



MEZENTER İSKEMİDE TANI YÖNTEMLERİ

Uzm.Dr.Özlem UZUN

Bağcılar Eğitim ve Araştırma Hastanesi

Acil Tıp Kliniği

SUNUM PLANI

- Tanım
- Giriş
- Anatomi
- Patofizyoloji
- Etiyoloji
- Tanı



TANIM

Mezenter iskemi

Barsakları besleyen vasküler yapının tıkanması veya daralması sonucu gelişen barsak iskemisi.



GİRİŞ

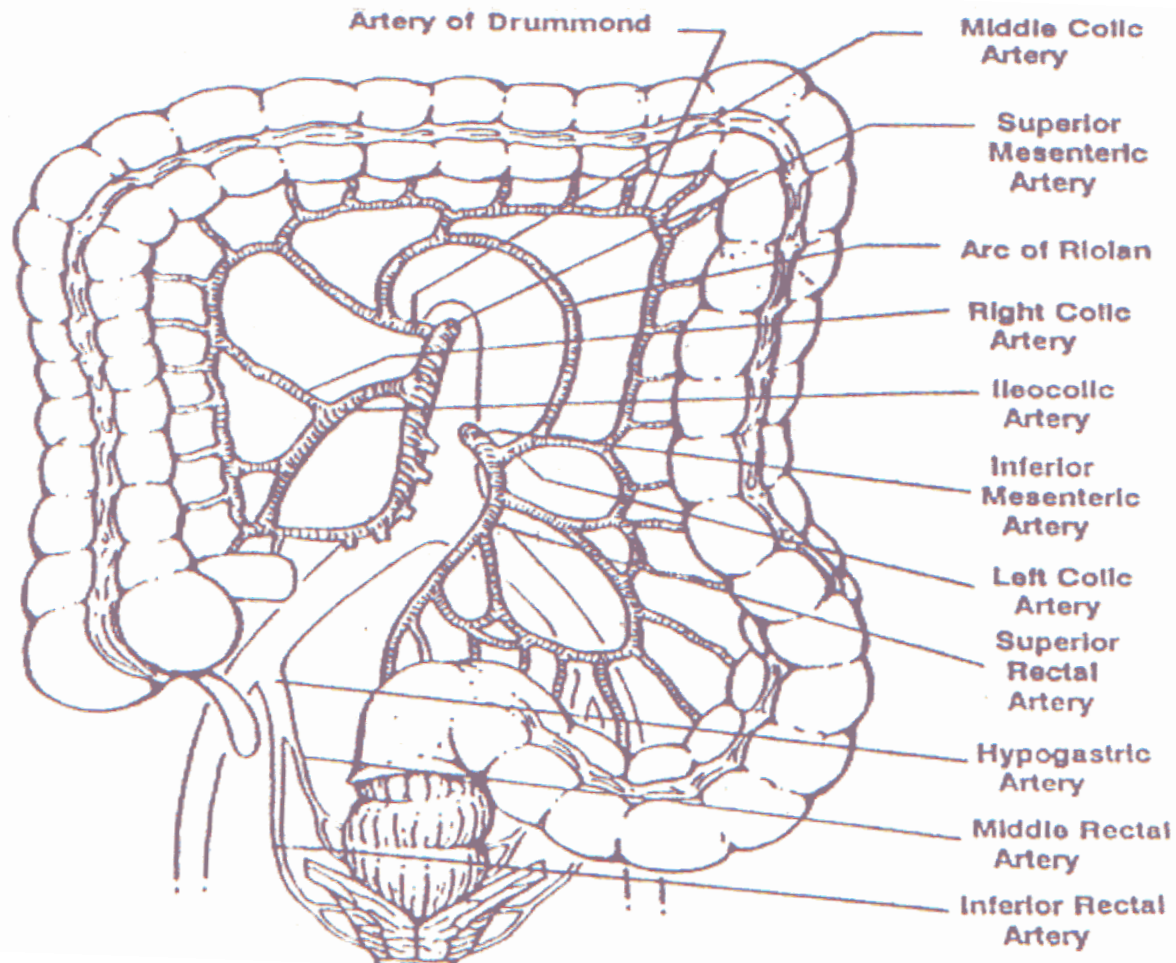
- Tüm hastane başvurularının %0.1' i
- Mortalite %50 - 69
- Kadın/Erkek = 1
- 50 yaş üstü ve kardiyovasküler hastalığı olanlar
- Fizik muayene ile orantısız karın ağrısı
- İlk 6 saatten sonra irreversibl hasar
- ERKEN TANI !!!!

•Roussel A, Castier Y, Nuzzo A, Pellenc Q, Sibert A, Panis Y, Bouhnik Y, Corcos O. Revascularization of acute mesenteric ischemia after creation of a dedicated multidisciplinary center. *JVasc Surg* 2015; **62**: 1251-1256 [PMID: 26243208 DOI: 10.1016/j.jvs.2015.06.204]

•Acosta S. Epidemiology of mesenteric vascular disease: clinical implications. *Sem Vasc Surg.* 2010;23:4–8.



