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EDİTÖRE MEKTUP LETTER TO EDITOR

PCR AS THE GOLD STANDARD: ARE NUCLEOCAPSID ANTIBODIES TRULY RELIABLE MARKERS OF SARS-COV-2 INFECTION?

PCR'nin altın standart olarak kabul edildiği dönemde: Nükleokapsid antikorları, SARS-CoV-2 enfeksiyonunun güvenilir bir sembolü olabilir mi?

***Hale KOKSOY, PhD*[1]**

[1] *Karamanoglu Mehmetbey University, Faculty of Medicine, Department of Medical Biology Karaman, Turkiye*

Related publication: *Ibrahimová, Markéta et al. "Nucleocapsid Antibodies as an Optimal Serological Marker of SARS-CoV-2 Infection: A Longitudinal Study at the Thomayer University Hospital." Journal of Clinical Laboratory Analysis vol. 39, 3 (2025): e25149. doi:10.1002/jcla.25149*

ABSTRACT

This study investigated the usability of nucleocapsid (N) antibodies for monitoring SARS-CoV-2 infection over two years in healthcare workers at Thomayer University Hospital. A total of 3892 blood samples were analyzed to evaluate the association of N antibodies with PCR testing, spike (S) antibodies, and interferon-gamma, as well as their predictive value for reinfection. The research revealed that N antibodies are valuable for tracking the dynamics of COVID-19 infection and can identify cases that PCR tests may miss. Furthermore, the study demonstrated that levels of S antibodies and interferon gamma were highest during hybrid immunity (acquired through both vaccination and natural infection).

Keywords: *SARS-CoV-2, Nucleocapsid antibodies, Cycle threshold value (Ct), Serological Marker, Multiplex Real-Time PCR (qRT-PCR), and Droplet Digital PCR (ddPCR)*

Correspondence to: Hale Koksoy,

Karamanoglu Mehmetbey University, Faculty of Medicine, Department of Medical Biology Karaman,Turkiye

E-mail: hkoksoy@kmu.edu.tr

Orcid: 0000-0001-5950-1449

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PCR as the Gold Standard: Are Nucleocapsid antibodies truly reliable markers of SARS-CoV-2 Infection?

Koksoy H.

Dear Editor,

I reviewed with great interest the study titled "Nucleocapsid Antibodies as an Optimal Serological Marker of SARS-CoV-2 Infection: A Longitudinal Study at the Thomayer University Hospital," published in the Journal of Clinical Laboratory Analysis. The study, a longitudinal follow-up among healthcare workers, demonstrates that Nucleocapsid (N) antibodies play a significant role in the monitoring and diagnosis of SARS-CoV-2 infection (1). However, I would like to offer a few critiques and suggestions regarding this work. The presented study provides significant and valuable findings regarding SARS-CoV-2 infection dynamics within a healthcare worker cohort. The successful identification of asymptomatic cases (35% of positive individuals were asymptomatic) that were missed or overlooked by PCR testing, particularly through the use of Nucleocapsid (N) antibodies, strongly highlights the epidemiological importance of serological screening. The 35.9% N-antibody positivity rate illustrates the true scale of the epidemic in this highly exposed population.

A major strength of the study is the demonstration that the highest Spike antibody and Interferon-gamma responses were observed during the state of hybrid immunity (the combination of natural infection and vaccination) (2,3). However, the observed declining antibody dynamics over a period of 6 months to 1 year underscores the necessity for sustained immune monitoring (3). To enhance the study's comprehensiveness and strengthen its conclusions, several critical points should be considered:

Viral Load and Infectivity Correlation: While the study examined PCR positivity and antibody dynamics, a more precise quantification of viral load is lacking. For future studies, we suggest using Quantitative Real-Time PCR (qRT-PCR) or Droplet Digital PCR (ddPCR), which is superior in detecting low titers, instead of solely relying on qualitative PCR for sensitive viral RNA measurement. Furthermore, the dynamics of CT (Cycle Threshold) values should be analyzed in detail for their correlation with both infectivity potential and disease severity (4).

Humoral Immunity Detail: Beyond general N and Spike antibody levels, a focus on Neutralizing Antibody titers, which represent the actual ability to block infection, and an analysis of IgG subclasses and mucosal IgA responses—vital for mucosal protection—is essential for a holistic understanding of immune mechanisms (5).

Cellular Immunity Depth: Although the study references IFN-gamma levels, a deeper insight into the functional capacities and phenotypes of T-cell (CD4+ and CD8+) responses, which form the basis of long-term protection, should be provided (6).

Data Gaps and Long-Term Impact: The lack of infection status information for 10% of participants constitutes a limitation, and the details of the dynamic patterns identified during re-

infection are unclear. Moreover, tracking the relationship between these immune dynamics and the persistence of Long COVID symptoms would substantially increase the clinical relevance of the study (7).

In conclusion, the diagnostic value of N antibodies and the superiority of hybrid immunity are confirmed. However, concerning diagnostic and tracking strategies, PCR testing must remain the standard for acute infection diagnosis, while serological tests should be strategically positioned as the cost-effective primary tool for population serosurveillance, rather than supplanting high-sensitivity PCR methods entirely.

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VAKA TAKDİMİ CASE REPORT

SYSTEMIC TOXICITY FOLLOWING ENDOSCOPIC INTRAGASTRIC BOTULINUM TOXIN INJECTION

Berika SENER[1], MD, Kaan ERDAS[1], MD, Ekim SAGLAM GURMEN[1], Assoc. Prof.

