached intima divides the vascular lumen into true and false lumens [9]. The aorta comprises three layers: intima, media, and adventitia. The intima, the thinnest layer, is composed of a metabolically active monolayer of endothelial cells supported by loose connective tissue, contributing to the aorta's elasticity [10]. In 1965, DeBakey et al. first proposed a classification system for AD based on the location of the intimal tear and the extent of dissection [11]. Subsequently, in 1970, Daily et al. introduced a simpler classification, dividing AD into Type A and Type B according to the involvement of the ascending aorta [12]. Currently, these two classification systems remain the most widely used globally.

Although the exact pathogenesis of AD remains unclear, it is generally attributed to a combination of genetic, immune, biochemical, and hemodynamic factors [13-15]. Intimal tears most commonly occur 2-2.5 cm above the aortic root, where the blood pressure is highest, although secondary tears can develop throughout the aorta [16]. Clinical observations indicate that constipation or straining during defecation is an independent risk factor for vascular rupture in AD patients and a direct cause of preoperative sudden death. Increased intra-abdominal pressure can further elevate aortic pressure through thoracic and abdominal cavity transmission, potentially precipitating dissection extension or rupture.

The study revealed that patient age, daily water intake, fruit intake, vegetable intake, and psychological status are all associated with the occurrence of constipation. With advancing age, physiological functions, particularly gastrointestinal motility, naturally decline, provid-

Table 1. Methods to relieve constipation

Method	n	Efficacy [n (%)]			Time to Effect (h)
		Ineffective	Effective	Highly Effective	
Glycerin suppository	38	0	5 (13.16)	33 (86.84)	0.37 ± 0.08
Lactulose	27	7 (25.93)	11 (40.74)	9 (33.33)	17.77 ± 3.50
Polyethylene glycol	27	3 (11.11)	3 (11.11)	21 (77.78)	2.06 ± 0.60
Honey water	24	5 (20.83)	6 (25.00)	13 (54.17)	18.92 ± 2.94
Banana	22	4 (18.18)	17 (77.27)	1 (4.55)	18.68 ± 3.02
Carrot Juice	8	5 (62.50)	3 (37.50)	0	31.13 ± 10.70

Table 2. Variable assignment

Variable	Description of valuation	Value
Age	Actual value entry	53.54 ± 10.67
Fruit intake	Actual value entry	90.91 ± 16.45
Vegetable intake	Actual value entry	179.56 ± 49.71
Water intake	Actual value entry	1604.72 ± 390.01
SDS score	Actual value entry	38.88 ± 6.12
SAS score	Actual value entry	38.18 ± 6.84

ing a physiological basis for constipation [17]. Patients with aortic dissection often require prolonged bed rest, which slows gastrointestinal transit and extends the retention time of intestinal contents [18]. This prolonged retention leads to excessive water absorption from the fecal matter, leading to hard, dry stools that are difficult to pass and significantly increases the incidence of constipation [19].

Adequate water intake is crucial for maintaining normal intestinal function. Insufficient water intake results in decreased water content in the feces making it harder for stool to move through the intestine. This not only complicates defecation but also promotes toxin absorption, further disrupting the intestinal environment and worsening constipation. Fruits and vegetables, rich in dietary fiber and essential nutrients, play a critical role in promoting bowel regularity. Dietary fiber absorbs water, causing food residues to swell and form a gel-like substance that lubricates the intestines and facilitates smoother stool passage [20].

In patients with aortic dissection, poor appetite and reduced dietary intake are common due to the combined effects of psychological stress and the disease itself [21]. Insufficient intake of fruits and vegetables further increases the risk of constipation. Psychological status is closely linked to bowel function. The sudden onset of AD, lack of disease awareness, bed rest, and frequent examinations can cause autonomic dysfunction, anxiety, and depression, which inhibit gastrointestinal motility [22, 23]. Additionally, severe pain, dyspnea, and concerns about prognosis can further exacerbate negative emotions, resulting in sympathetic hyperactivity and slowed gastrointestinal motility, thereby contributing to constipation. Moreover, the hospital environment - specifically the sounds and odors associated with defecation, unfamiliar surroundings, noise from instruments, and frequent examinations - can increase psychological stress and suppress the urge to defecate. Changes in defecation habits due to prolonged bed rest, lack of guidance or training, and concerns about soiling bed sheets can also inhibit the defecation reflex, further weakening the urge to defecate [24, 25].

To further assess the predictive value of the identified risk factors for preoperative bowel dysfunction in patients with acute Stanford Type B aortic dissection, a nomogram model was developed based on the six variables identified through multivariate logistic regression analysis. The model demonstrated good predictive performance in the validation set, with an AUC of 0.884 [95% CI (0.778, 0.990)]. Calibration analysis showed that the predicted probabilities closely aligned with the actual outcomes, and decision curve analysis indicated that the net clinical benefit of the nomogram exceeded that of the extreme strategies, supporting its strong clinical utility.