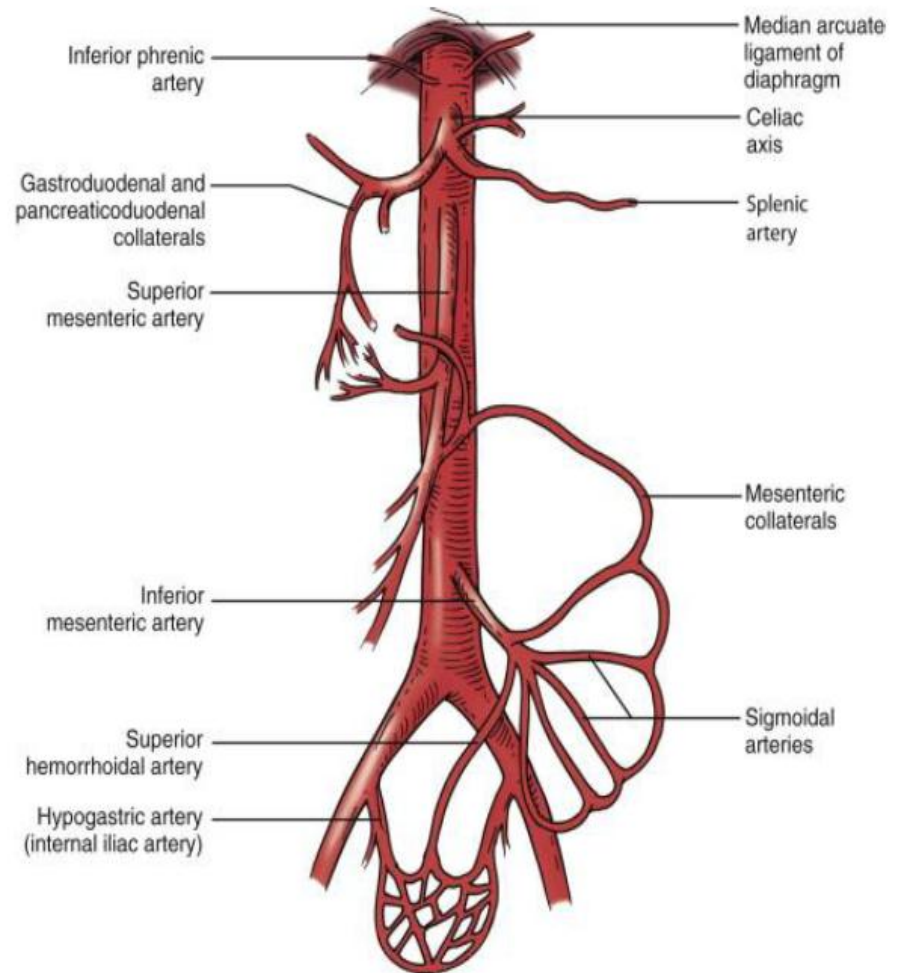
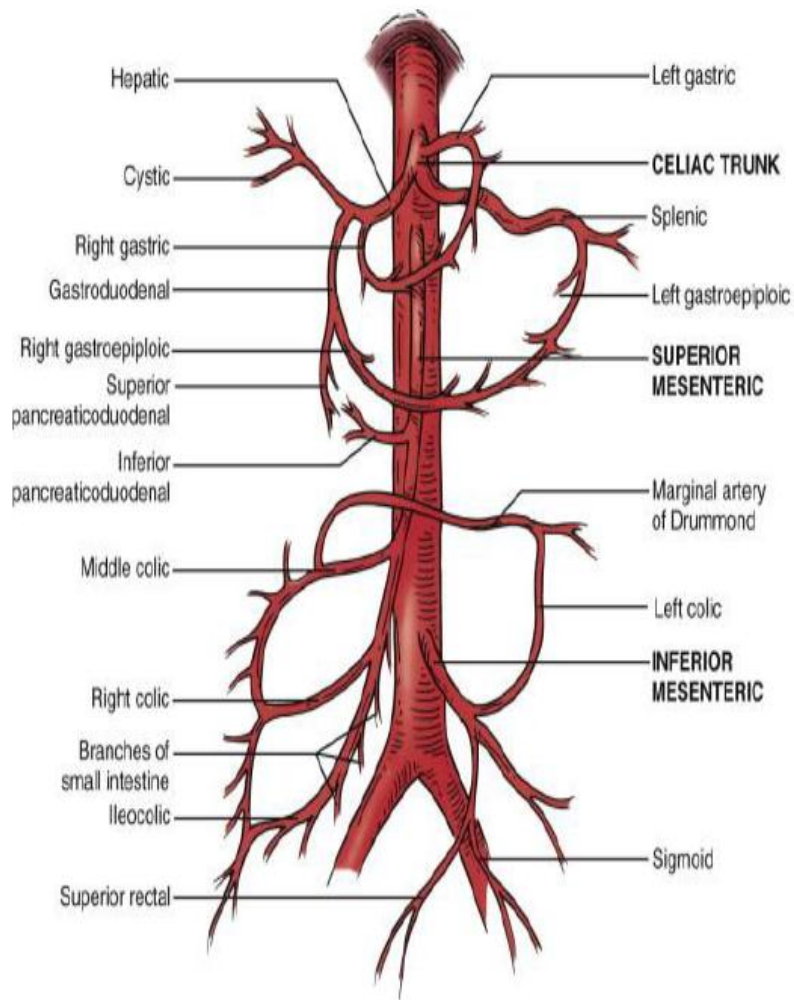
ANATOMI