[1] Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye

ABSTRACT

Botulism is a rare but life-threatening neuroparalytic disease caused by the Clostridium botulinum neurotoxin blocking neuromuscular transmission. Currently, botulinum toxin is applied endoscopically via the intragastric route to delay gastric emptying in the treatment of obesity. Although this procedure is generally considered safe, systemic involvement may occur as a result of the toxin entering the systemic circulation. In this case, we present a 60-year-old female patient who underwent intragastric botulinum toxin injection for weight loss and presented to the emergency department 10 days later with dyspnea, diplopia, dysphagia, and lower extremity weakness. The patient, suspected of having systemic botulinum toxicity based on clinical findings, was followed in the intensive care unit with antitoxin therapy. Early diagnosis of this rare complication that may develop after minimally invasive obesity treatments is critical for patient safety.

Keywords: Gastric botox, Botulism, Obesity, Systemic toxicity, Emergency department.

Correspondence to: ***Berika SENER[1]***

Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye
E-mail: berikasener97@gmail.com

Orcid: *0009-0007-1696-4145*

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INTRODUCTION

Botulism is a rare but potentially life-threatening neuroparalytic disorder caused by botulinum neurotoxin produced by *Clostridium botulinum*. The toxin inhibits acetylcholine release at presynaptic cholinergic nerve terminals, thereby blocking neuromuscular transmission [1]. This mechanism results in progressive, often descending flaccid paralysis, typically characterized by cranial nerve involvement, diplopia, ptosis, dysphagia, and generalized muscle weakness [1,2].

Due to its neuromuscular transmission–blocking properties, botulinum toxin type A (BTX-A) is widely used in the treatment of various neurological and non-neurological conditions, including cervical dystonia, blepharospasm, focal spasticity, chronic migraine, hyperhidrosis, and certain autonomic disorders [1,3]. It is also commonly employed in cosmetic dermatology for the management of facial wrinkles [2,3].

In recent years, the use of BTX-A for obesity management has emerged, exploiting its effects on reducing gastric muscle tone and delaying gastric emptying to induce early satiety [5]. As a minimally invasive approach, endoscopic intragastric botulinum toxin injection has been increasingly adopted as an alternative strategy for obesity treatment. Although this procedure is generally considered safe and minimally invasive, rare cases of systemic effects distant from the injection site have been reported [4].

In this case report, we present a rare instance of systemic toxicity following endoscopic intragastric botulinum toxin injection administered for obesity management.

CASE

A 60-year-old female patient with a medical history of chronic obstructive pulmonary disease (COPD), diabetes mellitus, and hypertension presented to the emergency department with dyspnea, tachypnea, diplopia, dysphagia, constipation, and acute bilateral lower extremity weakness, occurring 10 days after undergoing endoscopic intragastric botulinum toxin injection for weight loss. The symptoms reportedly began immediately following the procedure and progressively worsened over the subsequent days.

On neurological examination, proximal upper extremity muscle strength was 4/5 and distal strength 5/5, while proximal lower extremity strength was 2/5 and distal strength 4/5. Glasgow Coma Scale was 15, with no evidence of impaired consciousness; pupils were isocoric and reactive. Deep tendon reflexes (DTRs) were normoactive in the upper extremities and at the patellae, whereas bilateral Achilles reflexes were mildly reduced. Sensory examination revealed hypoesthesia in the left arm and sensory deficit corresponding to the T7–T8 dermatome. Abdominal examination showed no guarding or rebound tenderness. Laboratory tests and central nervous system imaging revealed no acute pathology.

Given the history of botulinum toxin injection and the clinical findings, systemic botulinum toxicity was suspected. The patient was admitted to the intensive care unit, where she received botulinum antitoxin and was closely monitored. After three days in the ICU, her general condition improved, and she was transferred to the general ward. She was followed for an additional four days on the ward and subsequently discharged with appropriate recommendations.

DISCUSSION

Endoscopic intragastric botulinum toxin injection is one of the minimally invasive approaches increasingly offered as an alternative to invasive surgical procedures for obesity management [5]. The procedure is generally considered safe in the literature, with most reported adverse effects remaining local [1,3]. However, systemic toxicity may occur if the toxin enters the systemic circulation [4]. Technical factors such as high-dose administration, injection into the deeper layers of the gastric wall, or inadvertent penetration into vascular structures are thought to contribute to the development of systemic effects [4].

In our case, the procedure was performed at an external center, and therefore, details regarding the dose and injection technique were not available. Nevertheless, the clinical presentation was fully consistent with neuromuscular manifestations resulting from systemic dissemination of botulinum toxin.

In recent years, reports of clusters of botulism cases following “gastric botox” procedures in Turkey, accompanied by public health announcements from the Ministry of Health, have highlighted the societal health implications of this issue and emphasized the importance of clinical awareness.

Although systemic neuromuscular complications of intragastric botulinum toxin are rarely reported in the literature, they carry potential life-threatening risk, making early recognition and prompt management critical [4].

Raising clinical awareness can facilitate the early detection and management of such rare systemic complications. While intragastric botulinum toxin injections are generally considered safe and well tolerated in the context of obesity treatment, with most adverse effects being mild, appropriate dosing strategies and close post-procedural monitoring are essential to prevent serious reactions [5].

CONCLUSION

This case demonstrates that endoscopic intragastric botulinum toxin injection, although generally considered minimally invasive, can rarely lead to clinically significant systemic toxicity. These findings underscore the importance of careful patient selection, precise dosing, and meticulous injection technique prior to the procedure. Close post-procedural monitoring of patients undergoing this intervention for obesity is essential, as it facilitates the early recognition and management of potential serious complications, thereby enhancing patient safety.

