Stomach Cancer

Literature Update

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Urinary titin N-terminal fragment concentration is an indicator of preoperative sarcopenia and nutritional status in patients with gastrointestinal tract and hepatobiliary pancreatic malignancies.

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Urinary titin N-terminal fragment concentration is an indicator of preoperative sarcopenia and nutritional status in patients with gastrointestinal tract and hepatobiliary pancreatic malignancies.

Nutrition. 2020 Jul 31;79–80:110957

Authors: Miyoshi K, Shimoda M, Udo R, Oshiro Y, Suzuki S

Abstract

OBJECTIVES: Recent reports indicate that preoperative patients with gastrointestinal malignancies often have sarcopenia. The diagnosis of sarcopenia is generally done by evaluation of walking speed, grip strength, and skeletal muscle volume of the limbs on computed tomography (CT). However, these parameters are objective indices, and new indicators for diagnosis, such as molecular biomarkers, have been anticipated. The aim of this study was to investigate whether titin, a muscular contractile protein present in sarcomeres, is an indicator of sarcopenia.

METHODS: We analyzed 39 patients with gastrointestinal tract and hepatobiliary pancreatic malignancies who underwent surgery. We compared urinary titin n-terminal fragment concentration (UTF) with clinical factors, subcutaneous fat volume, and skeletal muscle volume index, and also compared UTF levels between patients with and without sarcopenia.

RESULTS: The patients comprised 24 men and 15 women, with a mean age of 72 y (range: 35–85 y). Cancer locations were the pancreas (n = 17), liver (n = 9), stomach (n = 5), colorectum (n = 5), and esophagus (n = 3). UTF was significantly higher in patients with sarcopenia (P = 0.04), and showed statistically significant negative correlations with albumin (r = -2.61, P = 0.001), pre-albumin (r = -2.14, P = 0.02), body mass index (r = -0.49, P = 0.007), cholinesterase (r = -0.02, P = 0.01), skeletal muscle volume index (r = -0.16, P = 0.04), and subcutaneous fat volume (r = -0.03, P = 0.007).

CONCLUSION: UTF may be a new index for preoperative nutritional assessment in patients with gastrointestinal malignancies.

PMID: 32866763 [PubMed — as supplied by publisher]

Thrombopoietin is associated with a prognosis of gastric adenocarcinoma.

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Thrombopoietin is associated with a prognosis of gastric adenocarcinoma.


Authors: Zhou CL, Su HL, Dai HW

Abstract

OBJECTIVE Thrombopoietin (THPO) is well-known as a megakaryocyte growth and development factor (MGDF) involved in megakaryocyte proliferation and maturation. To explore the biological effects of THPO in gastric adenocarcinoma, we conducted this study. Methods: By accessing the TCGA database, the expression level of THPO was determined in tumor tissues. The association between THPO expression and clinical features, or prognostic significance was described by Cox regression analysis and Kaplan-Meier. The SiRNA method was used to decline the THPO expression; then cell viability, invasion, and migration were detected to verify the effects of the knockdown of THPO. qPCR and western blotting were implemented to examine the expression level of THPO. Results: The expression of THPO was increased in tumor tissue and cells, its high-regulation was associated with a poor prognosis in patients with gastric adenocarcinoma. Cell viability, invasion, and migration were suppressed in AGS with the down-regulation of THPO. Furthermore, on the basis of si-THPO transfection, E-cadherin was promoted while N-cadherin and Vimentin were attenuated. CONCLUSION Our results revealed that THPO may be a potent marker of gastric adenocarcinoma, providing a novel potential screening method for gastric adenocarcinoma.

PMID: 32638965 [PubMed — indexed for MEDLINE]
The gastroprotective potential of silibinin against Helicobacter pylori infection and gastric tumor cells.

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The gastroprotective potential of silibinin against Helicobacter pylori infection and gastric tumor cells.

Life Sci. 2020 Sep 01;256:117977

Authors: Bittencourt MLF, Rodrigues RP, Kitagawa RR, Gonçalves RCR

Abstract

AIMS: Silibinin is the major component of flavonolignans complex mixture (Silymarin), which is obtained from Silybum marianum (L.) Gaertn. Despite several reports about silibinin, little is known about its effects on gastric diseases. Then, the present study aims to evaluate the silibinin effect against Helicobacter pylori infection, gastric tumor cells and immunomodulation.