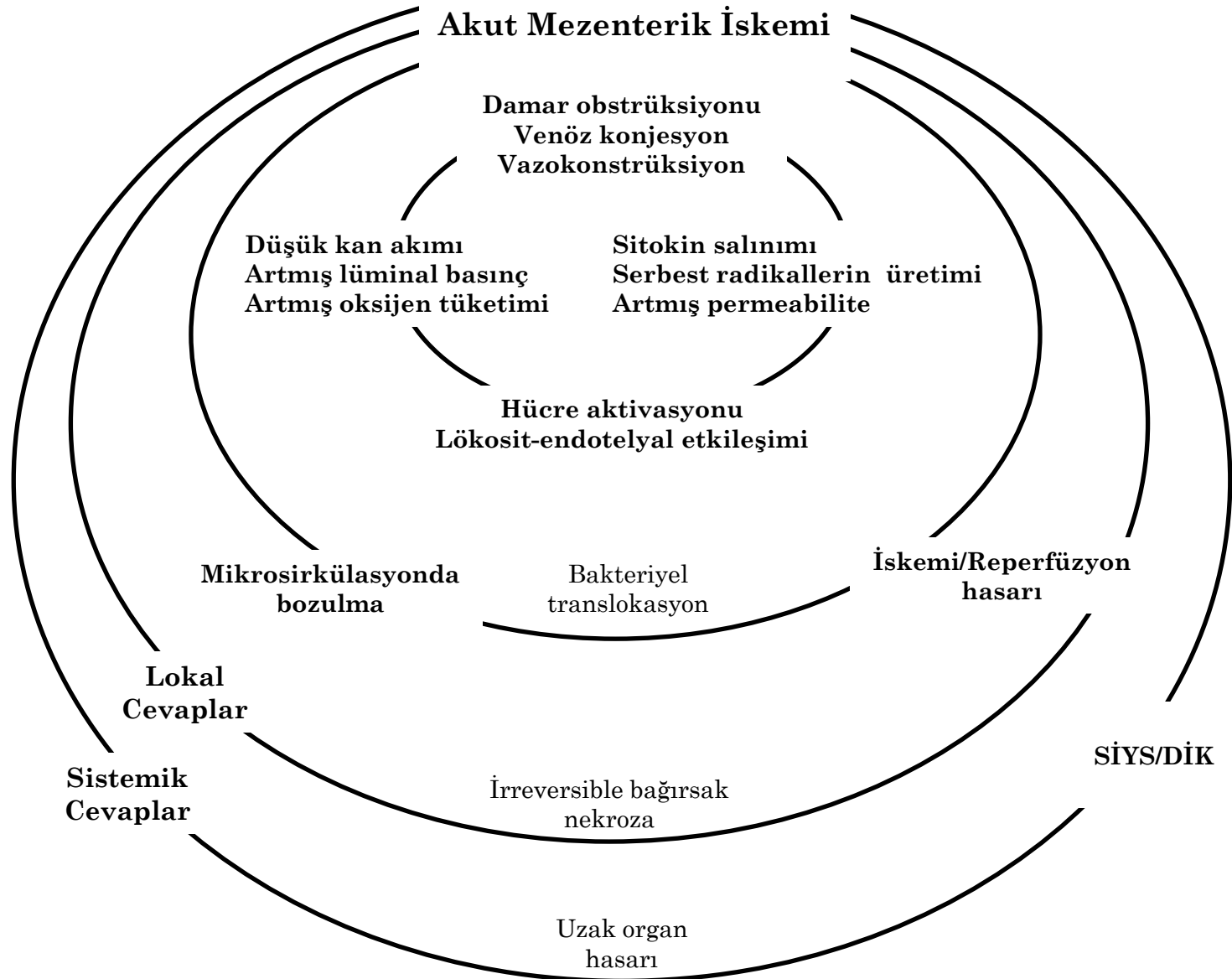
MEZENTERİK DOLAŞIM ARTERLERİ

- **Çölyak turunkus** foregut'u (mide ve duodenumun proksimal yarısı)
- **Superior mezenterik arter** (SMA) midgut'u (duodenumun distal yarısı, jejunum, ileum, çekum, apandiks, çıkan kolon ve proksimal 2/3 transvers kolon)
- **Inferior mezenterik arter** (İMA) hindgut'u (1/3 distal transvers kolon, inen kolon, sigmoid kolon, rektum ve anal kanalın proksimal kısmını) besler





PATOFİZYOLOJİ



ETYOLOJİ

- Kronik Mezenter İskemi

- Akut Mezenter İskemi(AMI) :

Arteriyel emboli (EAMI) %45

Arteriyel tromboz (TAMI) %25

Venöz tromboz (VAMI) %10

Nonoklüsiv mezenterik iskemi (NOMI) %20



CHARACTERISTICS AND RISK FACTORS ASSOCIATED WITH AMI

	Associated comorbidities	Onset of pain	Associated symptoms	Related procedures
EAMI	Heart disease (atrial fibrillation, rheumatic, myocardial infarction, prosthetic valve, ventricular aneurism, Chagas' disease)	Acute	Diarrhoea, vomiting	Angiography
TAMI	Arteriosclerosis, hypertension, diabetes, hyperlipidemia, dehydration, antiphospholipid syndrome, estrogens	Acute, may be recurrent	Sitophobia, postprandial pain	Vascular surgery (bypass)
VAMI	Hypercoagulable disorders, sickle cell disease, right sided heart failure, DVT, malignancies, hepatitis, pancreatitis, sepsis hepato-splenomegaly, cirrhosis	Gradual	Vague complaints	Recent abdominal surgery
NOMI	Shock, hypovolemia, hypotension, digitalis, diuretics, beta-blockers, alpha-adrenergics, enteral nutrition, critical care support	Either acute or gradual		

TANI

- Anamnez
- Fizik Muayene
- EKG
- Laboratuvar
- Görüntüleme Yöntemleri



SEMPATOM

- Ani başlangıçlı karın ağrısı
 - Lokalize olmayan
 - Şiddetli
 - Bazen periumblikal
 - Peritoneal irritasyon bulguları (İskemi ilerlediğinde)
- Bulantı (%93)
- Kusma (%80)
- İshal (%48)



DIĞER SEMPTOMLAR

- Taşikardi
 - Takipne
 - Hipotansiyon
- } şiddetli iskemi



FİZİK MUAYENE

- Barsak enfarktüsünün olmadığı erken evrede fizik muayene bulguları silik
- Karın yumuşak, bağırsak sesleri aktiftir
- Periton irritasyonunu düşündüren bulgular akut dönemde yoktur
- iskemi ilerlediğinde periton irritasyon bulguları belirgin
- Rektal kanama, Gaitada kan, kanlı nazogastrik içerik ve gaz gaita çıkaramama



LABORATUVAR

- AMİ erken tanısında etkin olarak kullanılan sensitivitesi ve spesifitesi yüksek laboratuvar yöntemi bulunmamaktadır.



LABORATUVAR

- Lökositoz
- Amilaz yüksekliği
- LDH yüksekliği
- Metabolik asidoz(Laktik asidoz)
- Pre-renal azotemi
- AST yüksekliği
- Fosfat yüksekliği



YENİ BELİRTEÇLER

- D-lactat
- I-FABP
- Alfa- glutatyon S –transferans (GST)
- D –dimer
- Serum İskemi Modifiye Albumin (İMA)
- Prokalsitonin



Can heat shock protein 32 be used for the early diagnosis of acute mesenteric ischemia?

Sait Berhuni¹, Ersin Öztürk¹, Arzu Yılmaztepe Oral², Pınar Sarkut¹, Nevzat Kahveci³, Tuncay Yılmazlar¹, Kasım Özlük³, Ömer Yerci⁴

ABSTRACT

Objective: Acute mesenteric ischemia is a challenging and fatal disease. The aim of this study was to detect the heat shock protein 32 (HSP32) response in intestinal tissue and systemic blood to intestinal ischemia and ischemia/reperfusion to define a tool for the early diagnosis of acute mesenteric ischemia.

Material and Methods: Thirty female Wistar albino rats were equally divided into 3 groups. Group 1 rats underwent simple laparotomy and closure (control). In Group 2 rats, 1-hour intestinal ischemia followed by 5-hour reperfusion was performed, and Group 3 rats were subjected to 6-hour intestinal ischemia. The experiment was repeated with a 24-hour waiting period. At the end of the waiting period, blood was withdrawn from the tail veins of the rats and the rats were sacrificed via cardiac puncture. Re-laparotomy was subsequently performed and intestinal tissue and luminal samples were obtained for biochemical and pathological investigations. The HSP32 levels of intestinal tissues, luminal contents and blood levels were compared among the groups.

