Assessing the incidence, timing, and risk factors for vitamin B12 deficiency following cystectomy with urinary diversion

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Introduction

• The use of ileum for urinary diversion following cystectomy is standard in modern practice, but the impact on B12 absorption remains unclear.

• Cases of symptomatic B12 deficiency following urinary diversion are rare, but many centers continue to routinely monitor B12 levels in patients with urinary diversions.

• We sought to characterize the incidence and timing of B12 deficiency among patients with urinary diversions at our institution.

Materials & Methods

• With IRB approval, we queried our institutional electronic health record for all patients who underwent cystectomy with urinary diversion between 12/1997 and 10/2018.

• Patients under age 18 or without 1 year follow up were excluded.

• Demographics, diversion type, and B12 assays were collected.
  • B12 deficiency was defined as a value under 300 ng/L.

• Descriptive statistics as well as univariable and multivariable logistic regression analysis were performed.

Results

Total sample with urinary diversion, n = 1228
Meeting inclusion criteria, n (%) = 856 (69.7%)

| Male, n (%) | 611 (71.4) |
| Female, n (%) | 245 (28.6) |
| BMI, median (IQR) | 27.1 (24.1-30.4) |
| Follow up in months, median (IQR) | 16 (15-41) |

B12 Monitoring performed, n (%) = 299 (34.9)
B12 Deficiency detected, n (%) = 149 (49.8)
Duration to B12 deficiency, months = 10 (5-24)

B12 deficiency is common: detected in 49.8% of monitored patients.

Patients who developed B12 deficiency were:
Younger (age 62.5 years versus 66.4, p=0.003)
More likely to have undergone continent diversion (19.5% versus 10.7%, p=0.049)

Gender, race, and BMI did not vary between groups.

On univariate regression analysis:
Lower age decreased the odds of developing B12 deficiency (OR 0.97, 95% CI 0.95-0.99, p=0.002)
Continent diversion increased odds of B12 deficiency (OR 2.02, 95% CI 1.06-3.99, p=0.04)

On Multivariate regression analysis:
Female gender increased the odds of B12 deficiency (OR 2.17, 95% CI 1.04-4.52, p=0.038)

Conclusions

• In this large institutional series, B12 monitoring was performed infrequently but B12 deficiency was common (detected in nearly half of screened patients).

• Patients of older age and with continent diversion had higher odds of developing B12 deficiency on UV analysis.
  • Female gender increases the odds of developing B12 deficiency on MV analysis.

• Routine screening of patients for B12 deficiency following urinary diversion is warranted, with particular attention to females and those with continent diversions.