

KONTRAST NEFROPATİSİ VE BITMEYEN TARTIŞMA SF/ NAC/ NAHCO3



SIVAS CUMHURİYET ÜNİVERSİTESİ
Gölecekten Geleceğe



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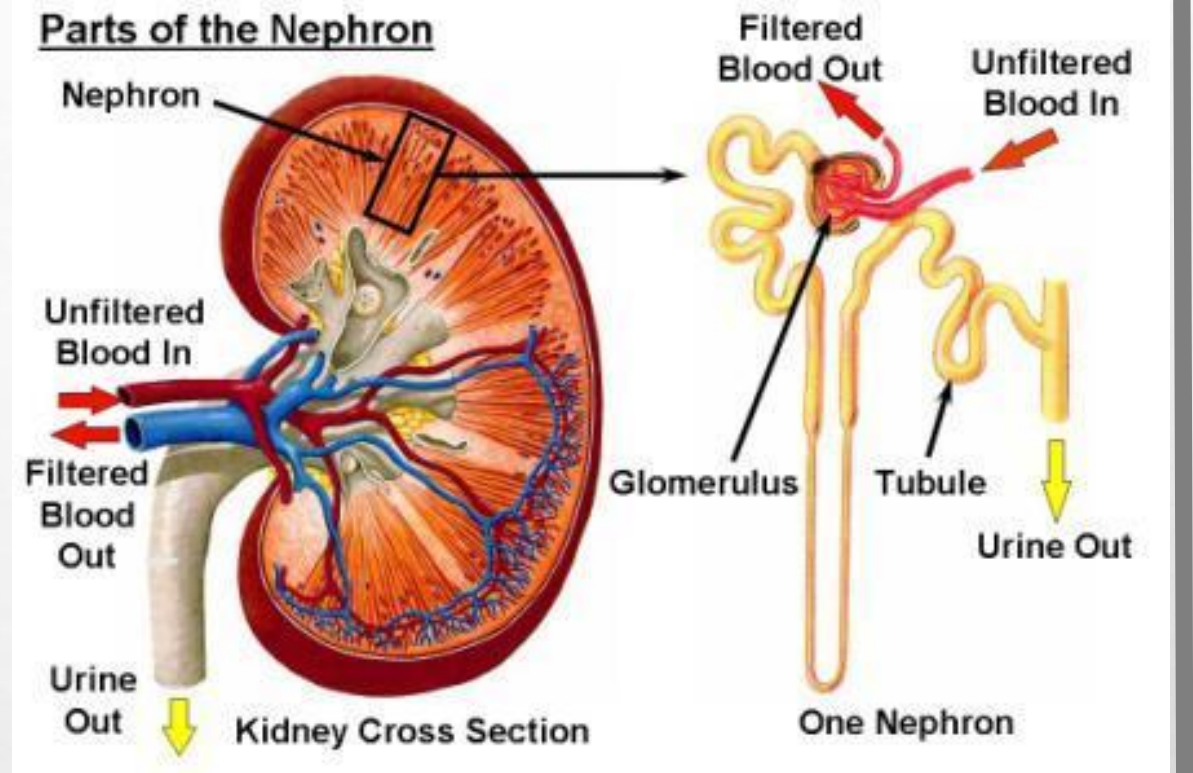


KONTRAST NEFROPATİSİ

- **I.V KONTRAST KULLANIMI SONRASI 48 SAAT**
- **SERUM KREATİNİN**
 - **0.5-1 MG/DL ↑**
 - **BAZAL KREATİNİN DEĞERİNİN %25-50 ↑**
- **İŞLEM SONRASI 6 SAAT TE IDRAR ÇIKIŞI <0.5 ML/KG/ SAAT**

PATOGENEZ

- REAKTİF OKSİJEN RADİKALLERİNİN DİREKT HASARI
- KONTRASTIN NEDEN OLDUĞU DİÜREZ
- ARTAN ÜRİNER VİZKOSİTE
- ARTAN OKSİJEN TÜKETİMİ
- VAZOKONSTRIKSİYON / VAZODİLATASYON DENGESİZLİĞİ
 - ENDOTELİN, ANJİYOTENSİN, VAZOPRESİN YÜKSEK
 - PROSTAGLANDİN VE NİTRİK OKSİT DÜŞÜK