Results: At the end of the 24-hour waiting period, the median tissue HSP32 levels were 0.43 (0-6.6) ng/mL for Group 1, 9.51 (2.5-49.9) ng/mL for Group 2 and 43.13 (6.3-121.3) ng/mL for Group 3 ($p=0.001$). The median blood HSP32 levels were 0.11 (0.1-1.4) ng/mL for Group 1, 0.42 (0.1-0.7) ng/mL for Group 2, and 0.25 (0.1-1.2) ng/mL for Group 3 ($p=0.047$). The HSP levels in the luminal contents were undetectable.

Conclusion: Both ischemia and ischemia/reperfusion significantly raised intestinal tissue HSP32 levels in comparison with the control group. However, this change was not reflected in the circulating blood or luminal contents.

Keywords: Acute, heat shock protein 32, ischemia/reperfusion, mesenteric ischemia

ÖZGÜN ARAŞTIRMA / ORIGINAL ARTICLE

Akut Mezenterik İskemi Tanısında ve Akut Pankreatit ile Akut Kolesistitten Ayırıcı Tanısında D-Dimerin Önemi

The Value of D-Dimer in Diagnosis of Acute Mesenteric Ischemia and Differential Diagnosis from Acute Pancreatitis and Acute Cholecystitis

Semih Hot¹, Nüvit Duraker¹, Ayhan Sarı², Kenan Çetin³

ÖZET

Amaç: Kötü prognozu ve yüksek mortalite oranı nedeniyle akut mezenterik iskemi (AMİ)'nin erken tanısı sorunudur. AMİ'nin tanısında serum belirteçlerinin yeri oldukça sınırlı olup son yıllarda D-dimer testi ile ilgili çalışmalar yapılmaktadır. Bu prospektif çalışmada AMİ'nin tanısında ve akut pankreatit ve akut kolesistit'ten ayırıcı tanısında plazma D-dimer düzeyinin önemini araştırdık.

Yöntemler: Acil servisimize karın ağrısı şikayeti ile has-

ABSTRACT

Objective: Because of its poor prognosis and high mortality rate, early diagnosis of acute mesenteric ischemia (AMI) is a challenge. The value of serum markers in the diagnosis of AMI is limited and the studies related with the D-dimer test carried out in recent years. In this prospective study we investigated the value of the level of plasma D-dimer in the diagnosis of AMI and the differential diagnosis from acute pancreatitis and acute cholecystitis.

D-Dimer as an Early Marker of Severity in Patients With Acute Superior Mesenteric Venous Thrombosis

Shuofei Yang, MD, Xinxin Fan, MD, Weiwei Ding, MD, PhD, Baochen Liu, MD, Jiaxiang Meng, MD, Kai Wang, MD, Xingjiang Wu, MD, PhD, and Jieshou Li, MD

Abstract: No early serum marker of disease severity contributes to the treatment decision-making process of acute superior mesenteric venous thrombosis (ASMVT). This study aims to assess the value of serum D-dimer level in the first 3 days after admission as a severity marker of ASMVT patients.

From May 2010 to June 2014, 50 consecutive patients of ASMVT were enrolled in this observational study. The serum D-dimer level was measured on a daily basis during the first 3 days after admission as well as other laboratory-testing parameters, clinical score, and outcome variables recorded during the same period. The maximum and mean D-dimer values were analyzed and compared with other potential markers for prediction of multiple-organ dysfunction syndrome (MODS) and short-bowel syndrome (SBS). The correlation of D-dimer level with other potential severity markers and inflammation parameters were also studied.

respiratory distress syndrome, ASMVT = acute superior mesenteric venous thrombosis, AUC = area under the curve, CRP = C-reactive protein, CT = computed tomography, I-FABP = intestinal-type fatty acid-binding protein, MODS = multiple-organ dysfunction syndrome, MVT = mesenteric venous thrombosis, ROC = receiver operating characteristics, SBS = short-bowel syndrome, SIRS = systemic inflammatory response syndrome, SOFA = sequential organ failure assessment, TPN = total parenteral nutrition, WCC = white blood cell count.

INTRODUCTION

Acute mesenteric ischemia (AMI) is a devastating vascular emergency characterized by the “clinical triad” of pain out

Diagnostic Value of Procalcitonin Levels in Acute Mesenteric Ischemia

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Background: Acute mesenteric ischemia (AMI) is a potentially fatal disease. Difficulties in diagnosis make it essential to find early biomarkers.

Aims: This study investigated the diagnostic value of procalcitonin (PCT) levels in AMI.

Study Design: Animal experimentation.

Methods: Rats were divided into six groups of six animals each. In the experimental group, an experimental ischemia model was established by clamping the superior mesenteric artery from the aortic outflow tract. Blood and tissue specimens were collected from rats in the experimental mesenteric ischemia model at 30 min and 2 and 6 h, and these were compared with specimens from the respective control groups. PCT levels were compared at 30 min and 2 and 6 h.

Results: PCT levels were 185.3 pg/mL in the control group and 219.3 pg/mL in the study group, 199.6 pg/mL in the control group and 243.9 pg/mL in the study group, and 201.9 pg/mL in the control group and 286.9 pg/mL in the study group, respectively, at 30 minute, 2 and 6 hours. Significant differences were determined between 6-h control group and ischemia group PCT levels ($p=0.005$).

Conclusion: The absence of a significant increase in PCT levels in the early period, while a significant difference was detected in the later period (6 h), shows that PCT levels rise late in mesenteric ischemia and can be a marker in the late period.

Keywords: Mesenteric ischemia, procalcitonin, intestinal ischemia

Eritrosit Dağılım Hacminin Akut Mezenter İskemideki Potansiyel Rolü

THE POTENTIAL ROLE OF RED BLOOD CELL DISTRIBUTION WIDTH IN ACUTE MESENTERIC ISCHEMIA

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ÖZET

Amaç: Bu çalışmanın amacı akut mezenter iskemili hastalardaki mortalite ile eritrosit dağılım genişliği düzeyleri arasındaki ilişkiyi araştırmaktır.

Yöntemler: Akut mezenter iske mi tanısı alarak acil opere edilen 30 hasta çalışmaya dahil edildi. Hastaların demografik özellikleri, rezeke edilen barsak segmentinin uzunluğu, mortalite oranları ve hastanın acil servise başvuru anındaki lökosit ve eritrosit dağılım genişliği değerleri incelendi.