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VAKA TAKDİMİ CASE REPORT

SPONTANEOUS ISOLATED CELIAC ARTERY DISSECTION: A RARE CASE SHOWING REGRESSION WITH CONSERVATIVE FOLLOW-UP

Kaan ERDAS[1], MD, Berika SENER[2], MD, Ekim SAGLAM GURMEN[3], Assoc. Prof, Salih Mert KALFAOGLU[4], MD

[1] Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye

ABSTRACT

Spontaneous isolated celiac artery dissection (SICAD) is a rare vascular pathology of the visceral arteries. Although its pathophysiology is not fully elucidated, it often presents with epigastric pain. In this case report, we present a 60-year-old female patient who presented to the emergency department with sudden-onset severe epigastric pain and was diagnosed with SICAD via computed tomography angiography (CTA). Imaging revealed a dissection flap at the root of the celiac trunk and an aneurysmal dilatation of 12 mm. As the patient was hemodynamically stable, a con-servative management strategy was followed. At the six-month follow-up, the dissection segment remained stable, and regression in the aneurysm diameter was observed. SICAD should be considered in the differential diagnosis of acute abdominal pain, and conservative management should be recognized as a primary treatment option in stable cases.

Keywords: *Celiac artery, Dissection, Splanchnic Arteries, Aneurysm, Conservative treatment.*

Correspondence to: ***Kaan ERDAS[1]***

Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye
E-mail: daserkaan33@gmail.com

Orcid: *0009-0003-7122-8715*

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INTRODUCTION

The celiac artery (truncus coeliacus), typically originating from the abdominal aorta at the T12 vertebral level, is the first major visceral branch and plays a critical role in the arterial supply of the upper abdominal organs. After a short main trunk, it divides into three principal branches—the left gastric artery, the splenic artery, and the common hepatic artery—supplying the stomach, liver, spleen, and a significant portion of the pancreas (1).

Spontaneous isolated celiac artery dissection (SICAD) is a rare vascular pathology characterized by an intimal tear, through which blood dissects between the layers of the vessel wall, resulting in the formation of a false lumen. Among visceral artery dissections, the superior mesenteric artery is the most commonly affected vessel, whereas isolated involvement of the celiac artery is considerably rare (2,3). In recent years, an increase in the detection rate of this condition has been observed, largely due to the widespread use of computed tomography angiography (4).

Although its pathophysiology has not been fully elucidated, factors such as hypertension, atherosclerosis, connective tissue disorders, and hemodynamic stress are thought to contribute to the development of dissection (5). The clinical presentation most commonly manifests as sudden-onset epigastric or upper abdominal pain (3,6). While conservative management is preferred in stable patients, endovascular or surgical interventions may be required in cases with progression, organ ischemia, or risk of rupture (4,7).

In this study, we present a case of SICAD that was managed conservatively and demonstrated radiological regression during follow-up.

CASE REPORT

A 60-year-old female patient presented to the emergency department with epigastric pain that had begun one day earlier and had awakened her from sleep during the night. The patient described the pain as retrosternal, centrally located, and of tearing quality. Her medical history was notable

for hyperlipidemia and a previous diagnosis of breast cancer; she was receiving tamoxifen and atorvastatin therapy. At presentation, her vital signs were stable. Physical examination revealed a soft abdomen without significant tenderness. Laboratory investigations demonstrated only an elevated D-dimer level (approximately 1500 ng/mL).

Given the initial suspicion of an aortic pathology, thoracoabdominal computed tomography angiography was performed. Imaging revealed a dissection flap at the origin of the celiac trunk, along with an associated aneurysmal dilatation measuring 12 mm in diameter over a segment approximately 2.5 cm in length. Considering the patient's hemodynamic stability and the aneurysm diameter being less than 15 mm, conservative management with close follow-up was recommended. Blood pressure control and lifestyle modifications were also planned.

On six-month follow-up computed tomography angiography, a slight regression of approximately 1 mm in aneurysm diameter was observed, and the dissected segment remained stable.

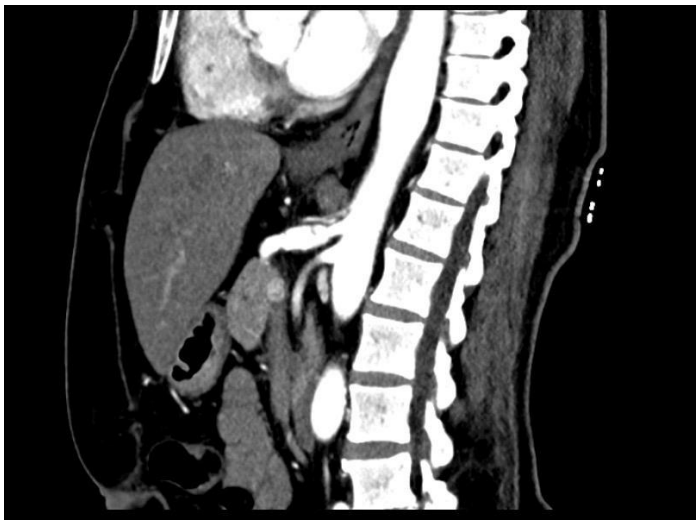

Figure 1. Abdominal CT scan showing celiac artery dissection

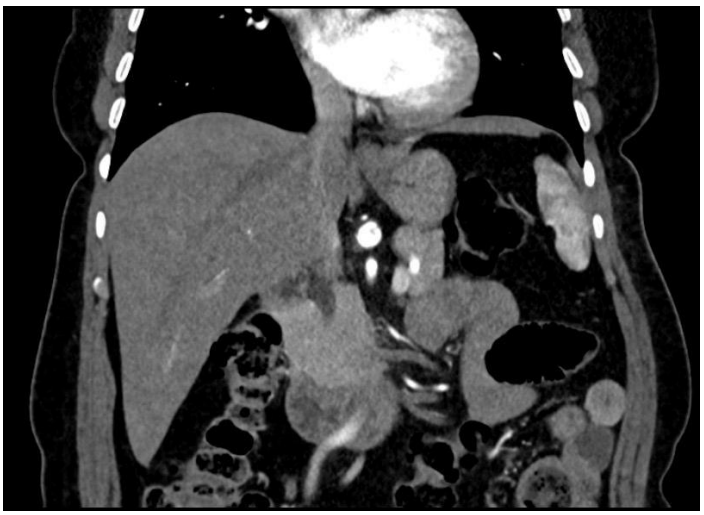

Figure 2. Abdominal CT demonstrating dissection of the celiac trunk and associated luminal irregularity