By identifying key influencing factors, targeted interventions can be implemented to improve patients' quality of life and clinical outcomes. After admission, staff should carefully evaluate the patient's bowel function and inquire about

Table 3. Logistics regression analysis for preoperative bowel dysfunction

Variable	*B*	*SE*	*Wald* χ^2	*P*	*OR*	*95% CI*
Age	0.126	0.029	18.668	< 0.001	1.134	1.071-1.200
Fruit intake	-0.039	0.016	6.110	0.013	0.962	0.932-0.992
Vegetable intake	-0.017	0.006	7.695	0.006	0.983	0.972-0.995
Water intake	-0.002	0.001	10.400	0.001	0.998	0.996-0.999
SDS score	0.093	0.044	4.467	0.035	1.098	1.007-1.197
SAS score	0.149	0.042	12.758	< 0.001	1.161	1.070-1.260
Constant	-7.469	3.272	5.213	0.022	0.001	-

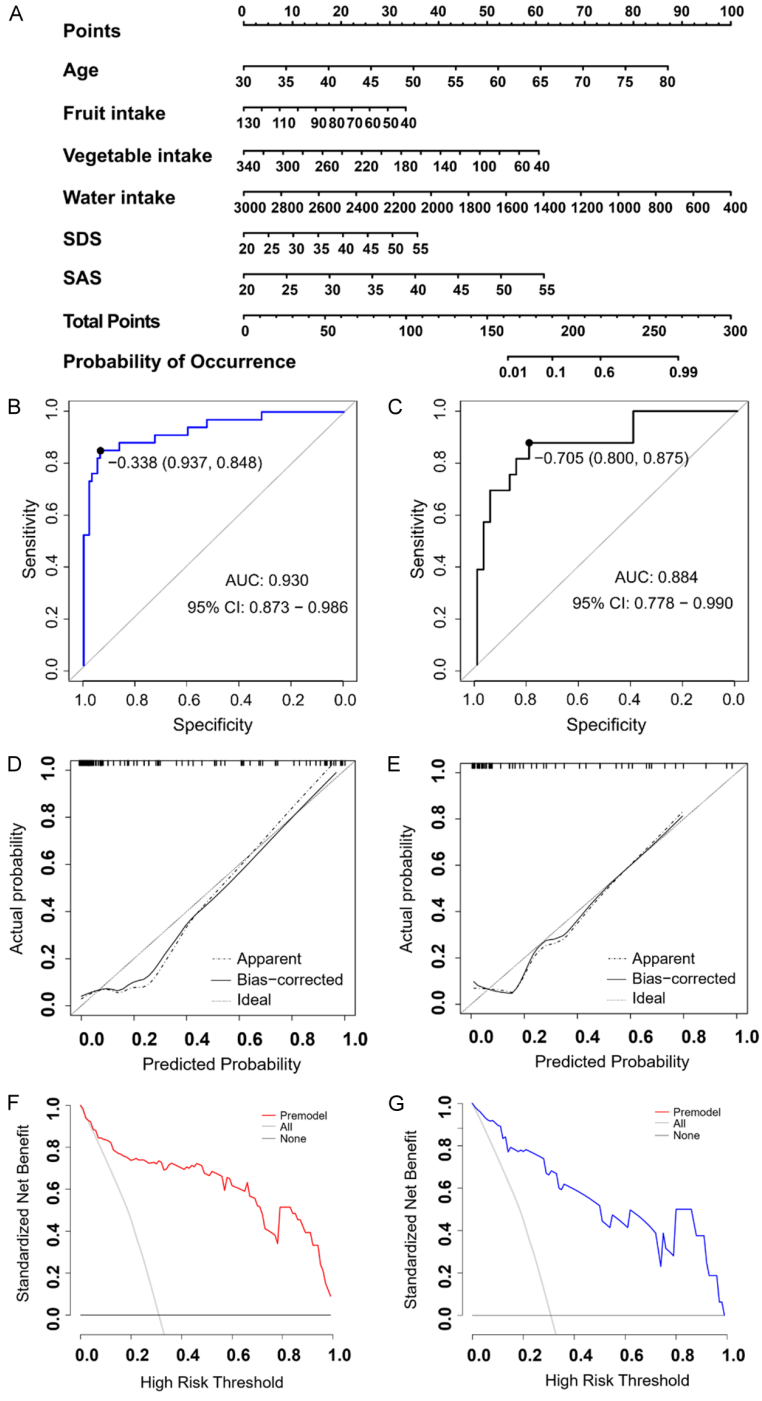

Figure 6. Establishment and verification of a predictive model. A. Nomogram model. B. ROC curve for the predictive model in the training set. C. ROC curve for the predictive model in the validation set. D. Calibration curve for the predictive model in training set. E. Calibration curve for the predictive model in validation set. F. Decision curve analysis for the predictive model in the training set. G. Decision curve analysis for the predictive model in the validation set. SDS: Self-rating depression scale, SAS: Self-rating anxiety scale, AUC: Area Under Curve, ROC: Receiver Operating Characteristic, CI: confidence interval.

