









Case Report

Burkitt's Lymphoma-induced Intussusception in a five-year-old Girl: A Case Report and Literature Review

Beş Yaşındaki Bir Kız Çocuğunda Burkitt Lenfomasına Bağlı İntussusepsiyon: Olgu Sunumu ve Literatür İncelemesi

Najib Hamade¹, Abbas Al Bazzal³, Rima Sibli³, Jamil Nasrallah³, Hadi Ftouni³, Youssef Kteich³,
Hiba Hamdar², Mohammad Ali Mtairek⁴

¹Al-Zahraa Hospital University Medical Center, Pediatric Surgery Department, Beirut, Lebanon., Paediatric Surgery, Beirut, Lebanon

²Medical Learning Skills Academy, Beirut, Lebanon., Research, Beirut, Lebanon

³Lebanese University, Faculty of Medical Sciences, Beirut, Hadath Campus, Lebanon, Research, Beirut, Lebanon

⁴Faculty of Medicine, Damascus University, Damascus, Syria., Research, Damas, Syria

ABSTRACT

Intussusception in children over the age of two frequently has an identifiable pathologic lead point linked to underlying causes, such as intestinal hematomas, lymphomas, polyps, duplications, and Meckel's diverticulum. These cases, which frequently present with severe abdominal pain paroxysms, warrant further investigation. A 5-year-old girl with abdominal pain was diagnosed with Burkitt's lymphoma, which caused her intussusception.

Keywords: intussusception, Burkitt's lymphoma, pediatrics

ÖZET

İki yaşından büyük çocuklarda görülen intussusepsiyon, sıklıkla bağırsak hematomları, lenfomalar, polipler, duplikasyonlar ve Meckel divertikülü gibi altta yatan nedenlere bağlı olarak tanımlanabilir bir patolojik öncül noktası ile ilişkilidir. Şiddetli karın ağrısı atakları ile kendini gösteren bu vakalar, daha ileri tetkikler gerektirir. Karın ağrısı şikayeti ile başvuran 5 yaşındaki bir kız çocuğunda, intussusepsiyona neden olan Burkitt lenfoması tanısı konulmuştur.

Keywords: human bocavirüs, pnömoni, alt solunum yolu enfeksiyonu

INTRODUCTION

An identified pathologic lead point for intussusception exists in children older than two years (1). About 1.5–12.0% of cases of intussusception have identifiable underlying pathological causes (2). Among them

Received: 30.04.2023 · **Accepted:** 03.09.2024 · **Published:** 05.09.2024

Correspondence / Yazışma: Mohammad Ali Mtairek · Faculty of Medicine, Damascus University, Damascus, Syria., Research, Damas, Syria · mohammadalimtairek@gmail.com

Cite this article as: Hamade N, Al Bazzal A, Sibli R, Nasrallah J, Ftouni H, Kteich Y, et al. Burkitt's Lymphoma-induced Intussusception in a five-year-old Girl: A Case Report and Literature Review. *Pediatr Acad Case Rep.* 2024;3(3):39-43.

© 2024 Association of Pediatric Specialization Academy.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes (<http://creativecommons.org/licenses/by-nc/4.0/>).

are intestinal hematomas, lymphomas, polyps, duplications, and Meckel's diverticulum (3). In children, 6.5% of pathologic lead points of intussusception are lymphomas, a rare but highly concerning condition because of its malignant nature (2). The majority of patients arrive with severe abdominal pain paroxysm (4). In this case study, we describe a 5-year-old girl who complained of abdominal pain; upon investigation, it was discovered that her condition was Burkitt's lymphoma, which was the cause of her intussusception.