RISK FAKTÖRLERİ

- **DAHA ÖNCEDEN RENAL HASTALIK MEVCUDİYETİ**
- **DIYABET**
- **YAŞ >75**
- **KRONİK KALP YETMEZLİĞİ**
- **HIPERTANSİYON**
- **HIPOVOLEMİ (DEHIDRATE HASTA)**
- **NEFROTOKSİN İLAÇ KULLANIMI (NSAİİ, AMİNOGLİKOZİDLER, SİKLOSPORİNLER)**
- **SİROZ**

ACILDE KREATİNİ YÜKSEK KN RISK VAR MI ???

- KREATİNİN DEĞERİNİN 1.2 MG/DL'NİN ÜZERİNDE OLDUĞU DURUMLARDA KONTRASTA BAĞLI NEFROPATİ GELİŞİMİNDE ARTIŞ OLDUĞU GÖSTERİLMİŞTİR.
- SERUM KREATİNİN DEĞERİNİN > 2 MG/DL KN SIKLIĞI %20 DÜZEYİNDE ↑
- DM OLAN HASTALARDA EĞER BÖBREK HASARI MEVCUT İSE RISK VARDIR.
- BÖBREK HASARI YOK İSE NORMAL POPÜLASYON İLE FARK SAPTANMAMIŞ.



NaHCO₃



SF



NAC



SERUM FİZYOLOJİK



Original Paper

A Randomized Prospective Trial to Assess the Role of Saline Hydration on the Development of Contrast Nephrotoxicity

Trivedi H.S.^a · Moore H.^b · Nasr S.^c · Aggarwal K.^c · Agrawal A.^b · Goel P.^c · Hewett J.^d

 Author affiliations

Keywords: Kidney failure, acute · Contrast therapy · Fluid therapy

Nephron Clin Pract 2003;93:c29–c34

<https://doi.org/10.1159/000066641>

- **KORONER ANJİOGRAFİ YAPILACAK 53 HASTA IV SALİN VE ORAL SIVI ALAN 2 GRUBA AYRILARAK İNCELENMİŞ**
- **IV SALİN 1/27(%3.7)**
- **ORAL SIVI 9/26 (%34.6) KN GÖRÜLMÜŞ**
- **KN ÖNLEMELİK İÇİN IV SALİN KULLANIMI ÖNERİLMİŞ.**

Risk Prediction of Contrast-Induced Nephropathy

Peter A. McCullough MD, MPH ^a ✉, Andy Adam MB, BS ^b, Christoph R. Becker MD ^c, Charles Davidson MD ^d, Norbert Lameire MD ^e, Fulvio Stacul MD ^f, James Tumlin MD ^g, CIN Consensus Working Panel

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<https://doi.org/10.1016/j.amjcard.2006.01.022>

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- **İŞLEM DEN 3-12 SAAT BAŞLANIP İŞLEM DEN SONRA 6-14 SAATE KADAR DEVAM EDEN İZOTONİK KRİSTALLOİDLERİN (1-1.5ML/KG/S) RİSK ALTINDAKİ HASTALARDA KN OLUŞMASINI AZALTTIĞINI BULMUŞLAR**



Articles

Prophylactic hydration to protect renal function from intravascular iodinated contrast material in patients at high risk of contrast-induced nephropathy (AMACING): a prospective, randomised, phase 3, controlled, open-label, non-inferiority trial

Estelle C Nijssen MSc ^a , Roger J Rennenberg MD ^b, Patty J Nelemans MD ^c, Brigitte A Essers PhD ^d, Marga M Janssen MSc ^a, Marja A Vermeeren PhD ^e, Vincent van Ommen MD ^e, Joachim E Wildberger MD ^a

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[https://doi.org/10.1016/S0140-6736\(17\)30057-0](https://doi.org/10.1016/S0140-6736(17)30057-0)

Get rights and content

- **GFR 30-59ML/DK/1.73M2 ARASINDA DEĞİŞEN 660 HASTA HIDRASYON YAPILAN (PRFOLAKTİK SALIN) VE YAPILMAYAN 2 GRUBA AYRILMIŞ**
- **SERUM KREATİNİN 45 MMOL/L ARTIŞ GÖRÜLENLER KN OLARAK KABUL EDILMIŞ**
- **HIDRASYON YAPILANLARDA KN INSIDANSI %2.6**
- **HIDRASYON VERILMEYENLERDE INSIDANS %2.7 BULUNMUŞ**

