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CASE REPORT

INTRA-ABDOMINAL MULTI-ORGANS INFARCTION IN 73-YEARS OLD FEMALE PATIENT WITH HYPERTENSIVE CRISIS: A CASE REPORT AND REVIEW OF LITERATURE

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Abstract

Objective: Unexpected clinical course

Background: In hypertensive crisis patients, intestinal ischemia has been reported, while gastric ischemia is rare due to its multiple blood supply. A hypertensive crisis is classified according to the progression of end-organ failure, which includes cerebral, cardiac, and renal insults.

Case Presentation: A 73-year-old female patient with uncontrolled hypertension and diabetes mellitus presented with dyspnea and fatigue. Her blood pressure was 248/157 mmHg and her serum blood glucose was 301 mg/dl. In the emergency room, she received antihypertensive treatment and was admitted to the intensive care unit to be monitored. 48 hours later, she developed nausea, vomiting, constipation and severe abdominal pain. A CT scan of the abdomen revealed infarction patches in the left renal and the spleen while the first colonoscopy was irrelevant. The second colonoscopy revealed left colonic and sigmoid necrosis. Finally, she underwent exploratory laparotomy that identified ischemic necrosis of the greater curvature of the stomach, multiple levels of the small intestine, sigmoid and descending colon. Partial gastrectomy, left colonic resection, sigmoidectomy, and colostomy were done.

Conclusion: This case illustrates the unusual site of ischemia in an uncontrolled hypertensive patient, as well as the difficulty of managing the patient and the adverse outcome. In order to rule out intra-abdominal organ involvement, any patient who develops abdominal pain in the course of hypertensive emergency should be evaluated for surgical consultation and contrast-enhanced CT.

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Introduction:-

Hypertensive crisis is a serious condition that poses a difficult challenge for both patients and physicians. The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure defines the hypertensive emergency as a systolic blood pressure > 180 mmHg and a diastolic blood pressure > 120 mmHg with the consequence of target-organ failure [1]. Kidneys, brain, retina and heart are common sites for infarction due to hypertensive crisis. However, gastrointestinal tract is a rare site for this fatal complication but has been reported [2, 3]. Hypertensive crisis has a poor prognosis and a high mortality rate if not treated properly [4, 5]. Patients with hypertensive crisis should be diagnosed immediately and start treatment as soon as possible to avoid end-organ damage [5].

Therefore, we report a case with hypertensive crisis complicated by multi-organ intra-abdominal ischemia and necrosis that was treated medically and surgically.

Case Presentation:

A 73-year-old African-American female patient presented to the emergency department with complaints of general fatigue, intermittent sweats, chills, decreased appetite and shortness of breath. Patient also complained of chest pain that was pressure-like. She denied any numbness or weakness, cough or sputum production with normal urinary and bowel habits.

On examination, the patient looked nontoxic, well appearing, afebrile with normal vital signs except for the high blood pressure (248/157 mmHg) and blood glucose (301 mg/dl). Abdominal examination was soft, non-tender and not distended with no rebound or guarding. She had unremarkable laboratory results except for troponin (0.02). Electrocardiogram showed normal sinus rhythm with a rate of 64 beats/minute and no axis abnormalities. Additionally, the echocardiogram showed no abnormalities with ejection fraction of 52%. She received hydralazine 5mg/iv, blood pressure initially dropped down to 180/138 mmHg but then increased to 200/100 mmHg. Nicardipine drip started in the emergency room then the patient admitted to the intensive care unit to complete her treatment for hypertensive emergency and adjusting her blood pressure. Patient had a previous history of coronary artery disease and cardiac arrest in 2008. Her family history is irrelevant

On Day 2 of admission, the patient developed abdominal pain. An abdominal computed tomography scan with contrast was requested and revealed bilateral renal and splenic infarctions of unknown etiology and gastroparesis that required a nasogastric tube to be relieved (Figure 1).

On Day 5, the patient started to be confused and lethargic with increased abdominal pain and bleeding per rectum. Surgical consultation was requested and another abdominal computed tomography scan with contrast and colonoscopy were done and showed intra-abdominal fluid collection and ischemic colitis(Figure 2).