CASE REPORT

A previously healthy 5-year-old girl was admitted to the hospital after experiencing five days of diffuse intermittent abdominal pain, vomiting, and a small amount of non-bloody stools. The patient was afebrile and had no rigour or other signs. Parents reported reduced appetite but no weight loss. The patient appeared healthy on physical examination, with diffuse abdominal pain on palpation and no guarding or tenderness. The rest of the physical examination was normal. Blood tests, biochemical electrolyte analysis, and urine analysis were performed on admission, and the results were all normal. The patient received intravenous fluid in the amount of 1.5 liters of normal saline, 270 mg of acetaminophen every six hours, 180 mg of metronidazole every eight hours, and 300 mg of amoxicillin-clavulanate every eight hours. An abdominal ultrasound was performed, which revealed intussusception at the ileocecal valve. At this point, the patient was prepared for a barium enema, which reduced intestinal invagination and allowed contrast material to pass to the ileum. One day after the reduction, the patient reported two episodes of vomiting with bloody stools (reddish) and abdominal pain. No blood tests or additional biochemical tests were performed at this time. The patient was started on acetaminophen and domperidone. An obstruction was suspected; however, a standing abdominal X-ray (KUB) revealed no signs of obstruction. One day later, the patient experienced repeated episodes of vomiting with no bloody stools. The findings of a blood test and biochemical analysis for electrolytes showed hyponatremia (125 mmol/L), hypokalemia (3 mmol/L), and hypochloremia (88 mmol/L) in addition to elevated levels of white blood cells ($19.2 \times 10^3/\text{mm}^3$), normal red blood cell levels ($4.16 \times 10^6/\text{mm}^3$), and high platelets ($658 \times 10^3/\text{mm}^3$). On the same day, the patient was referred for an abdominal ultrasound, which revealed a recurrence of intestinal invagination. The patient was

immediately prepared for the operation. An exploratory laparotomy was performed without further investigation. During surgical exploration, an ileo-ileocolic irreducible intussusception was discovered, consistent with a clinically anticipated Meckel's diverticulum and intraluminal infiltrate measuring 3 cm in diameter. As a result, a wedge resection with end-to-end anastomosis and an appendectomy were performed. After the procedure, the patient received a 1-liter mixed saline solution immediately. This fluid included 5 mg of vitamin K over 30 minutes, 180 mg of metronidazole every eight hours, 270 mg of acetaminophen every six hours, and 1g of ceftriaxone injection every 12 hours, if needed. The patient appeared to have recovered well from surgery, with hemodynamic stability and no pain or fever. However, wound bleeding occurred later on the same day as the operation. She was administered 1.5 liters of dextrose DW 5% and 130 mL of normal saline. One day after surgery, the patient appeared pale. Blood tests revealed low levels of red blood cells and hemoglobin ($2.59 \times 10^6/\text{mm}^3$ and 7.2 g/dl, respectively). Over three hours, the patient was prepared for a blood transfusion of 270 ml of packed red blood cells (isogroup B positive). Two days after surgery, the patient appeared stable, and the resected specimen was sent to histopathology, which revealed non-Hodgkin Lymphoma, Burkitt's type. The patient was diagnosed with completely resected Burkitt lymphoma and underwent two cycles of multiagent chemotherapy that included Cyclophosphamide, Vincristine, and Methotrexate.

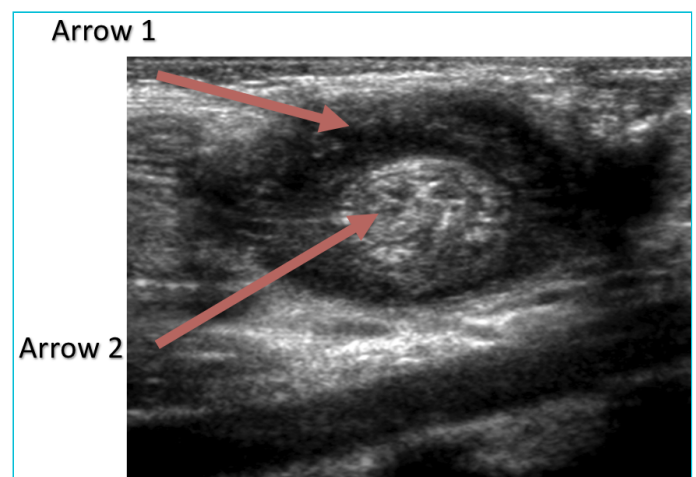


Figure 1. Abdominal intussusception on ultrasound, with arrow 1 indicating a hypochoic edematous outer loop and arrow Two hyperechoic compressed bowel loops are telescoping within.