Coronary Artery Disease

Role of Hydration in Contrast-Induced Nephropathy in Patients Who Underwent Primary Percutaneous Coronary Intervention

Alfonso Jurado-Román MD  , Felipe Hernández-Hernández MD, Julio García-Tejada MD, Carolina Granda-Nistal MD, Javier Molina MD, Maite Velázquez MD, Agustín Albarrán MD, Juan Tascón MD

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<https://doi.org/10.1016/j.amjcard.2015.02.004>

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- **STEMI 408 HASTA İV HİDRASYON ALAN (N:204) ALMAYAN N:204) İKİ GRUBA AYRILMIŞ**
- **İV HİDRASYON ALAN GRUP 1ML/KG/SA İŞLEM BAŞLANGICINDAN İTİBAREN 24 SAAT İV SALIN**
- **İV SALIN 22/204 HASTA KN**
- **İV HİDRATE – 43/204 KN GÖRÜŞMÜŞ**
- **İV SALIN HİDRASYONU % 48.8 AZALTTIĞINI BULMUŞLAR**

ORIGINAL ARTICLES

Remedial Hydration Reduces the Incidence of Contrast-induced Nephropathy and Short-term Adverse Events in Patients with ST-segment Elevation Myocardial Infarction: A Single-center, Randomized Trial

Yu Luo, Xiaodong Wang, Zi Ye, Yan Lai, Yian Yao, Jimin Li, Xuebo Liu

[+](#) Author information

Keywords: [contrast-induced nephropathy](#), [ST-segment elevation myocardial infarction](#)

[JOURNALS](#)

[OPEN ACCESS](#)