Additionally, patient's chemistry and hematology laboratories deteriorated from day of admission to the operative day as following (HB: 16.9 to 11.3 g/dl; HCT 50.6 to 33.8 %; WBC: 7.3 to 19.8; S. creatinine: 1.1 to 2.4). Surgical decision was taken for emergency exploratory laparotomy and multi-organ ischemic necrosis was determined. The intraoperative findings included multi-level small intestinal infarction, ischemic necrosis of the left colon, and ischemia of the greater curvature of the stomach. Partial gastrectomy, two small intestinal resections, anastomosis, left hemicolectomy, sigmoidectomy and colostomy were done. Patient returned back to the intensive care unit and kept ventilated. Histopathological examination was consistent with ischemia and transmural necrosis in all specimens(Figure 3, 4).Multiple postoperative scenarios have been developed, including evacuation of abdominal blood clots, delayed abdominal wall closure, gastrostomy tube insertion, and for delayed extubation and waning from the ventilator, tracheostomy tube was placed. Upon discharge from the ICU, the patient was transferred to the progressive care unit after two weeks and then the patient is following up in the outpatient clinic.

Discussion:-

Hypertension is a global health problem characterized by a chronic morbidity and high mortality. Hypertensive crisis, a condition defined as a rapid, inappropriate, extreme and symptomatic increase in blood pressure [1, 6].It affects about 1% of adults with hypertension with a 5-year survival rate of 74% among those populations [5, 7]. It is divided into two categories, hypertensive emergency which has systolic blood pressure >220 mmHg and diastolic blood pressure >120 mmHg with end-organ damage that include but not limited to brain, renal, retina, and cardiac; while hypertensive urgency with systolic blood pressure >180 and diastolic blood pressure >120 in the absence of or minimal organ involvement [1, 8]. The pathophysiology of the organ damage in Hypertensive crisis patients is the fibrinoid necrosis of the small vessels wall that is associated with multiple thrombi resulting in severe vascular damage [9, 10]. Intra-abdominal organs have also been reported to be affected. There has been a prevalence of intestinal infarction, abdominal hemorrhage, and necrotizing pancreatitis in hypertensive emergencies [11]. It has been shown that most patients with Hypertensive crisis as well as gastrointestinal ischemia presented first with acute abdominal pain [12, 13]. It is rare for gastric ischemic necrosis to occur due to its multiple collateral blood supply and it has not been reported in cases of hypertensive crisis. A few cases gastric ischemia have been described and its etiology includes acute gastric dilatation, inflammation, toxicities, and complications of other procedures [14]. In our case, the first presentation was elevated blood pressure without encephalopathy or papilledema. The clinical course of our case was unexpected with an atypical presentation. Several cases of hypertensive emergency have been reported to cause acute abdominal pain; however, the prognosis is poor in these cases. Consequently, hypertensive emergencies must be identified promptly and treated aggressively [15].

Conclusion:-

Therefore, intestinal, colonic, and gastric ischemia may occur in hypertensive crisis patients even if they are asymptomatic and control their blood pressure well. Once the abdominal pain started, Serial abdominal computed tomography should be considered in the follow-up during the hospital stay for early detection and rapid intervention for any gastrointestinal ischemia. Careful observation and good management may reduce mortality rates in hypertensive crisis patients.

Statements and Declarations:

Funding:
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Availability of data and materials:
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate:
The study was approved by the institutional review board at Bon Secours Mercy Health.

Consent for publication:
Written informed consent was obtained from the patient‘s next of kin for publication of this case report and any accompanying images.

Competing interests:
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Figures:

Figure 1:- A: Abdominal C.T scan showing bilateral kidney infarction
B: Abdominal C.T scan showing splenic infarction and gastric distension

