
Clinical: Therapy and Observation

Abstract citation ID: jjad212.0849**P719****Vitamin and micronutrient excess in patients with Crohn's disease under oral ambulatory exclusive enteral nutrition**R. Oliveira¹, B. Mendes², J. Cunha Neves¹, E. Amorim², J. Roseira¹, H. Tavares de Sousa¹¹Algarve University Hospital Centre, Gastroenterology Department, Portimão, Portugal ²Algarve University Hospital Centre, Colorectal Unit - General Surgery Department, Portimão, Portugal

Background: Exclusive enteral nutrition (EEN) is recommended for preoperative nutritional optimization (PNO) in adult Crohn's disease (CD) patients. However, during ambulatory oral EEN, a lack of routine monitoring for vitamins may occur, with a potential risk of hypervitaminosis-related toxicity, which remains unexplored. This study aims to assess the serum levels of vitamins and micronutrients in CD patients undergoing EEN and to examine its potential impact.

Methods: Complicated phenotype CD patients followed at a University Tertiary Hospital who were started on oral EEN June 2021 - June 2023 were prospectively included. EEN composition was determined and modified by an IBD nutritionist according to patients' nutritional status and needs and laboratory values. Compliance was monitored daily, both for in- and outpatients. Patients' weight and serum values (albumin, C-reactive protein [CRP], iron, folic acid, and vitamins B1, B6, B12, A, D, E and K) were monitored weekly.

Results: Nine patients (median age 29 years, 55.6% female) received a median of 24 (IQR 14.5-25.0) days of EEN, for PNO of symptomatic stricture (7, 77.8%) or abdominal penetrating disease (2, 22.2%). All patients were discharged while on EEN, which was maintained until elective surgery (4, 44.4%) or the planned start of advanced medical therapy (5, 55.6%), with EEN successfully avoiding emergent surgeries. Patients were started on a combination of hypercaloric-hyperproteic and hypercaloric-normoproteic ready-to-drink concentrated polymeric formulas, providing 30 kcal/kg/d and 1.2-1.5g/kg/d of protein. EEN daily volume ranged from 1000 to 1400mL. Compliance was 100%, requiring flavour adjustments for tolerance. Table 1 illustrates changes over time in patients' weight and serum levels of interest. Resolution of anaemia and hypoalbuminemia was achieved, while weight was maintained. Hypervitaminosis cases were remarkably detected: 5 (55.6%) for vitamin B1, 4 (44.4%) for A, 2 (22.2%) for E, and 3 (33.3%) for K, with increasing trends over time. However, no symptoms related to hypervitaminosis were reported.

Conclusion: Our study on PNO EEN in CD uncovered a gap in routine monitoring for essential vitamins during EEN. While achieving significant clinical improvement, our findings revealed subtle and asymptomatic cases of hypervitaminosis in short-term EEN courses. These results underscore that vitamin monitoring is advisable during EEN, especially in prolonged EEN protocols due to possible hypervitaminosis-related toxicity.

Figure(s)/Table(s): see next page

Table 1. Evolution of weight and serum levels of interest over the duration of exclusive enteral nutrition.

	Week 0	Week 1	Week 2	Week 3	Week 4	Reference
Weight (kg), median (IQR)	58.0 (53.8-65.8)	58.0 (51.5-65.8)	59.0 (53.0-66.5)	53.0 (42.7-58.0)	46.6 (41.1-46.6)	NA
Haemoglobin (g/dL), median (IQR)	12.4 (11.8-13.7)	13.1 (11.5-14.1)	12.5 (12.2-13.7)	13.4 (11.6-14.3)	13.3 (12.3-13.3)	12.5-16.0
Albumin (g/dL), median (IQR)	3.8 (3.2-4.0)	4.2 (3.7-4.4)	4.1 (3.7-4.4)	4.2 (4.0-4.3)	4.2 (4.1-4.2)	3.2-4.3
C-reactive protein (mg/L), median (IQR)	46.8 (17.5-69.6)	7.3 (4.4-44.6)	3.5 (3.1-13.3)	4.2 (2.7-6.6)	6.9 (3.6-6.9)	0.0-5.0
Iron (µg/dL), median (IQR)	34.0 (12.0-45.0)	94.0 (47.5-11.3)	64.0 (37.0-87.5)	86.0 (66.5-94.8)	61.0 (52.0-61.0)	59.0-158.0
Folic acid (ng/mL), median (IQR)	5.0 (5.0-5.0)	9.2 (7.7-14.7)	10.7 (6.3-14.3)	11.9 (9.4-14.5)	11.9 (8.0-11.9)	4.2-19.9
Vitamin B12 (pg/mL), median (IQR)	540.0 (357.3-1636.3)	410 (286.5-588)	297.5 (299.5-537.0)	370.5 (328.8-574.3)	282.0 (282.0-282.0)	240.0-900.0
Vitamin B1 (ng/mL), median (IQR)	91.0 (77.0-91.0)	94.0 (79.5-106.0)	106.5 (73.3-111.0)	100.0 (91.5-663.5)	102.0 (101.0-102.0)	28.0-85.0
Vitamin B6 (ng/mL), median (IQR)	5.6 (5.1-5.6)	9.5 (5.3-10.9)	7.7 (3.5-12.4)	15.4 (8.6-23.2)	12.8 (12.3-12.8)	5.0-30.0
Vitamin A (µg/dL), median (IQR)	64.0 (53.0-64.0)	53.0 (38.0-86.5)	72.0 (39.0-86.0)	82.0 (57.0-99.5)	88.5 (73.0-88.5)	46.0-150.0
Vitamin D (ng/mL), median (IQR)	24.0 (21.7-24.0)	24.5 (19.9-32.2)	22.4 (17.1-29.2)	31.7 (24.2-40.9)	35.3 (35.3-35.3)	15.0-70.0
Vitamin E (µg/dL), median (IQR)	1567.5 (1018.0-1965.5)	1343.0 (1077.5-1672.0)	1442.0 (1290.0-1953.0)	1427.0 (1048.5-1734.0)	1621.5 (1526.0-1621.5)	500.0-1800.0
Vitamin K (µg/dL), median (IQR)	3.2 (1.2-3.9)	0.9 (0.7-2.6)	0.6 (0.4-2.5)	0.9 (0.5-5.1)	0.7 (0.7-0.7)	0.1-2.1

Abbreviations: IQR – Interquartile ratio.