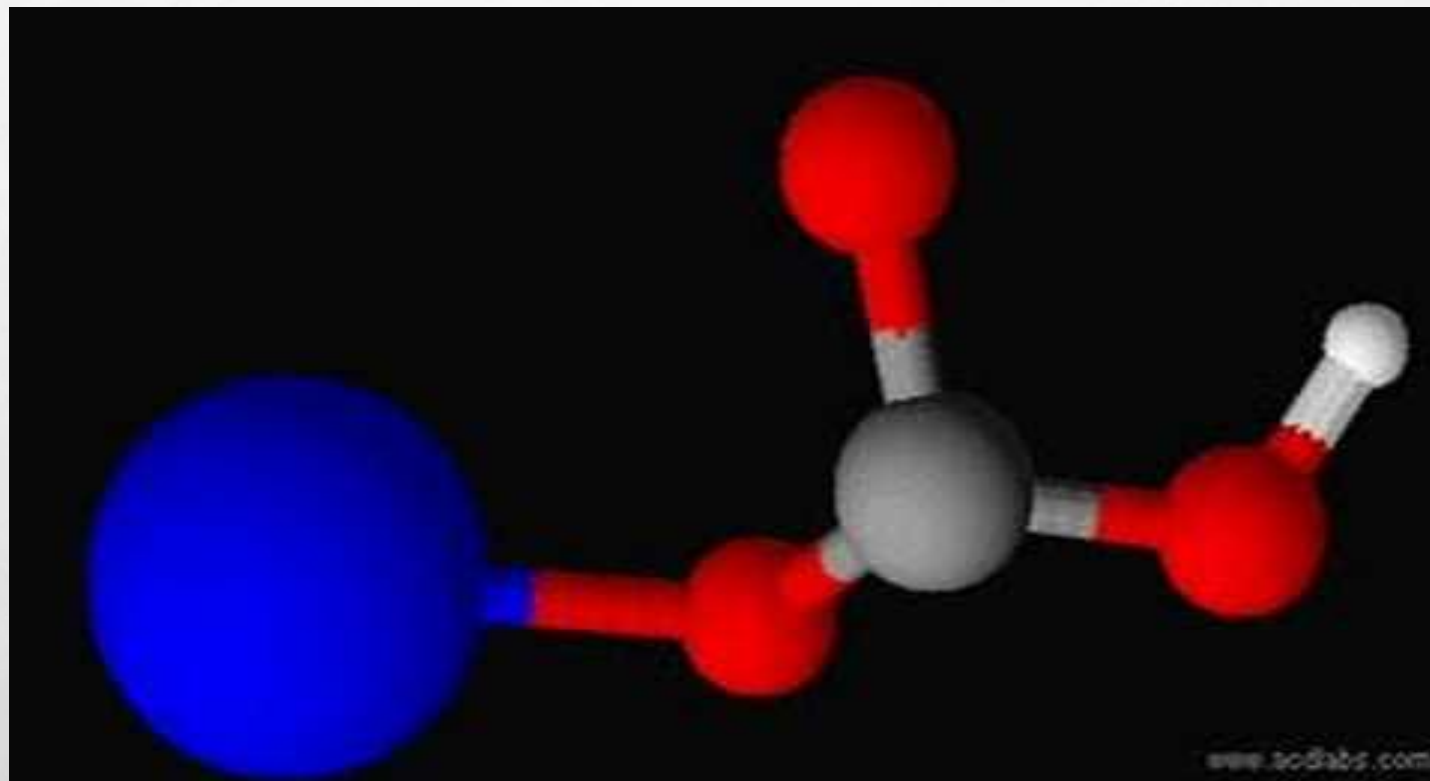
2014 Volume 53 Issue 20 Pages 2265-2272

[DOI](#)

<https://doi.org/10.2169/internalmedicine.53.1853>

- **STEMI 216 HASTA 2 GRUP 1 GRUP 1ML /KG/SA 12 SAAT HIDRASYON DIĞER GRUBA HIDRASYON YAPILMAMIŞ**
- **22/108 VS 38/108 KN GELİŞMİŞ**
- **SONUÇ OLARAK HIDRASYONUN KN GÖRÜLME RISKİNİ AZALTTIĞINI BULMUŞLAR.**

NaHCO₃



May 19, 2004

Prevention of Contrast-Induced Nephropathy With Sodium Bicarbonate A Randomized Controlled Trial

Gregory J. Merten, MD; W. Patrick Burgess, MD, PhD; Lee V. Gray, MD; et al

JAMA. 2004;291(19):2328-2334. doi:10.1001/jama.291.19.2328

- **119 HASTA KONTRAST ALMADAN ÖNCE NaCl VE NaHCO₃ ALAN İKİ GRUBA AYRILMIŞ HASTALARA İŞLEM ÖNCESİ 3 ML/KG BOLUS ARDINDAN 1ML/KG/SA 6 SAAT NaCl (N 59) YADA NaHCO₃ (N:60) VERİLMİŞ**
- **8/59 NaCl ALAN HASTADA KN**
- **1/60 NaHCO₃ ALAN HASTADA KN GÖRÜLMÜŞ**
- **NaHCO₃ İLE HİDRASYONUN KONTRAST NEFROPATİ PROFLAKSİSİ İÇİN ÖNEMLİ DENMİŞ**

Coronary artery disease

Comparison of Usefulness of Sodium Bicarbonate Versus Sodium Chloride to Prevent Contrast-Induced Nephropathy in Patients Undergoing an Emergent Coronary Procedure

Masaharu Masuda MD ^a✉, Takahisa Yamada MD, PhD ^a, Takanao Mine MD, PhD ^a, Takashi Morita MD, PhD ^a, Shunsuke Tamaki MD ^a, Yasumasa Tsukamoto MD ^a, Keiji Okuda MD ^a, Yuusuke Iwasaki MD ^a, Masatsugo Hori MD, PhD ^b, Masatake Fukunami MD, PhD ^a

- **ACIL ANJIOGRAFI PLANLANAN 59 HASTA ÇALIŞMAYA ALINMIŞ**
- **NaCl(N: 29) VE NaHCO₃ (N:30) 2 ALAN 2 GRUBA AYRILMIŞ. İŞLEMDEN 1 SAAT ÖNCE 3ML/KG/SA SONRASINDA 6 SAAT 1ML/KG/SA HİDRATE EDİLMİŞLER**
- **NaHCO₃ %7 NaCl %35 KREATİNİN KONSANTRASYONU %25 ARTIŞ GÖRÜLMÜŞ.**
- **NaHCO₃ LI HİDRASYONUN NaCl GÖRE KN ÖNLEMEDE DAHA İYİ SAPTANMIŞ.**

Outcomes after Angiography with Sodium Bicarbonate and Acetylcysteine.