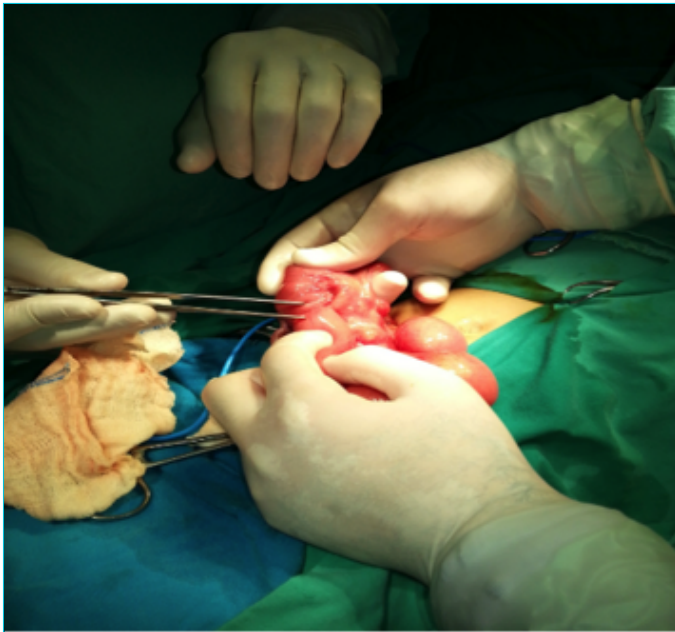


Figure 2. The operational finding of long segment ileocolic invagination.



Figure 3. Resection with end-to-end anastomosis

Table 1. This table shows the patient's hematological results on the days of hospital admission. (WBCs (white blood cells), RBCs (red blood cells), HGB (hemoglobin), HCT (hematocrit), NEU (neutrophils), CRP (C reactive protein), H (high), L (low), NA (not available), N (normal)).

| Days of admission | WBCs (N=4-10x10 ³ /mm ³) | RBCs (N=3.8-6.5X10 ⁶ /mm ³) | HGB (N=11.5-17 g/dl) | HCT (N=37-54%) | PLT (N=150=500x10 ³ /mm ³) | NEU (N=2-7.5x10 ³ /mm ³) | CRP (N<5 mg/dl) |
|-------------------|---|--|----------------------|----------------|---|---|-----------------|
| 31.12.2013 | 9.4 | 4.88 | 14.2 | 41.6 | 459 | 5.69 | 3.33 |
| 02.01.2014 | 19.2 (H) | 4.16 | 11.7 | 35.4 (L) | 658 (H) | 16.3 (H) | NA |
| 03.01.2014 | 6.3 | 3.33 (L) | 9.1 (L) | 27.9 (L) | 439 | 4.23 | NA |
| 04.01.2014 | 7.7 | 3.55 (L) | 10.8 (L) | 33.2 (L) | 264 | 5.01 | NA |
| 06.01.2014 | 6.2 | 3.78 (L) | 11.5 | 35.4 (L) | 322 | 3.6 | NA |
| 08.01.2014 | 5.6 | 4.35 | 13.10 | 40.10 | 430 | 4.6 | NA |

Table 2. This table displays the biochemistry findings for the days of admission. (Na⁺ (sodium), K⁺ (potassium), CL⁻ (chloride), N (normal), L (low)).

| Days of admission | Na ⁺ (N=136-145 mmol/l) | K ⁺ (N=3.5-5.1 mmol/l) | CL ⁻ (N= 98-107 mmol/l) |
|-------------------|------------------------------------|-----------------------------------|------------------------------------|
| 31.12.2013 | 137 | 4.10 | 99.3 |
| 02.01.2014 | 124 (L) | 3 (L) | 88 (L) |
| 03.01.2014 | 134 | 3.6 | 96.7 |

DISCUSSION

For infants aged three to twenty-four months, gastrointestinal disorders, such as intussusception,

may occur (5). This occurs when a portion of the intestine closer to the surface telescopes into a region farther away (6). In this instance, the ileocecal valve is affected. In 75 percent of cases, it is idiopathic and may be rela-

ted to viral infections; in the remaining cases, telescoping is triggered by a lead point. Meckel's diverticulum, IgA vasculitis, and tumors are among the lead points in infants (3). Predisposing factors for lymphomas include malabsorption syndromes like celiac disease, HIV, HTLV-1, EBV infections, and family history (7); however, none of these conditions existed in this instance. Burkitt lymphoma in the abdomen typically manifests as a dense area of lymphoid tissue in the distal ileum or ileocecal segment (5). The tumor's mass effect causes the intestines' normal peristalsis to be disrupted, which allows one section of the intestine to invade the other.

Most often, patients arrive with fits of excruciating abdominal pain that are frequently accompanied by sobbing fits (4). In our particular case, the patient had diffuse intermittent pain for five days, which presented a problem during physical examination although the patient seemed to be in apparent clinical well-being. Unfortunately, in our case, the abdominal stress sign—knees drawn to chest—that is frequently seen in pediatric intussusception went unnoticed. On the other hand, our case had a palpable abdominal mass that was described as diffuse abdominal pain upon palpation, without guarding or tenderness, as reported in previous case reports (8). The appearance of non-hemorrhagic stools resembling currant jelly is consistent with the various clinical scenarios explained in the literature (9). In addition, we noticed vomiting in our case, which is frequently associated with bile production as a result of gastrointestinal blockage (9). Complex factors may lead to the diagnostic complexities associated with pediatric intussusception. Pain in the abdomen, nausea, and fatigue are examples of nonspecific symptoms that can be challenging to differentiate because they can coexist with various other gastrointestinal disorders (10). Diagnosis becomes even more complex due to age-related differences in symptomatology, especially the tendency for younger children to have more nonspecific manifestations.