Bulgular: Mortalite ve kısa barsak oluşumuyla giden gruplar arasında yaş ve cinsiyet açısından homojen dağılım gözlenen çalışmamızda, 10 hastada kısa barsak hastalığı saptanırken eritrosit dağılım genişliği ile geniş barsak rezeksiyonu sonrası gelişen kısa barsak sendromu arasında istatistiksel olarak anlamlı bir ilişki yoktu ($p=0,397$). Mortalite oranımız %53,3 iken; eritrosit dağılım genişliği; 12,95 cut-off düzeyi ve %52 nozitif prediktif değer ile mortaliteyi doğru olarak tahmin edilebildi

GÖRÜNTÜLEME YÖNTEMLERİ

DIREK GRAFI

- Parmakizi bulgusu
 - Hemoraji ve ödem
- Bağırsak duvarında hava
 - İskeminin ileri evresi
- Diğer karın ağrısı nedenlerinin ayırımında önemli



AYAKTA DIREK BATIN GRAFISI



DOPPLER ULTRASONOGRAFI

- SMA ve çölyak aksiste akımı göstermede yararlı olabilir
- Alanında uzmanlaşmış personel
- Özgüllük (%92-100), Duyarlılık (%70-89)
- Doppler ultrasonografi ana damarların distalindeki emboliyi göstermede ve nonoklüsiv mezenter iskemi tanısında değerli değildir



BILGISAYARLI TOMOGRAFI

- %71-96 duyarlılık , %92-94 özgüllük
- Portal vende gaz
- Barsak duvarında ödem
- Mezenterik ödem
- Solid organ infarktı
- Pneumatosis Intestinalis



Triphasic CT in the diagnosis of acute mesenteric ischaemia

Nicola Schieda · Najla Fasih · Wael Shabana

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Abstract

Objective To evaluate the yield of each phase in a triphasic CT protocol used to diagnose acute mesenteric ischaemia (AMI).

Methods Retrospective analysis of patients who underwent CT to exclude AMI was conducted. From 218 patients, 80 were randomly selected for analysis: 39 with proven AMI; 41 controls. Three readers evaluated the studies; two readers were provided with only portions of the examination to determine the yield of unenhanced CT (NECT) and CT angiography (CTA). The diagnostic accuracy of CT findings was calculated and compared between readers.

Results The sensitivity and specificity of submucosal haemorrhage were 10 % and 98 %. Interobserver variability was poor ($\kappa=0.17$). All true-positive cases had other CT findings of AMI ($n=4$). There was no difference in the assessment of bowel enhancement between readers ($P<0.05$). There was no difference between readers ($P<0.05$) and interobserver variability was moderate to good when diagnosing arterial abnormalities without CTA. Sample size was small and errors occurred when using only the portal venous phase for this purpose.

Conclusion NECT is not required for diagnosis of AMI. Splanchnic arterial abnormalities can be diagnosed without CTA although errors occur when using only the portal venous phase for this purpose.

- *Multiphase CT multiplies the radiation dose when compared to single phase CT.*
- *Each phase in a multiphase CT examination should be independently validated.*
- *Unenhanced CT is not required for diagnosis of acute mesenteric ischaemia.*
- *CT angiography should be performed for diagnosis of acute mesenteric ischaemia.*

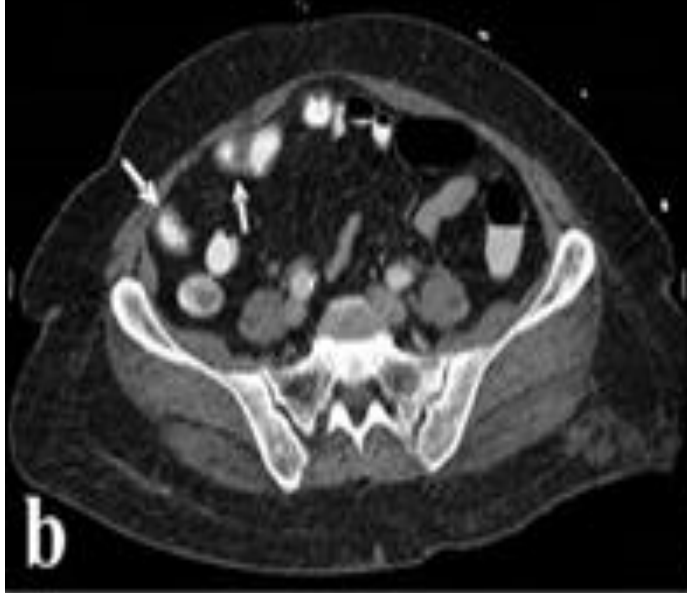
Keywords Computed tomography · Mesenteric ischaemia · Submucosal haemorrhage · Bowel enhancement · Radiation dose

