

Vitamin D deficiency predicts severe acute pancreatitis

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Background/Aims: The ability to predict the severity of disease is important to reduce morbidity and mortality in patients with acute pancreatitis (AP). Vitamin D deficiency has been associated with severity in various diseases. This study was conducted to assess vitamin D as a predictor of disease severity in patients with AP. **Methods:** Patients with AP were prospectively enrolled at Yonsei University Wonju College of Medicine from March 2015 to September 2017. Serum vitamin D was analyzed as soon as AP was diagnosed. The level of vitamin D was classified as normal (> 20 ng/ml), insufficient (> 10 and ≤20 ng/ml), or deficient (≤ 10 ng/ml). **Results:** Among 242 patients with AP, the prevalence of vitamin D deficiency was 56.2%, and 28.5% of patients had vitamin D insufficiency. Serum vitamin D level was negatively correlated with severity indexes, such as the Atlanta classification, computed tomography severity index, Bedside index for severity of AP, and Ranson score. The prevalence of vitamin D deficiency increased with severity of AP according to the Atlanta classification. Vitamin D deficiency was the only independent factor for predicting severe AP (OR 5.37, 95% CI 1.13-25.57, P=0.015) and intensive care unit admission (OR 3.09, 95% CI 1.24-7.69, P=0.035). **Conclusions:** Vitamin D deficiency is associated with increased severity of AP and is a predictor for intensive care unit admission.

Figure 1. The prevalence of vitamin D deficiency in acute pancreatitis according to Atlanta classification

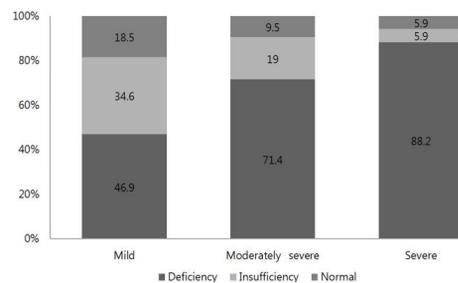


Table 4. The association between vitamin D deficiency and intensive care unit admission

	OR	P-value*	OR	95% CI	P-value*
Gender (Male)	2.27	0.065	1.74	0.63-4.78	0.278
Age	0.99	0.828	1.01	0.98-1.04	0.382
Gallstone	0.21	<0.001	0.25	0.06-1.05	0.059
Alcohol	4.54	<0.001	1.9	0.51-7.11	0.338
Smoking	1.91	0.075	0.83	0.31-2.22	0.712
Hypertension	1.27	0.510	1.72	0.65-4.58	0.272
Diabetes mellitus	1.75	0.138	1.53	0.63-3.73	0.351
Body mass index	0.9	0.033	0.93	0.84-1.03	0.170
C-reactive protein	1.04	0.071	1.02	0.96-1.07	0.411
Vitamin D (Deficiency)	3.18	0.006	3.09	1.24-7.69	0.015

* Univariate analysis was done
* Multivariate analysis was done
OR, odds ratio; CI, confidence interval

Table 5. The association between vitamin D deficiency and severe acute pancreatitis

	OR	P-value*	OR	95% CI	P-value*
Gender (Male)	1.20	0.741	1.20	0.34-4.25	0.775
Age	0.99	0.944	1.02	0.97-1.06	0.345
Gallstone	0.35	0.057	0.23	0.04-1.31	0.098
Alcohol	2.12	0.137	0.87	0.16-4.55	0.870
Smoking	1.09	0.866	0.57	0.15-2.16	0.412
Hypertension	0.93	0.895	0.79	0.22-2.72	0.710
Diabetes mellitus	1.84	0.236	1.68	0.53-5.28	0.369
Body mass index	0.96	0.491	0.97	0.85-1.11	0.977
C-reactive protein	1.08	0.007	1.07	1.01-1.13	0.047
Vitamin D (Deficiency)	6.44	0.015	5.37	1.13-25.57	0.035

* Univariate analysis was done
* Multivariate analysis was done
OR, odds ratio; CI, confidence interval

Risk factors of cholecystitis and pancreatitis after ERBD with malignant bile duct obstruction