[Weisbord SD](#), [Gallagher M](#), [Jneid H](#), [Garcia S](#), [Cass A](#), [Thwin SS](#), [Conner TA](#), [Chertow GM](#), [Bhatt DL](#), [Shunk K](#), [Parikh CR](#), [McFalls EO](#), [Brophy M](#), [Ferguson R](#), [Wu H](#), [Androsenko M](#), [Myles J](#), [Kaufman J](#), [Palevsky PM](#); [PRESERVE Trial Group](#).

- **5177 HASTA ANJIOGRAFI ÖNCESİ İV %1.26 NAHCO₃ YADA %0.9 NACL MAYI DESTEĞİ SAĞLANIYOR.**
- **NAHCO₃ ALAN 110/2511 KN**
- **NACL ALAN 116/ 2482 HASTA KN GELİŞİYOR**
- **ANLAMLI BİR FARK BULUNMAMIŞ.**

Table 1.

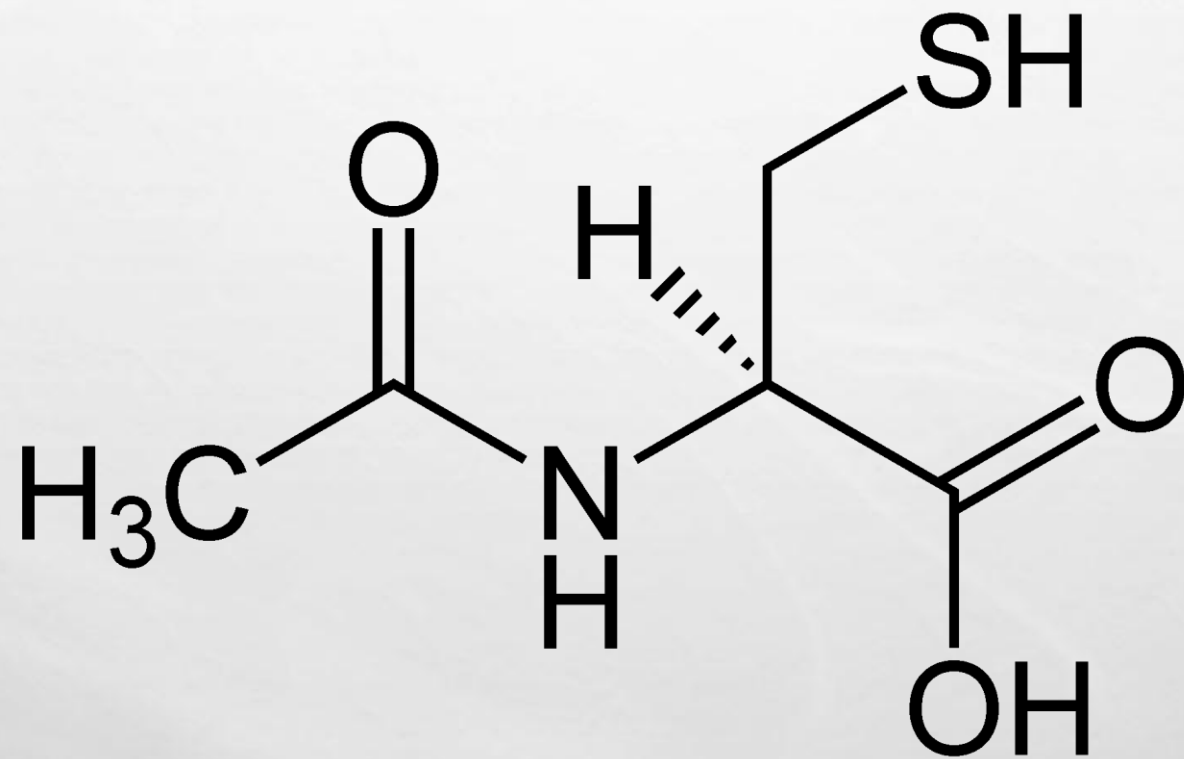
Clinical trials comparing IV bicarbonate with IV saline