defecation habits. During patient education and counselling, the methods, importance, and risks associated with in-bed defecation should be emphasized, along with the necessity of nursing interventions during bowel movements. For the first defecation after admission, regardless of prior constipation history, proactive nursing interventions should be implemented, including bed recumbent defecation and the use of glycerin enemas. Concurrently, education, guidance, and psychological support should be provided, with repeated reinforcement of the importance of bed recumbent defecation [26]. Dietary management is also essential. Patients should be provided with a light, easy-to-

digest diet that is high in protein and vitamins, low in salt and fat, and free from spicy foods. Increasing the intake of high-fiber foods is recommended, as dietary fiber absorbs water, expands, and forms a gel-like substance that facilitates bowel movements. Patients should avoid rapid eating and overeating. If no contraindications exist, a daily fluid intake of at least 2,000 mL is advised to promote stool softening and ease passage [27].

The defecation environment also requires attention. Since bedside defecation may cause discomfort, privacy should be ensured by using cloth curtains around the bed to create a more acceptable environment. To prevent constipation, patients should follow medical advice and initiate conventional oral laxative therapy as prescribed after admission to safely navigate the critical period.

Constipation in AD patients is influenced by multiple factors, including age, daily water intake, fruit intake, vegetable intake, and psychological status. Addressing these factors through a balanced diet, psychological support, moderate physical activity, pain management, and ensuring a comfortable defecation environment is crucial for preventing constipation. Early assessment of bowel function in AD patients enables timely medical intervention, potentially reducing risk of serious complications and mortality.

Currently, there is no clinical tool specifically designed to assess constipation risk in patients with cardiovascular disease. Developing a standardized constipation management pathway based on early risk assessment and screening in AD patients warrants further investigation. This study has several limitations. It was a single-center study with a relatively small sample size, which may limit the generalizability of the findings to broader populations across different regions and healthcare settings. Future research should focus on prospective, multicenter studies with larger sample sizes to systematically collect data, thereby minimizing issues related to missing or inaccurate records inherent in retrospective studies. Such efforts would enhance the generalizability of the findings and provide more robust evidence to inform clinical practice.

Disclosure of conflict of interest

None.

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References

[1] Bossone E and Eagle KA. Epidemiology and management of aortic disease: aortic aneurysms and acute aortic syndromes. Nat Rev Cardiol 2021; 18: 331-348.
[2] Sayed A, Munir M and Bahbah EI. Aortic dissection: a review of the pathophysiology, management and prospective advances. Curr Cardiol Rev 2021; 17: e230421186875.
[3] Weissler EH, Osazuwa-Peters OL, Greiner MA, Hughes GC, Long CA, Vemulapalli S, Patel MR and Jones WS. National trends in repair for type B aortic dissection. Clin Cardiol 2021; 44: 1058-1068.
[4] Tao Y, Li G, Yang Y, Wang Z, Wang S, Li X, Yu T and Fu X. Epigenomics in aortic dissection: from mechanism to therapeutics. Life Sci 2023; 335: 122249.
[5] Li S, Fu W and Wang L. Role of macrophages in aortic dissection pathogenesis: insights from preclinical studies to translational prospective. Sci China Life Sci 2024; 67: 2354-2367.
[6] Howard C, Sheridan J, Picca L, Reza S, Smith T, Ponnapalli A, Calow R, Cross O, Iddawela S, George M, Livra Dias D, Srinivasan A, Munir W, Bashir M and Idhrees M. TEVAR for complicated and uncomplicated type B aortic dissection-Systematic review and meta-analysis. J Card Surg 2021; 36: 3820-3830.
[7] Judkins CP, Wang Y, Jelinic M, Bobik A, Vinh A, Sobey CG and Drummond GR. Association of constipation with increased risk of hypertension and cardiovascular events in elderly Australian patients. Sci Rep 2023; 13: 10943.
[8] Sundbøll J, Szépligeti SK, Adelborg K, Szentkúti P, Gregersen H and Sørensen HT. Constipation and risk of cardiovascular diseases: a Danish population-based matched cohort study. BMJ Open 2020; 10: e037080.
[9] Lopes A, Gouveia E Melo R, Amorim P, Fernandes E Fernandes R and Mendes Pedro L. Current perspectives in acute type B aortic dissections: a literature review. J Cardiovasc Surg (Torino) 2024; 65: 132-138.
[10] Sharif M, Yap ZJ, Ghazal A, Bashir M and Harky A. Tear size and location influence the pres-