DISCUSSION

Spontaneous isolated celiac artery dissection is a rare vascular pathology among visceral artery dissections. The superior mesenteric artery is the most commonly affected vessel in visceral artery dissections, whereas isolated involvement of the celiac artery is exceedingly uncommon (2,5). The clinical presentation is often nonspecific, with sudden-onset epigastric pain being the most frequent presenting symptom. However, with the increasing use of advanced imaging modalities, asymptomatic cases are also being reported more frequently (2,3).

Computed tomography angiography currently represents the most important diagnostic imaging modality. It allows for the visualization of findings such as an intimal flap, double-lumen appearance, mural thrombus, or aneurysmal dilatation, and also enables assessment of visceral organ perfusion (4). In the literature, conservative management has been reported to be sufficient in most hemodynamically stable patients without complications. The conservative approach typically includes blood pressure control, analgesic therapy, and, in selected cases, antithrombotic treatment. Endovascular or surgical interventions are recommended in cases with persistent pain, progression of dissection, visceral organ ischemia, or risk of rupture (5,7).

In our case, conservative follow-up was preferred due to the patient's stable clinical course and the absence of signs of organ ischemia. The regression of the dissected segment observed at six-month follow-up is consistent with previously reported outcomes of conservative management in the literature.

CONCLUSION

Spontaneous isolated celiac artery dissection should be considered in the differential diagnosis of patients presenting with acute epigastric pain. Conservative management represents a safe and effective approach in uncomplicated cases.

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VAKA TAKDİMİ CASE REPORT

SIGMOID VOLVULUS IN AN ADULT WITH MUCOPOLYSACCHARIDOSIS: A RARE CASE OF GASTROINTESTINAL COMPLICATION

Berika SENER[1], Kaan ERDAS[1], Ekim SAGLAM GURMEN[1], Hakan IGDELI[1]

[1] Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye

ABSTRACT

Mucopolysaccharidosis (MPS) is a group of rare metabolic disorders characterized by multisystemic involvement due to the accumulation of glycosaminoglycans (GAGs) in tissues. Although gastrointestinal involvement is common, acute surgical conditions such as sigmoid volvulus are extremely rare in the literature. We present an 18-year-old male MPS patient who presented with abdominal pain and distension for two days. Physical examination was limited due to the patient's baseline cognitive status; however, computed tomography (CT) revealed sigmoid volvulus and significant colonic dilatation. Laboratory analysis showed leukocytosis and elevated CRP, and the patient underwent surgery by general surgery. This case highlights that chronic symptoms in MPS patients may mask acute surgical conditions and emphasizes the critical importance of advanced imaging in the diagnostic process for these patients.

Keywords: *Mucopolysaccharidosis, Sigmoid volvulus, Gastrointestinal complications, Acute abdomen, Emergency department.*

Correspondence to: ***Berika SENER[1]***

Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye
E-mail: berikasener97@gmail.com

Orcid: *0009-0007-1696-4145*

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INTRODUCTION

Mucopolysaccharidosis (MPS) is an inherited metabolic disorder caused by lysosomal enzyme deficiency and comprises seven major subtypes [1]. Impaired degradation of glycosaminoglycans (GAGs) leads to their progressive accumulation in various tissues, resulting in multisystem damage affecting the skeletal, respiratory, cardiovascular, and gastrointestinal systems [2]. Gastrointestinal involvement frequently manifests as dysphagia, bowel motility disorders, chronic constipation, or diarrhea [3,4].

With advances in treatment, the life expectancy of patients with MPS has increased, leading to a higher incidence of rare complications encountered in adulthood. In this study, we present a case of sigmoid volvulus, a rare gastrointestinal complication, in an adult patient with MPS.

CASE

An 18-year-old male patient with a known diagnosis of mucopolysaccharidosis (MPS) presented to the emergency department with a two-day history of abdominal pain and progressive abdominal distension. On admission, his general condition was moderate; he was conscious but disoriented and uncooperative, while his vital signs were stable. Due to his baseline cognitive impairment, assessment of orientation and cooperation was limited. Physical examination revealed marked abdominal distension without guarding or rebound tenderness. The patient had retching but no episodes of vomiting. It was also reported that he had not passed stool or flatus for the preceding two days.

Laboratory tests showed high levels of leukocytes (24,500/μL), troponin (180 ng/L), lactate, and C-reactive protein (CRP) (112 mg/L). Colonic dilatation up to 10 cm in diameter was seen on abdominal computed tomography (CT), which revealed results compatible with sigmoid volvulus (figure 1). A hiatal hernia and stomach distension were also noted. Due to the significant risk of perforation, colonoscopic detorsion was not performed after examination by the gastroenterology and general surgery teams, and an emergency surgical procedure was scheduled. The general surgery team then brought the patient to the operating room.