MAIN METHODS: The anti-H. pylori effect was performed on 43504 and 43629 strains by minimum inhibitory concentration (MIC) determination, observing morphological alterations by scanning electron microscopy and in silico evaluation by molecular docking. Immunomodulatory activity (Interleukins-6 and 10, TNF-α and NO inhibition) was determined in H. pylori-stimulated macrophages and the cytotoxic activity on gastric adenocarcinoma cells prior and after metabolization by S9 fraction.

KEY FINDINGS: Silibinin showed anti-H. pylori activity with MIC of 256 μg/mL, promoted important morphological changes in the bacterial cell wall, as blebs and clusters, suggesting interaction with Penicillin Binding Protein (PBP) subunits. Immunomodulatory potential was observed at 50 μg/mL with the inhibition of produced cytokines and NO by H. pylori-stimulated macrophages of 100% for TNF-α, 56.83% for IL-6, and 70.29% for IL-10 and 73.33% for NO. Moreover, silibinin demonstrated significant cytotoxic activity on adenocarcinoma cells (CI50: 60.17 ± 0.95 μg/mL) with a higher selectivity index (SI: 1.52) compared to cisplatin. After metabolization silibinin showed an increase of cytotoxicity with a CI50 six-fold decrease (10.46 ± 0.25).

SIGNIFICANCE: The use of silibinin may become an important alternative tool in the prevention and treatment of H. pylori infection and, consequently, in gastric cancer.

PMID: 32603822 [PubMed — indexed for MEDLINE]

Seroprevalence of Helicobacter pylori/CagA Antibodies in Guatemalan Gastric Cancer Patients: Association of Seropositivity with Increased Plasma Levels of Pepsinogens but not Soluble Urokinase Plasminogen Activator Receptor.

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Seroprevalence of Helicobacter pylori/CagA Antibodies in Guatemalan Gastric Cancer Patients: Association of Seropositivity with Increased Plasma Levels of Pepsinogens but not Soluble Urokinase Plasminogen Activator Receptor.


Authors: Fernandez-Botran R, Wellmann IA, Une C, Méndez-Chacón E, Hernández de Rodas E, Bhandari B, Villagrán de Tercero CI

Abstract

Infection by Helicobacter pylori is a major risk factor for gastric cancer (GC), the second leading cause of cancer-related death worldwide. Although biomarkers such as pepsinogens (PGs) and soluble urokinase plasminogen activator receptor (suPAR) may have diagnostic and/or prognostic value in patients with GC, their levels may be affected by H. pylori infection. The aim of this study was to investigate the association of the presence of antibodies to H. pylori and cytotoxin-associated gene A (CagA) with plasma levels of PGs and suPAR in a cohort of Guatemalan GC patients and controls. To this end, levels of suPAR, Pepsinogens I and II (PGI and PGII), and antibodies to H. pylori and CagA toxin were determined by ELISA in plasma samples from 67 GC patients and 136 matched healthy controls. Seropositivity for CagA was significantly higher in patients with GC than in controls. Pepsinogens II and suPAR levels were higher and PGI/PGII ratios were lower in GC patients than in controls. There was a significant association of H. pylori seropositivity status with increased levels of PGI and lower PGI/PGII ratios, particularly in the control (non-GC) population. The levels of suPAR were not significantly affected by H. pylori or CagA seropositivity status. These results suggest that the seropositivity status for H. pylori and CagA need to be taken into account during the GC diagnostic process.

PMID: 32314688 [PubMed — indexed for MEDLINE]
Preoperative Chemoradiation Versus Chemotherapy in Gastroesophageal Junction Adenocarcinoma.

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Preoperative Chemoradiation Versus Chemotherapy in Gastroesophageal Junction Adenocarcinoma.


Abstract

**BACKGROUND:** The incidence of lower esophageal and gastroesophageal junction adenocarcinoma has sharply increased over the past several decades and is a serious public health problem. Preoperative therapy with either chemotherapy or chemoradiation is recommended, but the optimal regimen is unknown. We used the National Cancer Database and propensity score matching to investigate whether preoperative chemoradiation therapy offers an advantage over chemotherapy alone for patients with these tumors.