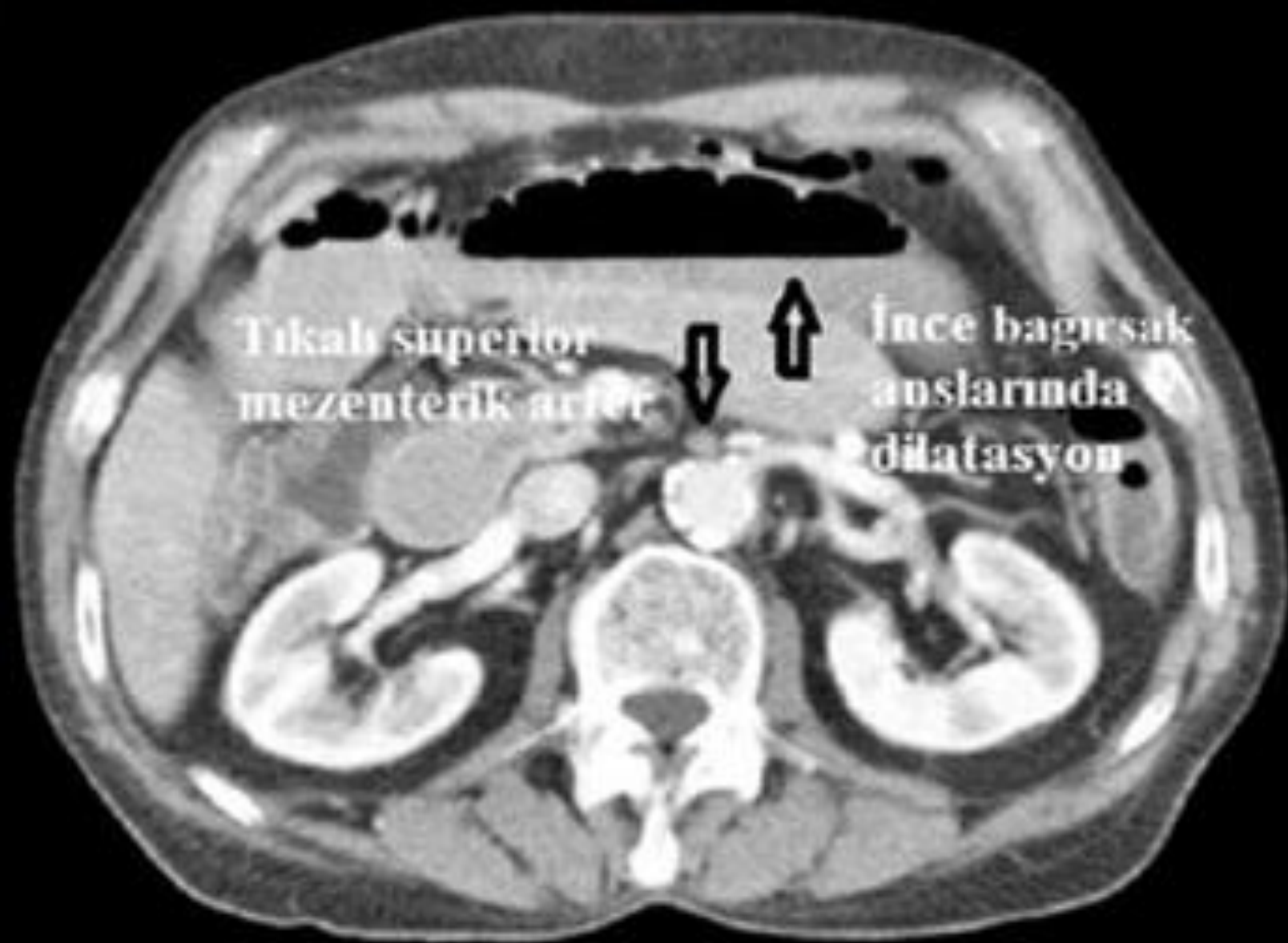
Abbreviations and acronyms

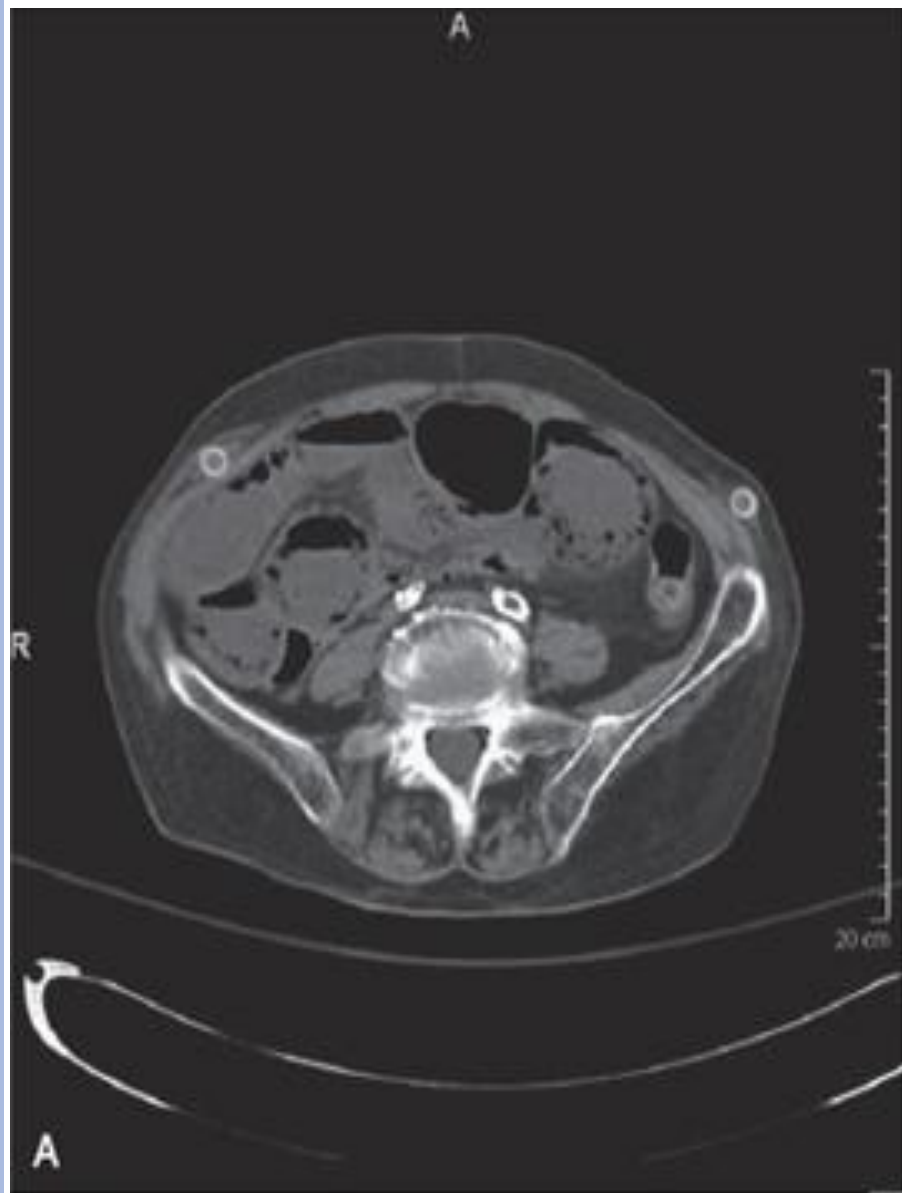
AMI	Acute mesenteric ischaemia
NECT	Unenhanced or non-enhanced CT
CTA	CT angiography
PVP	Portal venous phase
SMA	Superior mesenteric artery
IMA	Inferior mesenteric artery

Şüpheli mezenter iskemi durumlarında,
duyarlılığının yüksek olması nedeniyle birincil
görüntüleme yöntemi olarak BT tercih edilir