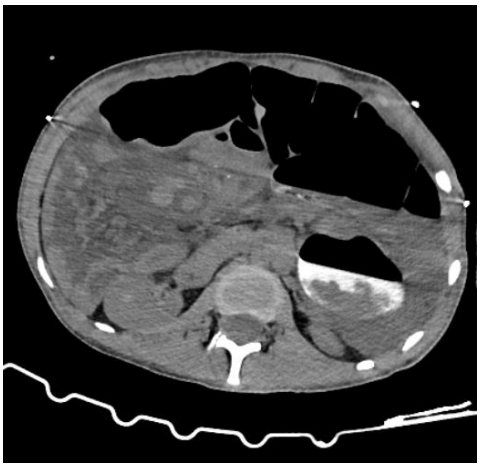

Figure 1. Abdominal CT scan showing colon

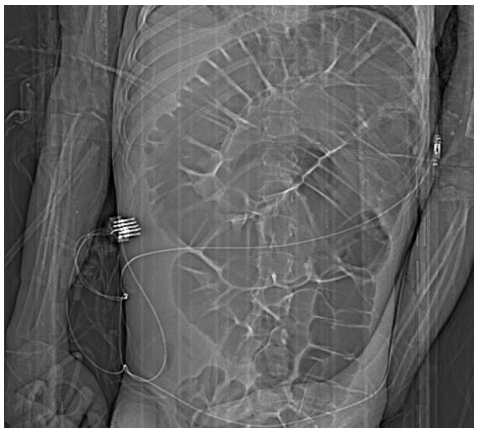

Figure 2. Upright abdominal radiograph demonstrating sigmoid volvulus

DISCUSSION

Mucopolysaccharidosis (MPS) is a progressive disorder characterized by multisystem involvement, often resulting in neurocognitive impairment, chronic pain, and a substantial reduction in quality of life, which makes clinical management challenging [3]. The rarity of the disease, along

with the limited availability of standardized diagnostic and therapeutic protocols, further complicates patient management. In addition, the neurocognitive deficits and multisystem involvement frequently observed in these patients may obscure the localization of acute abdominal pathology, making the recognition of new diagnoses during emergency department visits more difficult [1,4].

In the literature, functional gastrointestinal manifestations such as diarrhea, dysphagia, and abdominal pain are commonly reported in patients with MPS. However, severe mechanical complications, including sigmoid volvulus, are rarely described among the gastrointestinal manifestations associated with the disease [2,4]. In the present case, the development of sigmoid volvulus was considered to be associated with a redundant sigmoid colon, likely secondary to chronic constipation and impaired intestinal motility commonly observed in patients with MPS.

In our case, the markedly elevated troponin level (180 ng/L) was considered to be secondary to the physiological stress associated with the acute abdominal pathology. However, it should be noted that glycosaminoglycan (GAG) accumulation in the pathophysiology of mucopolysaccharidosis (MPS) also affects the cardiovascular system, which may influence cardiac biomarker responses during acute stress conditions [2].

Furthermore, the absence of specific biomarkers for monitoring disease progression in adult patients with MPS complicates long-term follow-up. Therefore, patient management is recommended to be conducted in multidisciplinary and experienced metabolic centers [1,3]. With increasing life expectancy and the development of new therapeutic options, awareness of such rare complications has become increasingly important [2,3].

CONCLUSION

This case demonstrates a rare complication that developed in a patient diagnosed with MPS who presented to the emergency department with abdominal pain. The multisystemic and progressive nature of MPS makes it difficult to quickly and accurately establish additional diagnoses, especi-

ally in emergency situations, and complicates patient management. This case highlights the importance of early recognition of gastrointestinal complications and the adoption of a multidisciplinary approach in the management of patients with mucopolysaccharidosis (MPS). Furthermore, increasing awareness among emergency physicians and relevant specialist teams regarding rare complications that may occur in MPS patients is essential for timely intervention and the prevention of adverse outcomes.

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VAKA TAKDİMİ CASE REPORT

TOTAL GASTRIC NECROSIS ASSOCIATED WITH MEDIAN ARCUATE LIGAMENT SYNDROME: A RARE CASE REPORT

Kaan ERDAS[1], MD, Ekim SAGLAM GURMEN[1], Assoc. Prof, Berika SENER[1], MD, Salih Mert Kalfaoglu[1], MD, Mücahit UNER[1], MD,

[1] Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye

ABSTRACT

Total gastric necrosis is an extremely rare clinical condition due to the stomach's extensive collateral blood supply but is associated with high mortality. A vascular or mechanical etiology is usually present. We present a 22-year-old female patient who presented to the emergency department with lower abdominal pain and distension. Imaging revealed diffuse pneumoperitoneum, loss of contrast enhancement in the gastric wall, and intramural gas. Additionally, findings suggestive of celiac trunk compression and splenic infarction were present. The patient, diagnosed with total gastric necrosis associated with Median Arcuate Ligament Syndrome (MALS), underwent emergency total gastrectomy and splenectomy. MALS can lead to gastric necrosis by impairing visceral perfusion. Early diagnosis is lifesaving in acute abdominal presentations.

Keywords: *Total gastric necrosis, median arcuate ligament syndrome, celiac artery compression, acute abdomen.*

Correspondence to: ***Kaan ERDAS[1]***

Manisa Celal Bayar University School of Medicine, Emergency Department, Manisa, Turkiye
E-mail: daserkaan33@gmail.com

Orcid: *0009-0003-7122-8715*

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INTRODUCTION

The stomach has a rich arterial blood supply through branches originating from the celiac trunk; due to this extensive collateral network, gastric necrosis is a rare clinical entity (1,3). However, ischemia may develop in conditions such as severe vascular occlusion, strangulation, or acute dilation (3,4).