Authors	Sample Size (N)	Diabetes (%)	Baseline SCr (mg/dl)	Primary Outcome	CI-AKI (%)		Prespecified Effect Size (%) ^a
					Bicarbonate Arm	Saline Arm	
Positive studies							
Briguori <i>et al.</i> (5)	219	52	2.0	↑ SCr ≥25%	1.9	9.9	86
Masuda <i>et al.</i> (6)	59	31	1.3	↑ SCr ≥0.5 mg/dl or ≥25%	6.6	34.5	85
Merten <i>et al.</i> (7)	119	48	1.7–1.9	↑ SCr ≥25%	1.7	13.6	66
Ozcan <i>et al.</i> (9)	176	45	1.4	↑ SCr ≥0.5 mg/dl or ≥25%	4.2	16.6	NR
Pakfetrat <i>et al.</i> (10)	192	30	1.1	^b	4.2	12.5	NR
Recio-Mayoral <i>et al.</i> (11)	111	30	1.0	↑ SCr ≥0.5 mg/dl	1.8	21.8	85
Maioli <i>et al.</i> (18) ^c	450	21	1.1	↑ SCr ≥0.5 mg/dl or ≥25%	12	22.7	50
Motohiro <i>et al.</i> (8) ^d	155	58	1.5	↑ SCr ≥0.5 mg/dl or ≥25%	2.6	13	87
Negative studies							
Adolph <i>et al.</i> (13)	145	34	1.5–1.6	↑ SCr ≥0.5 mg/dl or ≥25%	4.2	2.7	87
Brar <i>et al.</i> (14)	353	44	1.5	↓ eGFR ≥25%	13.3	14.6	66
Maioli <i>et al.</i> (12) ^c	502	24	1.2	↑ SCr ≥0.5 mg/dl	10	11.5	50
Vasheghani <i>et al.</i> (20) ^b	265	22	1.6–1.6	↑ SCr ≥0.5 mg/dl or ≥25%	7.4	5.9	71
Lee <i>et al.</i> (17)	382	65	1.5	↑ SCr ≥0.5 mg/dl or ≥25%	9.0	5.3	80
Briguori <i>et al.</i> (15) ^c	292	70	1.8	↑ SCr ≥0.3 mg/dl	20.5	11	60
Shavit <i>et al.</i> (19) ^c	87	44	1.8–1.9	↑ SCr ≥0.3 mg/dl or ≥25%	9.8	8.4	67
Rosenstock <i>et al.</i> (21)	142	51	1.7	↑ SCr ≥0.5 mg/dl or ≥25%	NR	NR	75
Castini <i>et al.</i> (16) ^c	156	27	1.5–1.6	↑ SCr ≥25%	14	15	85

IV, intravenous; SCr, serum creatinine; CI-AKI, contrast-induced AKI; NR, not reported; eGFR, estimated GFR.

^aAssumed effect size of bicarbonate.^bThree definitions of CI-AKI assessed; differences between bicarbonate and saline based on ↑ SCr ≥0.3 mg/dl.^cDiffering regimens of bicarbonate and saline.

N ASETIL SISTEIN



ORIGINAL ARTICLE

Prevention of Radiographic-Contrast-Agent–Induced Reductions in Renal Function by Acetylcysteine

Martin Tepel, M.D., Marcus van der Giet, M.D., Carola Schwarzfeld, Ulf Laufer, M.D., Dieter Liermann, M.D., and Walter Zidek, M.D.

Article Figures/Media

26 References 990 Citing Articles

July 20, 2000

N Engl J Med 2000; 343:180-184

DOI: 10.1056/NEJM200007203430304

- **KONTRAST NEFROPATİSİ (KN) RISKİ TAŞIYAN DÜŞÜK OZMALİTELİ NON İYONİK KONTRAST VERİLEREK BT ÇEKİLECEK**
- **83 HASTAYA %0.45 NACL YADA NAC + %0.45 NACL VERİLMİŞ**
- **NAC+ GRUPTA 1/41 KN , NAC- 9/42 KN SERUM KREATİNİNİNDE 44 MEQ /L ARTIŞ**

✓ Prevention of Contrast-Induced AKI: A Review of Published Trials and the Design of the Prevention of Serious Adverse Events following Angiography (PRESERVE) Trial