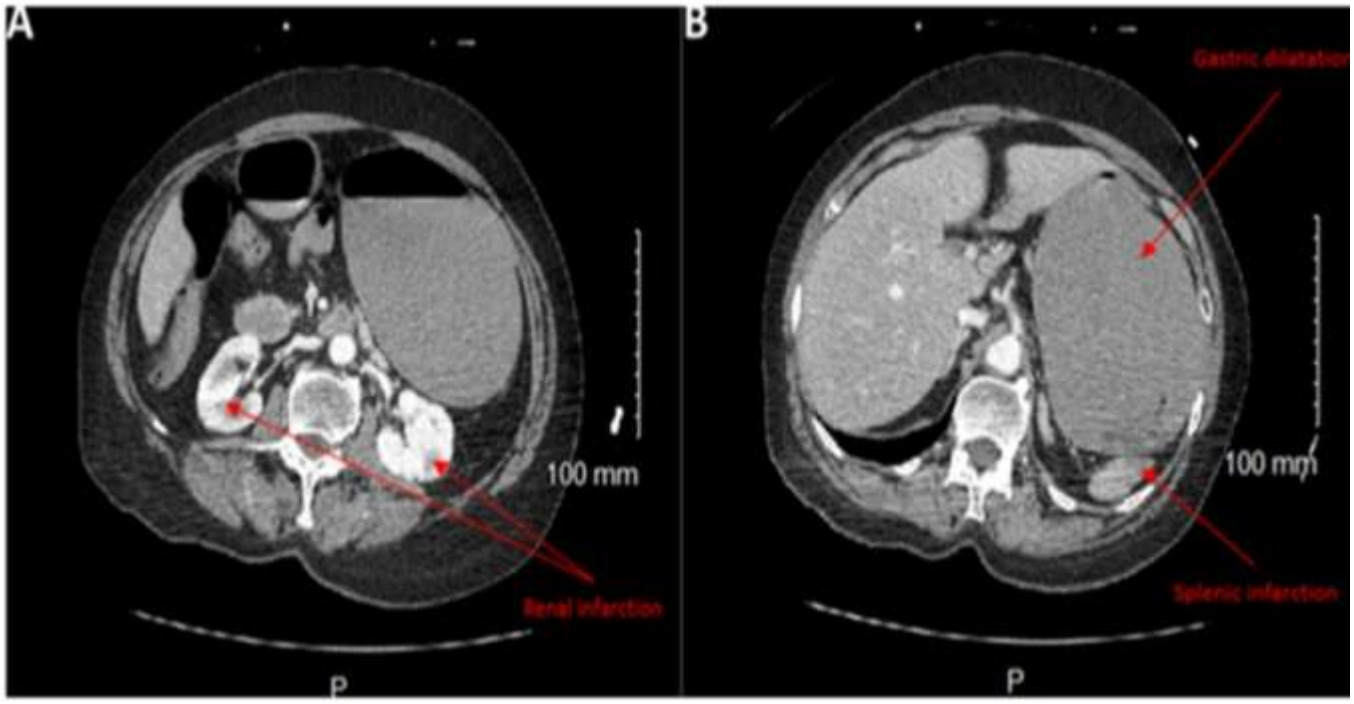


Figure 2:- Colonoscopy showing ischemia of sigmoid and descending colon.

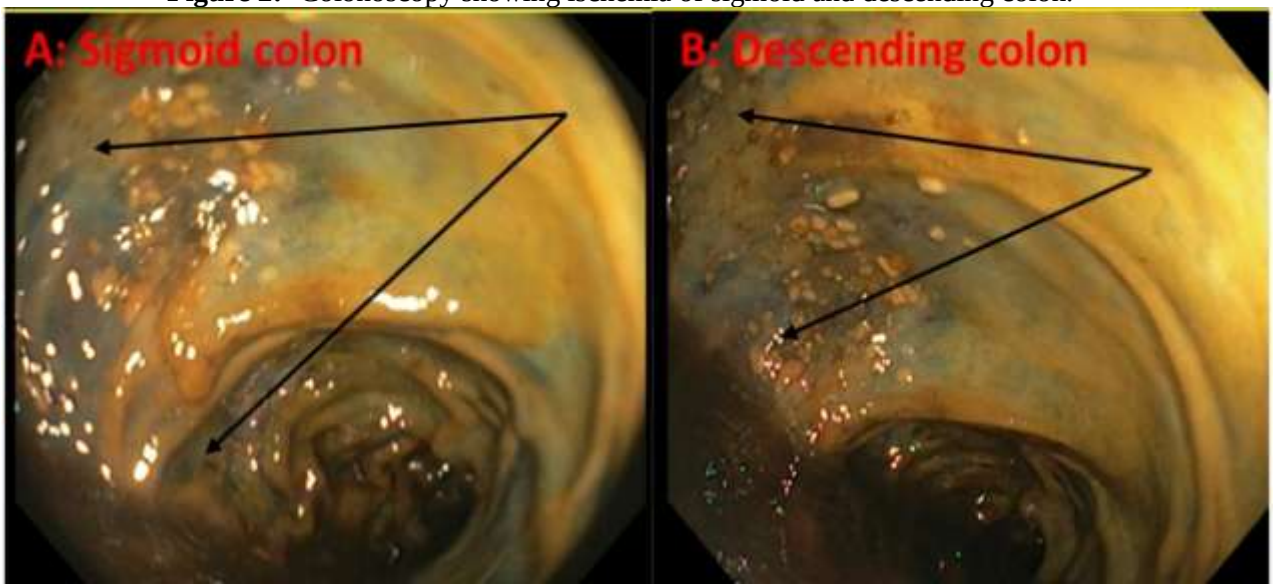


Figure 3:- Partial gastrectomy showing transmural necrosis (arrow) of stomach wall suggestive of gastric ischemia.