sure of false lumen following type a aortic dissection: perspective of current evidence. Heart Lung Circ 2020; 29: 178-187.
[11] Debakey ME, Henly WS, Cooley DA, Morris GC Jr, Crawford ES and Beall AC Jr. Surgical management of dissecting aneurysms of the aorta. J Thorac Cardiovasc Surg 1965; 49: 130-49.
[12] Daily PO, Trueblood HW, Stinson EB, Wuerflein RD and Shumway NE. Management of acute aortic dissections. Ann Thorac Surg 1970; 10: 237-47.
[13] Zhang H, Ouyang Z, Zhou T, Su F and Wang M. Novel anoikis-related diagnostic biomarkers for aortic dissection based on machine learning. Sci Rep 2024; 14: 31314.
[14] Bax M, Romanov V, Junday K, Giannoulatou E, Martinac B, Kovacic JC, Liu R, Iismaa SE and Graham RM. Arterial dissections: common features and new perspectives. Front Cardiovasc Med 2022; 9: 1055862.
[15] Xu X, Yu Y, Fan J, Shen S, Zhao Z, Ding S, Zhang J, Xu Z, Wang Y, Han L and Tang Y. Chronobiological patterns and risk of acute aortic dissection: a clinical retrospective and two-sample Mendelian randomisation study. Heart Lung Circ 2025; 34: 444-455.
[16] Howard C, Ponnapalli A, Shaikh S, Idhrees M and Bashir M. Non-A non-B aortic dissection: a literature review. J Card Surg 2021; 36: 1806-1813.
[17] Patejdl R. Gastrointestinal motility function and dysfunction in the elderly patient: what are the effects of aging? Visc Med 2024; 40: 325-330.
[18] Hao J, Li J, Zhang H, Chen J, Fang M, Wu M, Gu B, Xiao Y and Lei L. Gastrointestinal bleeding risk factors in type A aortic dissection post-aortic arch replacement. J Thorac Dis 2024; 16: 2314-2325.
[19] Xu Y and Xue Z. The relationship between food components and constipation: a cross-sectional study. BMC Gastroenterol 2024; 24: 459.
[20] Ramezani F, Pourghazi F, Eslami M, Gholami M, Mohammadian Khonsari N, Ejtahed HS, Larijani B and Qorbani M. Dietary fiber intake and all-cause and cause-specific mortality: an updated systematic review and meta-analysis of prospective cohort studies. Clin Nutr 2024; 43: 65-83.
[21] Ilonzo N, Taubenfeld E, Yousif MD, Henoud C, Howitt J, Wohlauer M, D'Oria M and MacCarrick G; Aortic Dissection Collaborative. The mental health impact of aortic dissection. Semin Vasc Surg 2022; 35: 88-99.
[22] Ballou S, Katon J, Singh P, Rangan V, Lee HN, McMahon C, Iturrino J, Lembo A and Nee J. Chronic diarrhea and constipation are more common in depressed individuals. Clin Gastroenterol Hepatol 2019; 17: 2696-2703.
[23] Blakeslee-Carter J, Menon AJ, Novak Z, Spangler EL, Beck AW and McFarland GE. Association of mental health disorders and aortic dissection. Ann Vasc Surg 2021; 77: 217-225.
[24] Zhao Z, Bai B, Wang S, Zhou Y, Yu P, Zhao Q and Yang B. Physical and psychological correlates of somatic symptom in patients with functional constipation: a cross-sectional study. BMC Psychiatry 2024; 24: 134.
[25] Liu T, Wang Z, Kang X, Wang X, Ren G, Lv Y, Li J, Liu Y, Liang S, Nie Y, Luo H and Pan Y. Causal relationships between psychological disorders and functional gastrointestinal disorders: a bidirectional two-sample Mendelian randomization study. Eur J Gastroenterol Hepatol 2024; 36: 1267-1274.
[26] He Z, Yu Q, He B, Liu J, Gao W and Chen X. Can depression lead to chronic constipation, or does chronic constipation worsen depression? NHANES 2005-2010 and bidirectional Mendelian randomization analyses. BMC Gastroenterol 2024; 24: 361.
[27] Li M and Ma S. A review of healthy role of dietary fiber in modulating chronic diseases. Food Res Int 2024; 191: 114682.