Steven D. Weisbord, Martin Gallagher, James Kaufman, Alan Cass, Chirag R. Parikh, Glenn M. Chertow, Kendrick A. Shunk, Peter A. McCullough, Michael J. Fine, Maria K. Mor, Robert A. Lew, Grant D. Huang, Todd A. Conner, Mary T. Brophy, Joanne Lee, Susan Soliva and Paul M. Palevsky

CJASN September 2013, 8 (9) 1618-1631; DOI: <https://doi.org/10.2215/CJN.11161012>

- **15 ÇALIŞMA DA NAC İN POZİTİF ETKİLERİNİN OLDUĞU**
- **21 ÇALIŞMADA NAC ETKİSİNİN SAPTANMADIĞI YADA NEGATİF OLDUĞUNU**



[Exp Ther Med](#). 2017 Aug; 14(2): 1568–1576.

Published online 2017 Jun 27. doi: [10.3892/etm.2017.4678](#)

PMCID: PMC5525578

PMID: [28810622](#)

Oral N-acetylcysteine for prophylaxis of contrast-induced nephropathy in patients following coronary angioplasty: A meta-analysis

[Jing-Xiu Li](#), [En-Ze Jin](#), [Long-Hao Yu](#), [Yang Li](#), [Nan-Nan Liu](#), [Yu-Mei Dong](#), [Xin Li](#), and [Xue-Qi Li](#)

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- 4.000'DEN FAZLA HASTAYI KAPLAYAN TOPLAM 19 KLINİK ÇALIŞMA DEĞERLENDİRİLMİŞ
- ORAL NAC KN PROFİLAKSİSİ İÇİN ETKİLİ BİR STRATEJİ OLMADIĞI SONUCUNA VARILDI.

BONUSSSSS



STATINLER..

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[Medicine \(Baltimore\)](#). 2017 Jul; 96(27): e7384.

PMCID: PMC5502163

Published online 2017 Jul 7. doi: [10.1097/MD.00000000000007384](https://doi.org/10.1097/MD.00000000000007384)

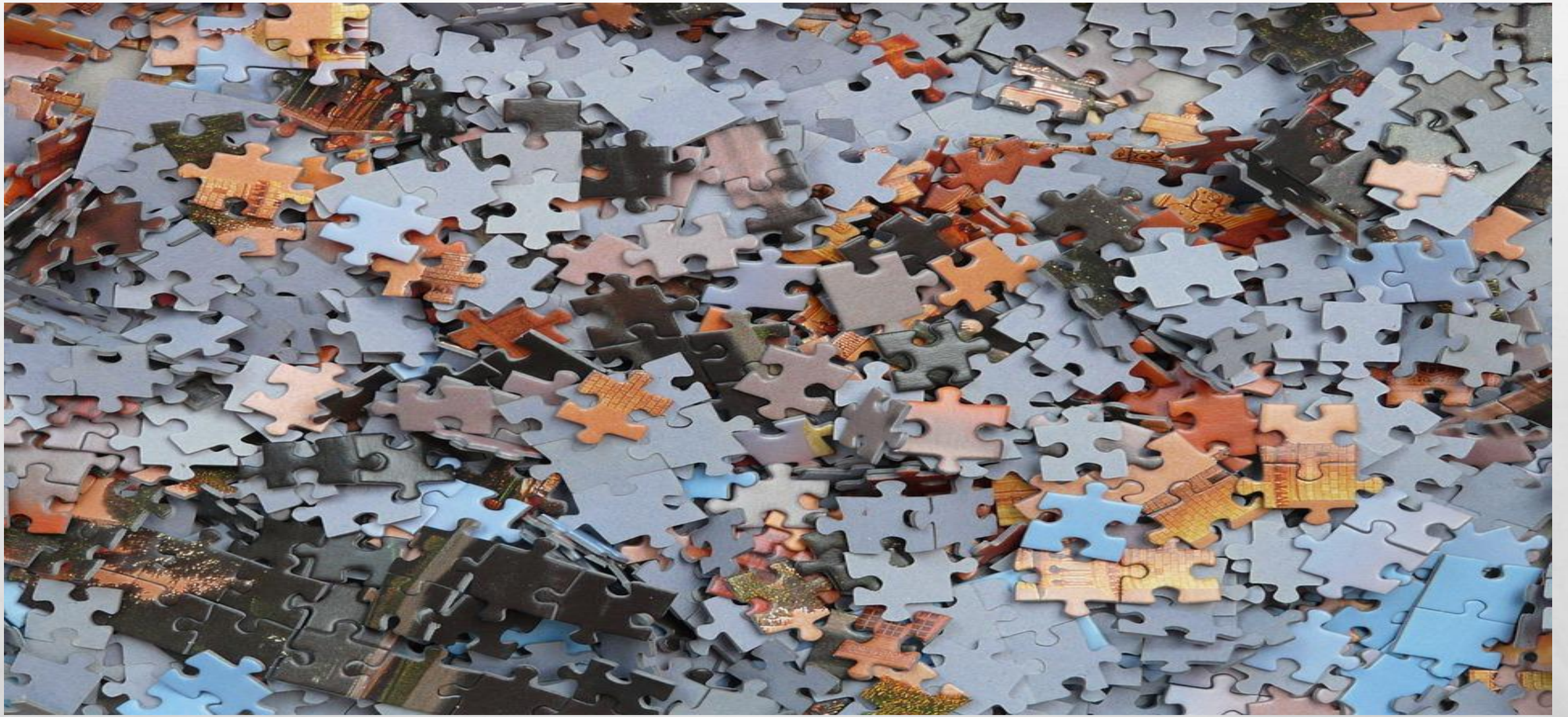
PMID: [28682890](https://pubmed.ncbi.nlm.nih.gov/28682890/)