Findings from a physical examination, most notably the existence of a palpable abdominal mass, may not always be evident, making diagnosis more challenging (11). Ultrasonography is the most effective examination to show specific signs of intussusception, such as the "target" sign and barium enema (12). However, interpreting imaging studies requires expertise and may not always result in a definitive diagnosis, especially in cases with unusual presentations or complications. With the aid of histological, immunophenotypic, and genetic characteristics, Burkitt's lymphoma is accurately diagnosed (13). In our instance, a laparotomy was

done, and after the resected specimen was sent to histopathology, non-Hodgkin lymphoma of Burkitt's type was diagnosed. Surgery, chemotherapy, radiotherapy, and immunotherapy are all part of the multidisciplinary treatment for Burkitt lymphoma. Treatment combinations can vary depending on the specifics of each case, including its stage (6).

CONCLUSION

Intussusception is a gastrointestinal disease that affects infants aged three to 24 months and may be associated with tumors, such as Burkitt's Lymphoma. Similarly, in our case, ileo-ileocolic irreducible intussusception was discovered during surgical exploration, necessitating a wedge resection with end-to-end anastomosis and an appendectomy. After being diagnosed with completely resected Burkitt lymphoma, the patient underwent chemotherapy.

Patient Consent Form / Hasta Onam Formu

The parents' of this patient consent was obtained for this study.

Conflict of Interest / Çıkar Çatışması

The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

Financial Disclosure / Finansal Destek

The authors received no financial support for the research and/or publication of this article.

REFERENCES

1. Saad AAM, Kkalid T, Abbas M, et al. Rare presentation of chronic ileocecal intussusception secondary to Burkitt's lymphoma in three years Sudanese boy: a case report and literature review. *The Pan African medical journal* 2018; 31: 57.
2. Blakelock RT, Beasley SW. The clinical implications of non-idiopathic intussusception. *Pediatric surgery international* 1998; 14(3): 163-7.
3. Sorantin E, Lindbichler F. Management of intussusception. *European radiology* 2004; 14 Suppl 4: 146-54.
4. Irish MS, Pearl RH, Caty MG, et al. The approach to common abdominal diagnosis in infants and children. *Pediatric clinics of North America* 1998; 45(4): 729-72.
5. Fiegel H, Gfroerer S, Rolle U. Systematic review shows that pathological lead points are important and frequent in intussusception and are not limited to infants. *Acta paediatrica (Oslo, Norway : 1992)*. 2016; 105(11): 1275-9.
6. Sahli H, El Mandour J, Boularab J, et al. Acute Intestinal Intussusception: Beware of Burkitt's Lymphoma. *Global pediatric health* 2022; 9: 2333794x221078712.
7. Al-Taher R, Alabadla A, Al-Halaseh S, et al. Intussusception in a 4-Year-Old Male Due to Burkitt Lymphoma. *Case reports in pediatrics* 2023; 2023: 3535164.

8. Venkatasami M, Cobby E. Intussusception of the appendix in a young adult: an important differential diagnosis of abdominal pain in cystic fibrosis patients? *Journal of surgical case reports* 2023; 2023(3): rjad117.
9. Cha PI, Gurland B, Forrester JD. First Reported Case of Intussusception Caused by *Escherichia coli* O157:H7 in an Adult: Literature Review and Case Report. *Surgical infections* 2019; 20(1): 95-9.
10. Jain S, Haydel MJ. Child Intussusception. [Updated 2023 Apr 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK431078/>
11. Park IK, Cho MJ. Clinical Characteristics According to Age and Duration of Symptoms to Be Considered for Rapid Diagnosis of Pediatric Intussusception. *Frontiers in pediatrics* 2021; 9: 651297.
12. Mandeville K, Chien M, Willyerd FA, et al. Intussusception: clinical presentations and imaging characteristics. *Pediatric emergency care* 2012; 28(9): 842-4.
13. Anajar S, Bensaleh S, Allaoui A, et al. Burkitt's lymphoma of medial part of clavicle: Case report of unusual localization. *International journal of surgery case reports* 2021; 87: 106393.