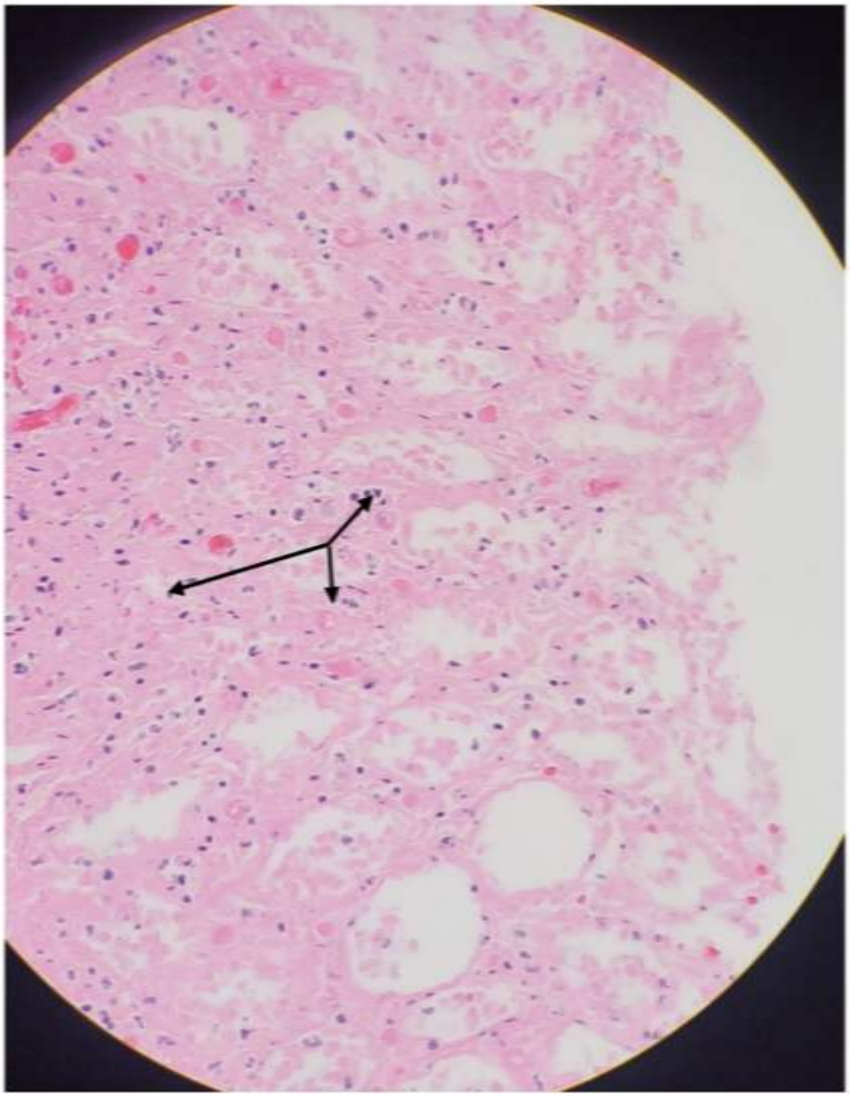
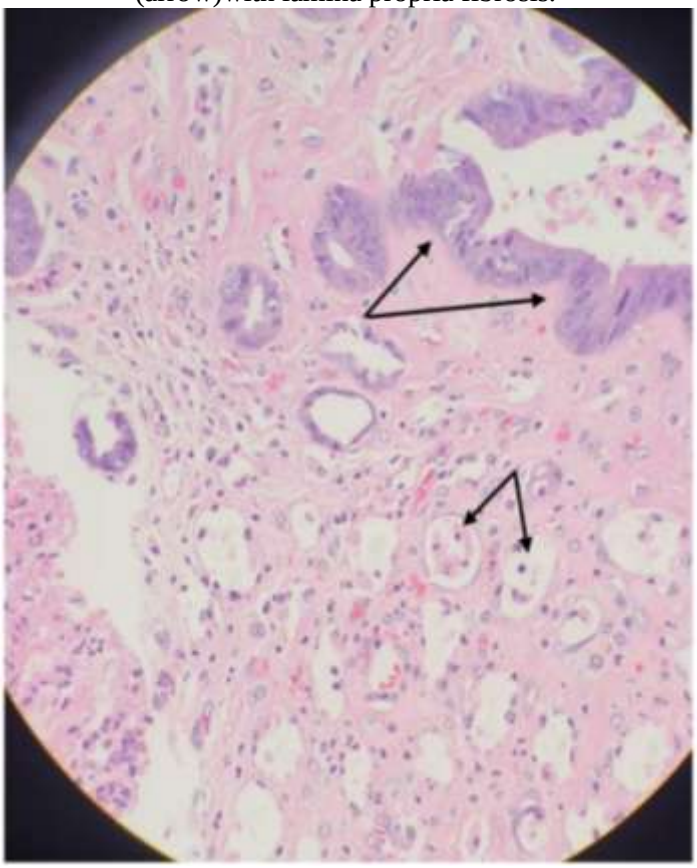