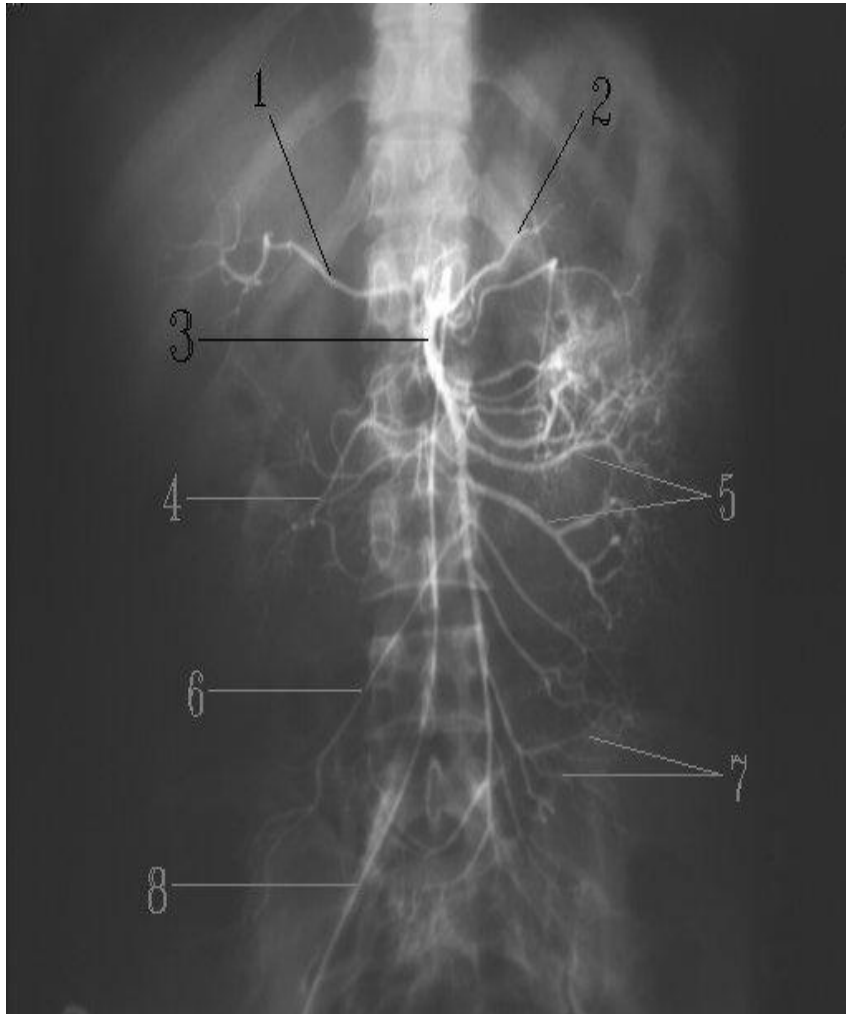
ANJİOGRAFİ

- Duyarlılık %64-100 , Özgüllük %100
- Altın standart
- Okluzyonun varlığını ve lokalizasyonunu göstermede en güvenli metod
- Tromboz, emboli ve nonokluziv mezenter iskemi ayırımı

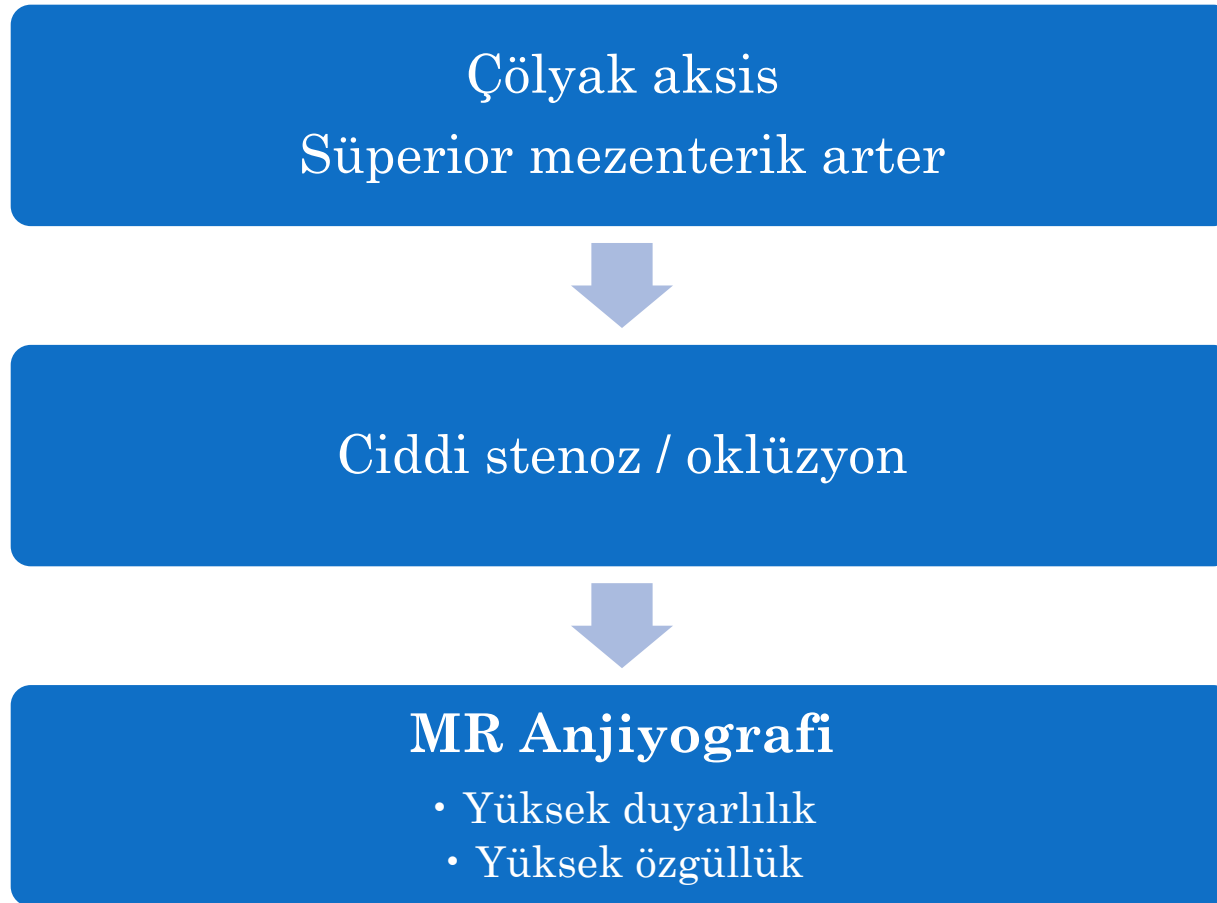
Clark RA, Gallant TE. Acute mesenteric ischemia:angiographic spectrum. *AJR Am JRoentgenol* 1984;142:555.