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Background/Aims: Post endoscopic retrograde biliary drainage (ERBD) pancreatitis and cholecystitis are known as reducing the quality of life of patients after procedure. Thus, the purpose of this study is to identify the predictive factors of these complications after endoscopic retrograde biliary drainage in many phases, patient sides, cancer sides, stent sides including three type of stents; plastic, uncovered metal stent, covered metal stent. **Methods:** This study was a retrospective analysis of cancer patients in Samsung medical center who did endoscopic retrograde biliary drainage stenting from 2007 to July 2017. The following variables were evaluated: Sex, Age, BMI, cancer type, history of pancreatitis, presence of gallbladder stone, previous history of biliary procedure, pre-contrast, stent type, contrast injection into the pancreatic duct or gallbladder. **Results:** 248 patients were in no complication group, 97 patients were in pancreatitis group, 30 patients were in cholecystitis group. On pancreatitis group, BMI shows higher, cancer type showed no significant difference. Contrast inject to pancreatic duct was risk factor of pancreatitis. In contrary, biliary stenting history was lower in pancreatitis patients. In stent types, the plastic stent showed lower risk of pancreatitis than metal stents. On cholecystitis group, there were no significant risk factors in patients, and cancer sides. But contrast inject to gallbladder was independent risk factor. In the respect of GB stone, we can assumed the tendency of high risk cholecystitis in positive GB stone patients. **Conclusions:** Higher BMI and contrast injection into the pancreatic duct were predictive factors for pancreatitis, and contrast injection into gallbladder was predictive factor for cholecystitis after ERBD in malignant biliary obstruction. Patient with bile drainage history showed lower risk of pancreatitis, since the procedure such as EST was done before. Metal stents had more risk of post procedure pancreatitis than plastic stents. Considering that the contrast injection was the most important factor in both complication, the physician's delicate procedure will be mostly important to prevent complication.

Table 2. Univariate and Multivariate analysis of risk factors for pancreatitis

Variables	No complication	Pancreatitis	P-Value	
			Univariate analysis	Multivariate analysis
Gender (Male %)	153 (61.7)	47 (48.5)	0.026*	0.073
Age (mean (sd))	62.54 (12.01)	64.60 (12.62)	0.16	0.395
BMI (mean (sd))	22.30 (2.81)	23.13 (3.17)	0.019**	0.005**
Cancer type			0.636	
Pancreas cancer	105 (42.6)	41 (42.3)		
Non-Pancreas cancer	143 (57.7)	56 (57.7)		
Pancreatitis History (%)	16 (6.5)	6 (6.2)	0.928	
Biliary stenting History (mean(sd))	0.59 (0.89)	0.16 (0.37)	<0.0001**	
Precut (%)	7 (2.8)	5 (5.2)	0.295	
Stent type (%)				
Plastic vs USEMS vs CSEMS			0.0923	0.0992
Plastic vs metal	300 : 148 (1:1.48)	27 : 70 (1:2.59)	0.032*	
USEMS vs CSMES	99 : 49 (1:0.49)	45 : 25 (1:0.55)	0.704	
Pancreatogram (%)	24 (9.7)	43 (44.3)	<0.0001**	<0.0001**

Table 3. Univariate and Multivariate analysis of risk factors for Cholecystitis

Variables	No complication	Cholecystitis	P-Value	
			Univariate analysis	Multivariate analysis
Gender (Male %)	153 (61.7)	16 (53.3)	0.377	
Age (mean (sd))	62.54 (12.01)	66.70 (10.90)	0.073	0.149
BMI (mean (sd))	22.30 (2.81)	22.89 (3.46)	0.289	
Cancer type			0.754	
GB cancer	27 (10.9)	3 (9.3)		
Non-GB cancer	221 (89.1)	30 (90.9)		
GB stone (%)	22 (8.9)	6 (20.0)	0.063	0.094
Biliary stenting History (mean (sd))	0.59 (0.89)	0.80 (1.35)	0.116	
Precut (%)	7 (2.8)	0 (0.0)	0.987	
Stent type (%)				
Plastic vs USEMS vs CSEMS			0.909	
Plastic vs metal	100 : 148 (1:1.48)	13 : 17 (1:30)	0.751	
USEMS vs CSMES	99 : 49 (1:0.49)	12 : 5 (1:0.41)	0.759	
Contrast inject to GB (%)	41 (16.5)	11 (36.7)	0.0214*	0.0277*