Median Arcuate Ligament Syndrome (MALS) is a rare vascular compression disorder resulting from external compression of the celiac artery by the median arcuate ligament (1,2). This condition is typically associated with postprandial pain and weight loss, particularly in young female patients.

In this study, we present a rare case of total gastric necrosis occurring in the setting of MALS.

CASE REPORT

A 22-year-old female patient presented to the emergency department with complaints of lower abdominal pain, abdominal distension, and inability to pass gas, which had begun one day prior. It was noted that she had experienced similar symptoms during previous menstrual periods, and that menstruation had commenced at the time of presentation. Physical examination revealed marked tenderness in the lower abdominal region; however, no rebound tenderness or guarding was observed. The patient was hemodynamically stable.

Laboratory investigations demonstrated metabolic acidosis on venous blood gas analysis (pH: 7.33, HCO_3: 18.2 mmol/L) and a markedly elevated lactate level (10.09 mmol/L). During clinical follow-up, worsening pain prompted consideration of an acute abdomen, and further imaging was planned. Subsequent laboratory tests revealed significant leukocytosis, neutrophilia, and elevated pancreatic enzymes.

Contrast-enhanced abdominal computed tomography revealed diffuse pneumoperitoneum and free intra-abdominal fluid. Loss of contrast enhancement in the gastric wall and extensive intramural gas were consistent with total gastric necrosis. In addition, a filling defect measuring approximately 5 mm at the origin of the celiac trunk and areas of splenic infarction were identified.

The patient was evaluated by the general surgery team and underwent emergency surgical intervention, during which findings consistent with total gastric necrosis were confirmed. Total gastrectomy and splenectomy were performed, and the patient was subsequently monitored in the intensive care unit postoperatively.

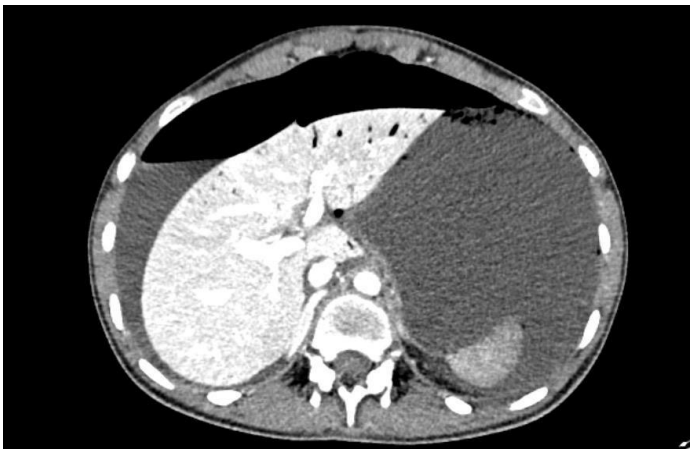

Figure 1. Abdominal CT demonstrating loss of gastric wall enhancement and intramural gas consistent with total gastric necrosis

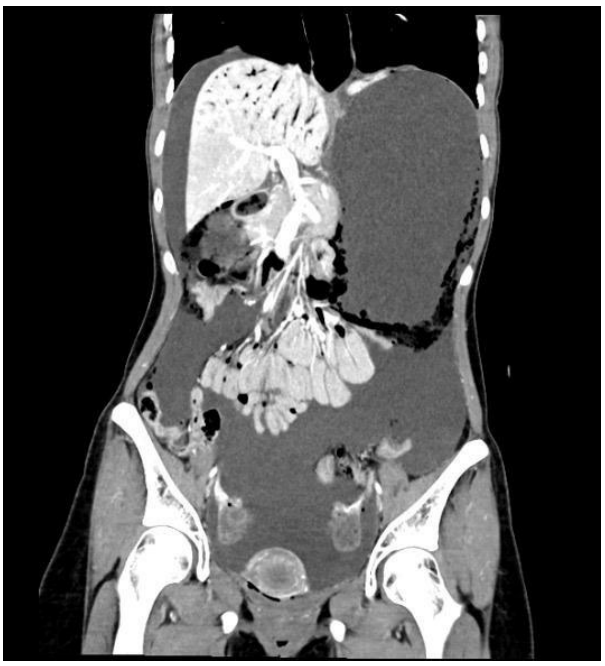

Figure 2. Abdominal CT showing diffuse pneumoperitoneum and free intraperitoneal fluid

DISCUSSION

Total gastric necrosis is exceedingly rare in the literature due to the stomach's rich vascular anatomy, and it is usually associated with the coexistence of multiple pathophysiological mechanisms (3). Most reported cases are related to acute gastric dilatation or vascular events (3,4). Median Arcuate Ligament Syndrome (MALS) is characterized by extrinsic compression of the celiac artery, leading to reduced visceral blood flow (1,2). This compression, which becomes more pronounced during expiration, may compromise perfusion of the visceral organs.

In our case, the filling defect at the origin of the celiac trunk and the associated splenic infarctions are indicative of impaired visceral perfusion. In diagnosis, contrast-enhanced computed tomography is crucial in surgical decision-making, with findings such as loss of wall enhancement and intramural gas being highly suggestive of transmural ischemia and necrosis (3,4).

CONCLUSION

Total gastric necrosis is a rare and life-threatening clinical condition. Vascular compression syndromes such as Median Arcuate Ligament Syndrome (MALS) may lead to severe visceral ischemic events. In young patients presenting with acute abdomen, these rare etiological factors should be considered in the differential diagnosis, and prompt surgical intervention is essential to reduce mortality.