**METHODS:** From the National Cancer Database esophageal and gastric dataset, we selected patients with either lower esophageal or gastric cardia adenocarcinomas who had undergone definitive resection after chemotherapy or chemoradiation. We used propensity score matching to balance groups based on the preoperative treatment they received. We then used conditional multivariable logistic regression and Cox proportional hazard models to examine the association between preoperative therapy regimen and pathological response, overall survival (OS), and postoperative outcomes.

**RESULTS:** Our study included 13,783 patients; 12,129 (89.0%) had received preoperative chemoradiation. Propensity score matching created 1650 pairs. Patients receiving chemoradiation were 2.7 (95% confidence interval, 1.29–3.23) times more likely to achieve complete response in the primary tumor than those receiving chemotherapy alone; however, chemoradiation was not associated with improved OS (hazard ratio, 1.01; 95% confidence interval, 0.91–1.12). Short-term outcomes (length of stay, mortality, and readmissions) were similar between the 2 groups.

**CONCLUSIONS:** Preoperative chemoradiation was associated with a higher complete response rate in the primary tumor but not with improved OS in lower esophageal and gastroesophageal junction adenocarcinoma.

PMID: 32289300 [PubMed — indexed for MEDLINE]

MiR-BART1-5p targets core 2 β-1,6-acetylglucosaminyltransferase GCNT3 to inhibit cell proliferation and migration in EBV-associated gastric cancer.

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MiR-BART1-5p targets core 2 β-1,6-acetylglucosaminyltransferase GCNT3 to inhibit cell proliferation and migration in EBV-associated gastric cancer.

Virology. 2020 02;541:63–74


Abstract

GCNT3 (core 2β-1,6-acetylglucosaminyltransferase) is a novel core mucin synthase. It is known that abnormal expression of GCNT3 promotes the progression of several human cancers. However, its relationship with Epstein-Barr virus (EBV) has not been comprehensively studied. We found GCNT3 expression in EBV-associated gastric cancer cells and tissues to be lower than in EBV-negative gastric cancer cells and tissues, and high expression was significantly associated with advanced tumor-lymph node metastasis. Luciferase reporter assay revealed that miR-BART1-5p directly targeted GCNT3. In addition, miR-BART1-5p mimics transfection was observed to reduce cell proliferation and migration, while miR-BART1-5p inhibitor increased cell proliferation and migration following transfection. In conclusion, both miR-BART1-5p and knockdown of GCNT3 inhibited cell proliferation and migration. In addition, EBV may regulate GCNT3 by affecting the NF-kB signaling pathway. E-cadherin, N-cadherin, vimentin, and p-ERK were found to be downstream molecules of the miR-BART1-5p/GCNT3 pathway.

PMID: 32056716 [PubMed — indexed for MEDLINE]

Perineural invasion as a predictive factor for survival outcome in gastric cancer patients: a systematic review and meta-analysis.

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Perineural invasion as a predictive factor for survival outcome in gastric cancer patients: a systematic review and meta-analysis.

J Clin Pathol. 2020 Sep;73(9):544–551

Authors: Zhao B, Lv W, Mei D, Luo R, Bao S, Huang B, Lin J

Abstract

Perineural invasion as a predictive factor for survival outcome in gastric cancer patients: a systematic review and meta-analysis.
AIMS: The prognostic significance of perineural invasion (PNI) for gastric cancer (GC) patients was under debate. This study aimed to review relevant studies and evaluate the impact of PNI on the survival outcome of GC patients.

METHODS: Systematic literature search was performed using PubMed and Embase databases. The relevant data were extracted, and the association between PNI and clinicopathological characteristics or survival outcome in GC patients were evaluated using a fixed-effect model or random-effect model.

RESULTS: A total 13 studies involving 7004 GC patients were included in this meta-analysis. The positive rate of PNI was 35.9% (2512÷7004) in GC patients, ranging from 6.9% to 75.6%. There were significant relationships between PNI and a series of unfavourable clinicopathological factors including undifferentiated histology type (OR: 1.78, 95% CI 1.37 to 2.33, p