Barmase M, Kang M, Wig J, Kochhar R, Gupta R, Khandelwal N. Role of multidetector CT angiography in the evaluation of suspected mesenteric ischemia. *Eur J Radiol* 2011; **80**: e582-e587[PMID: 21993179 DOI: 10.1016/j.ejrad.2011.09.015]





MR ANJIOGRAFI



Meaney JF, Prince MR, Nostrant TT, Stanley JC. Gadolinium-enhanced MR angiography of visceral arteries in patients with suspected chronic mesenteric ischemia. J Magn Reson Imaging 1997;7:171.

ÖZET

Kardiyovasküler
komobidite

Fizik muayene
ile orantısız ağrı

AMİ ???

Ani başlangıçlı
karın ağrısı

Atrial
fibrilasyon

EAMİ ???



Hiperkoagülopati
öyküsü

Karın ağrısı

VAMİ ???

Riskli hasta
grubu

Ani
kötüleşme

NOMİ ???

Damar
manüplasyonu içeren
invaziv işlem

Açıklanmayan karın
ağrısı

AMİ ???



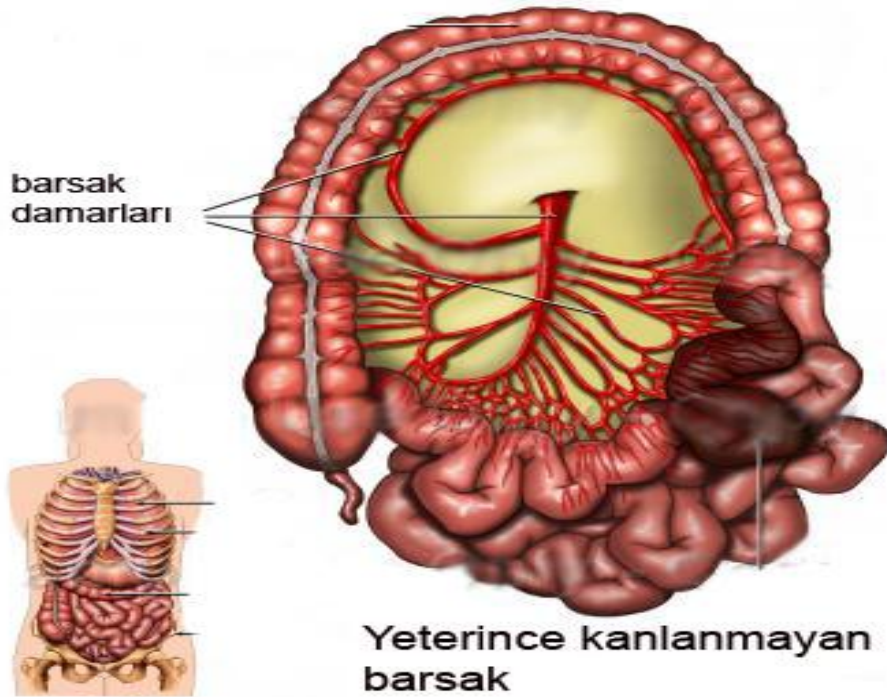
ÖNEMLİ NOTLAR

- Normal serum laktat seviyesi AMI dışlamaz
- Rutin laboratuvar testlerinden AMI prognozunda yararlanılır (tanı amaçlı kullanılmamalıdır)
- AMİ şüphesinde hızlıca IV kontrastlı BT
- NOMİ düşünülen durumlar hariç perkütan anjiyografi kullanılmamalıdır



ERKEN TANI!!!! ÖNEMLİ !!!!!

BARSAKTA AKUT İSKEMİ





ESTES guidelines: acute mesenteric ischaemia

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M. Ceolin³ · A. J. G. D'Almeida¹¹ · S. Hilario¹² · A. L. Olavarria¹³ · M. M. Ozmen¹⁴ ·
L. F. Pinheiro¹⁵ · M. Poeze¹⁶ · G. Triantos¹⁷ · F. T. Fuentes¹⁸ · S. U. Sierra¹⁹ ·
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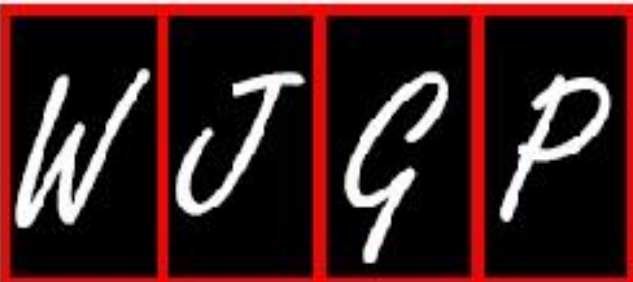
Abstract

Purpose Acute mesenteric ischaemia (AMI) accounts for about 1:1000 acute hospital admissions. Untreated, AMI will cause mesenteric infarction, intestinal necrosis, an overwhelming inflammatory response and death. Early intervention can halt and reverse this process leading to a full recovery, but the diagnosis of AMI is difficult and failure to recognize AMI before intestinal necrosis has developed is responsible for the high mortality of the disease.

Early diagnosis and prompt treatment are the goals of modern therapy, but there are no randomized controlled trials to guide treatment and the published literature contains a high ratio of reviews to original data. Much of that data comes from case reports and often small, retrospective series with no clearly defined treatment criteria.

Methods A study group of the European Society for Trauma and Emergency Surgery (ESTES) was formed in 2013 with the aim of developing guidelines for the management of AMI. A comprehensive literature search was performed using the Medical Subject Heading (MeSH)

Steering group: J. V. T. Tilsed, A. Casamassima, H. Kurihara, D. Mariani, I. Martinez, J. Pereira, L. Ponchietti, A. Shamiyeh.



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MINIREVIEWS

Mesenteric ischemia: Pathogenesis and challenging diagnostic and therapeutic modalities

Aikaterini Mastoraki, Sotiria Mastoraki, Evgenia Tziava, Stavroula Touloumi, Nikolaos Krinos, Nikolaos Danias, Andreas Lazaris, Nikolaos Arkadopoulos



Teşekkürler