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VAKA TAKDİMİ CASE REPORT

HYPHEMA: A RARE CLİNİCAL CONDİTİON RESULTİNG FROM ELECTRİC SHOCK
ELEKTRİK ÇARPMASI SONUCU NADİR BİR KLİNİK OLAN HİFEMA

Ali DEMIR[1], MD,

[1] ***Kaman Devlet Hastanesi,AcilServis,Kırşehir, Türkiye***

ABSTRACT

Electric shock is an event occurring in homes and workplaces that can result in polytrauma. High-voltage electric shock is particularly significant regarding morbidity and mortality among industrial workers. Electric shock can affect multiple organs and systems, frequently causing cardiovascular and neurological injuries in addition to localized damage (1). Furthermore, it can lead to cardiac conditions such as ventricular fibrillation, ventricular tachycardia, arrhythmias, and myocardial infarction. We present a rare case of hyphema that developed following low-voltage electric shock without associated physical trauma. Case Report: A 61-year-old male patient presented with complaints of bleeding, redness, and blurred vision in his right eye following an electric shock. While working as a shepherd, two of his sheep had been subjected to low-voltage electric shock; he was shocked while attempting to rescue them. Physical examination revealed hyphema in the right eye—an accumulation of blood in the anterior chamber, the space between the cornea and the iris. An ophthalmology consultation was obtained. The ophthalmologist recommended treatment with Tropicamide Forte and Pred Forte eye drops, along with an outpatient follow-up appointment. In conclusion, hyphema following electric shock is a rare condition with a multifactorial pathophysiology; thermal injury, vascular endothelial dysfunction, and indirect traumatic effects may all play a role. Reporting such cases will contribute to a better understanding of this rare clinical presentation.

Keywords: *Electric shock, hyphema, High-voltage electric shock*

Correspondence to: ***Ali Demir[1]***
Kaman Devlet Hastanesi, AcilServis, Kırşehir, Türkiye
E-mail: dralidemir_1983@hotmail.com
Orcid: 0009-0007-1482-5467
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ÖZET

Elektrik çarpması, ev ve iş yerlerinde olan ve multitravmalara neden olan bir durumdur. Genellikle çalışma ortamında özellikle sanayi bölgesinde çalışanlarda yüksek voltajlı elektrik çarpması mortalite ve morbitide açısından önem arz etmektedir. Elektrik çarpması, birden fazla organ ve sistemi etkileyebilir ve sıklıkla lokal olduğu gibi kardiyovasküler ve nörolojik yaralanmalara neden olabilir (1). Bunun dışında kardiyak olarak da ventriküler fibrilasyon, ventriküler taşikardi, aritmi, miyokard enfaktüs gibi klinink tablolarda oluşturabilir. Bizim vakamız bilinenin aksine düşük voltajlı elektrik sonrası travma maruziyeti olmaksızın gelişen nadir şekilde görülen hifema olgusunu sunmaktayız. ***Olgu Sunumu;*** *61 yaşında erkek hasta elektrik çarpması sonucu sağ gözde kanama , kızarıklık ve puslu görme şikayeti ile başvurdu. Hastanın çobanlık meseleğini icra ederken iki koyununa düşük voltajlı elektrik çarpmış.Bu koyunları kurtarma çabası neticesinde kendisini elektrik çarpmıştır.Hastanın yapılan fizik muayenesinde sağ gözde hifema,gözün saydam tabakası(cornea) ile renkli kısmı(iris)arasında kalan ön kamerada kan birikmesi durumu gelişmiştir.Göz hastalıkları uzmanına konsülte edilmiştir.Göz hastalıkları uzmanı Tropamid Fort göz damlası,pred Forte göz damlası ve poliklinik kontrolü önerilmiştir.Sonuç olarak, elektrik çarpması sonrası hifema nadir görülen bir durumdur ve patofizyolojisi multifaktöryeldir. Termal hasar, vasküler endotel disfonksiyonu ve indirekt travmatik etkiler birlikte rol oynayabilir. Bu tür olguların bildirilmesi, nadir görülen bu klinik tablonun daha iyi anlaşılmasına katkı sağlayacaktır.*

Anahtar kelimeler: *Elektrik çarpması, hifema, yüksek voltajlı elektrik çarpması*

GİRİŞ

Elektrik çarpması, ev ve iş yerlerinde olan ve multitravmalara neden olan bir durumdur.Genellikle çalışma ortamında özellikle sanayi bölgesinde çalışanlarda yüksek voltajlı elektrik çarpması mortalite ve morbitide açısından önem arz etmektedir. Elektrik çarpması, birden fazla organ ve sistemi etkileyebilir ve sıklıkla lokal olduğu gibi kardiyovasküler ve nörolojik yaralanmalara neden olabilir (1). Bilinen nörolojik komplikasyonlar içinde nöbet, intrakraniyal kanama, inme, hipoksik-iskemik ensefalopati, transversmiyelit ve periferik nöropati gibi çeşitli sunumlarla merkezi sinir sistemi, periferik sinir sistemi ve hatta nöromüsküler kavşağın etkilenmesini içerir(2). Bunun dışında kardiyak olarak da ventriküler fibrilasyon, ventriküler taşikardi, aritmi, miyokard enfaktüs gibi klinink tablolarda oluşturabilir. Bizim vakamız bilinenin aksine düşük voltajlı elektrik sonrası travma maruziyeti olmaksızın gelişen nadir şekilde görülen hifema olgusunu sunmaktayız.