Efficacy of short-term moderate or high-dose rosuvastatin in preventing contrast-induced nephropathy

A meta-analysis of 15 randomized controlled trials

[Min Liang](#), BS,^a [Shicheng Yang](#), MD,^b and [Naikuan Fu](#), MD^{b,*}

- BU META-ANALİZ, ORTA VEYA YÜKSEK DOZ ROSUVASTATİN TEDAVİSİNİN, PCI UYGULANAN HASTALARDA KN INSİDANSINI AZALTABİLECEĞİNİ GÖSTERMİŞTİR.



[Int J Nephrol](#). 2018; 2018: 5727309.

Published online 2018 May 2. doi: [10.1155/2018/5727309](#)

PMCID: PMC5954945

PMID: [29854458](#)

Contrast-Induced Nephropathy: Update on the Use of Crystalloids and Pharmacological Measures

[D. Patschan](#), [I. Buschmann](#), and [O. Ritter](#)

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- **. CRYSTALLOIDS VERSUS NO CRYSTALLOIDS**
- **SODIUM CHLORIDE VERSUS SODIUM BICARBONATE**
- **ORAL VERSUS INTRAVENOUS VOLUME ADMINISTRATION**
- **N-ACETYLCYSTEINE (ACC)**
- **. OTHER DRUGS**
 - **ASCORBIC ACID**
 - **FENOLDOPAM**
 - **PROBUCOL**
 - **PROSTAGLANDINS**
 - **STATINS**
 - **THEOPHYLLINE**

SONUÇ

- **KN NEFROPATISI RISKİ OLAN HASTALARDA PROFLAKTİK HİDRASYON**
- **HİDRASYON İV YAPILMALIDIR**
- **NaCl VE NaHCO₃ UYGULANABİLİR.**
- **GFR<30 İSE PROFLAKTİK ÖNLEMLER ALINMALI GFR30-60 İSE EK RİSKLER GÖZDEN GEÇİRİLMELİDİR.**
- **NaC EXTRADAN UYGULANABİLİR.**
- **YÜKSEK DOZ STATİNLER UYGULANABİLİR.**
- **PROBUCOL, PROSTAGLANDİNLER, TOKOFEROL VE TRİMETAZİDİN, KN YÖNETİMİNDE YENİ ADAYLARDIR. KESİN BİR ŞEY DEMEK ZOR**
- **ASKORBİK ASİT, TEOFİLİN VE FENOLDOPAM MODASI GEÇMİŞ İLAÇLARDIR.**
- **İŞLEM ÖNCESİ VE İŞLEM SONRASI DİYALİZ ETKİSİ OLMAYAN UYGULAMALARDIR.**



TEŞEKKÜRLER