Figure 4:- Left colon resection showing colonic mucosa with active colitis and withering crypts (arrow)with lamina propria fibrosis.



References:-

1. Chobanian AV, Bakris GL, Black HR, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. Jama. 2003 May 21;289(19):2560-71.DOI: 10.1001/jama.289.19.2560
2. Guerrera C, Colivicchi F, Pola R, et al. Acute abdominal symptoms in malignant hypertension: clinical presentation in five cases. ClinExpHypertens. 2001 Jan 1;23(6):461-9.. DOI: 10.1081/ceh-100104237
3. Heptinstall RH. Malignant hypertension: A study of fifty-one cases. J PatholBacteriol. 1953 Apr;65(2):423-39. DOI: 10.1002/path.1700650215
4. Shantsila, Alena, and Gregory YH Lip. "Malignant hypertension revisited—does this still exist?." Am J Hypertens. 30.6 (2017): 543-549. DOI: 10.1093/ajh/hpx008
5. Lip GY, Beevers M, Beevers DG. Complications and survival of 315 patients with malignant-phase hypertension. Journal of hypertension. 1995 Aug 1;13(8):915-24. DOI: 10.1097/00004872-199508000-00013
6. Martin JF, Higashiama É, Garcia E, Luizon MR, Cipullo JP. Hypertensive crisis profile: prevalence and clinical presentation. Arq Bras Cardiol. 2004;83:125-30. DOI: 10.1590/s0066-782x2004001400004
7. Aggarwal M, Khan IA. Hypertensive crisis: hypertensive emergencies and urgencies. CardiolClin. 2006 Feb 1;24(1):135-46. DOI: 10.1016/j.ccl.2005.09.002
8. Cherney D, Straus S. Management of patients with hypertensive urgencies and emergencies: a systematic review of the literature. J Gen Intern Med. 2002 Dec;17(12):937-45. DOI: 10.1046/j.1525-1497.2002.20389.x
9. Vaughan CJ, Delanty N. Hypertensive emergencies. The Lancet. 2000 Jul 29;356(9227):411-7. DOI: 10.1016/S0140-6736(00)02539-3
10. Kincaid-Smith P. Malignant hypertension: mechanisms and management. PharmacolTher. 1980 Jan 1;9(2):245-69. DOI: 10.1016/s0163-7258(80)80021-0

11. Yen CC, Wang CK, Chen SY, et al. Risk assessment and prognostic analysis of patients with splenic infarction in emergency department: a multicenter retrospective study. Sci Rep. 2021 Nov 2;11(1):21423. DOI: 10.1038/s41598-021-00897-0
12. Chi JG, Suh YL, Choi YO, et al. Necrotizing arteriolitis of ileum, as the initial manifestation of malignant hypertension in childhood. Child Nephrol Urol. 1988 Jan 1;9(1-2):112-5.
13. Padfield PL. Malignant hypertension presenting with an acute abdomen. Br Med J. 1975 Aug 8;3(5979):353. DOI: 10.1136/bmj.3.5979.353
14. Abdu RA, Garritano D, Culver O. Acute gastric necrosis in anorexia nervosa and bulimia: two case reports. Arch Surg. 1987 Jul 1;122(7):830-2.. DOI: 10.1001/archsurg.1987.01400190096021
15. Dollery C. Hypertension trial results: consensus and conflicts. J Hum Hypertens. 1995 Jun 1;9(6):403-8.