OLGU SUNUMU

61 yaşında erkek hasta elektrik çarpması sonucu sağ gözde kanama , kızarıklık ve puslu görme şikayeti ile başvurdu. Hastanın çobanlık meseleğini icra ederken iki koyununa düşük voltajlı elektrik çarpmış.Bu koyunları kurtarma çabası neticesinde kendisini elektrik çarpmıştır.Hastanın yapılan fizik muayenesinde sağ gözde hifema,gözün saydam tabakası(cornea) ile renkli kısmı(iris)arasında kalan ön kamerada kan birikmesi durumudur(Şekil 1). Genellikle künt travmalar sonucu

oluşur.GKS 15 oryante koopere.Nörolojik muayenesi normal olarak değerlendirildi.Tansiyon:140/70 Nabız:80 Spo2:96.Ateş: 36.7 C idi. Hastanın EKG'si normal sinüs ritmindeydi.Rutin tahlillerinde ise; Glikoz: 97,Üre: 26,29 Kreatinin: 0,70 Ürik asit:4,1, ALT:11 AST:18 GGT:13 Sodyum:139 Potasyum:3,8 Kalsiyum:9 Amilaz:89 Lipaz:26 CRP:4 Total Bilirubin:0,42 EGFR:101,8 Troponin:0,0 Kütle CK-MB:1,0 CK:103 WBC:7,4 RBC:4,8 HGB:14,7 HCT:43,2 PLT:147 PH:7,43 PCO2:38,1 Lac:1,1 Angap:7,3 idi.

Göz hastalıkları uzmanına konsülte edilmiştir. Göz hastalıkları uzmanı Tropamid Fort göz damlası,pred Forte göz damlası ve poliklinik kontrolü önerilmiştir.

Şekil 1.Elektrik çarpması sonrası gelişen hifema

TARTIŞMA

Elektrik çarpması, nadir ancak multisistemik etkileri olan bir travma türüdür ve oküler komplikasyonları literatürde sınırlı sayıda bildirilmiştir. Bu komplikasyonlar arasında korneal hasar, katarakt, optik nöropati ve retinal değişiklikler daha sık tanımlanmış olmakla birlikte, hifema gelişimi oldukça nadirdir (3,4). Hifema genellikle künt göz travması sonrası iris ve siliyer cisim damarlarının rüptürüne bağlı olarak ortaya çıkarken, elektrik çarpmasına bağlı gelişim mekanizması tam olarak aydınlatılamamıştır.

Elektrik çarpması, nadir görülmesine rağmen çoklu organ sistemlerini etkileyebilen kompleks bir travma türüdür ve oküler tutulum geniş bir spektrumda ortaya çıkabilir. Güncel sistematik derlemeler, elektrik yaralanmalarının göz kapağından retina ve optik sinire kadar tüm oküler yapılarda hasar oluşturabileceğini göstermektedir(5). En sık bildirilen komplikasyonlar katarakt ve retinopati olmakla birlikte, ön segment tutulumu daha nadir olup hifema bu tablolar içinde oldukça seyrek yer almaktadır.

Elektrik akımının göz dokuları üzerindeki etkisi; termal hasar, elektroporasyon ve vasküler endotel hasarı üzerinden açıklanmaktadır (6). Yüksek voltajlı akımlarda özellikle Joule ısısı etkisiyle dokularda koagülasyon nekrozu gelişebilir. Bunun yanı sıra, elektrik akımının ani geçişi sırasında oluşan kas kontraksiyonları ve travmatik etkiler, indirekt mekanik hasara yol açarak iris damarlarında yırtılmaya neden olabilir. Bu durum, klasik travmatik hifema patofizyolojisine benzer şekilde değerlendirilmektedir.

Literatürde elektrik çarpması sonrası gelişen hifema olguları oldukça sınırlıdır. Örneğin, Sinha ve ark. tarafından bildirilen bir olguda yüksek voltaj elektrik yaralanması sonrası bilateral hifema geliştiği ve konservatif tedavi ile gerilediği rapor edilmiştir (7). Benzer şekilde, Kearney ve ark. elektrik yaralanmasına bağlı oküler hasarları inceledikleri çalışmalarında, vasküler hasarın önemli bir mekanizma olduğunu vurgulamışlardır (8). Bu veriler, elektrik çarpmasının doğrudan vasküler yapılara zarar verebileceğini ve hifema gelişimine zemin hazırlayabileceğini desteklemektedir.

Elektrik çarpmasına bağlı hifema gelişiminde alternatif bir mekanizma da ani intravasküler basınç değişiklikleridir. Elektrik akımı, otonom sinir sistemi üzerinden vasküler tonusu etkileyerek ani basınç dalgalanmalarına yol açabilir. Bu durum özellikle iris gibi ince ve hassas vasküler yapılarda kanamaya neden olabilir (9).

Klinik açıdan değerlendirildiğinde, elektrik çarpmasına bağlı hifema genellikle diğer oküler veya sistemik yaralanmalarla birlikte görülür. Bu nedenle hastaların multidisipliner yaklaşımla değerlendirilmesi önemlidir. Hifema yönetimi genel prensipler doğrultusunda konservatif olup; yatak istirahati, baş elevasyonu, sikloplejik ajanlar ve gerektiğinde topikal steroid tedavisini içerir

(10,11). Bununla birlikte, elektrik yaralanmasına eşlik eden oküler hasarların daha kompleks olabileceği göz önünde bulundurulmalı ve hastalar uzun dönem komplikasyonlar açısından izlenmelidir.

Sonuç olarak, elektrik çarpması sonrası hifema nadir görülen bir durumdur ve patofizyolojisi multifaktöryeldir. Termal hasar, vasküler endotel disfonksiyonu ve indirekt travmatik etkiler birlikte rol oynayabilir. Bu tür olguların bildirilmesi, nadir görülen bu klinik tablonun daha iyi anlaşılmasına katkı sağlayacaktır.

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