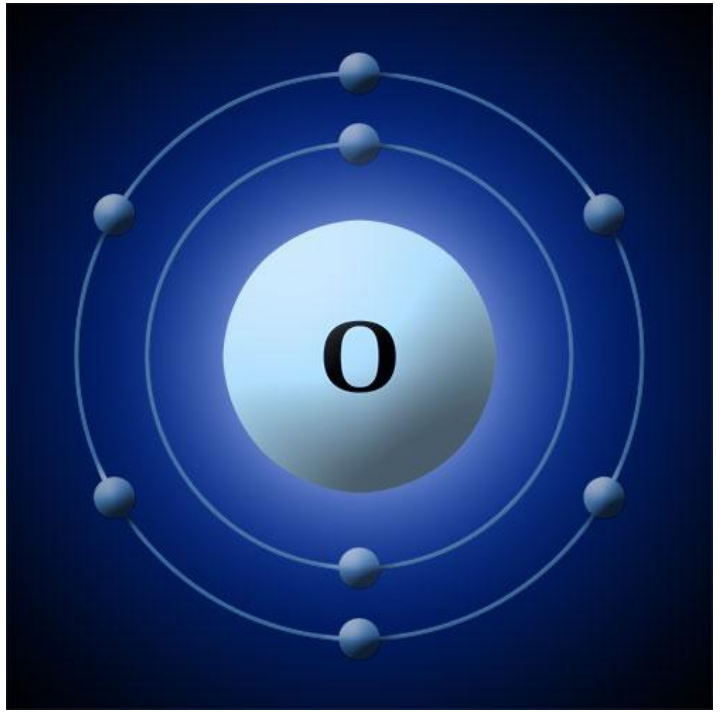
HİPEROKSİ; OKSİJENE DİKKAT

Dr. Öğr. Üyesi Abdullah Osman KOÇAK
Atatürk Üniversitesi Tıp Fakültesi
Acil Tıp Anabilim Dalı
ERZURUM

Oksijen



- Simgesi O_2
- Atom sayısı 8
- Atom ağırlığı yaklaşık 16
- Yoğunluğu 1,105
- Havada beşte bir oranında bulunan
- Rengi, kokusu, tadı olmayan
- Hidrojenle birleşerek suyu oluşturan bir gaz

Oksijen Tedavisi

- Deniz seviyesinde 760 mmHg'lık basınca(=1 atm) sahip olan havanın yaklaşık %21'i O2'dir(FiO2)
- Oksijen tedavisi, hastaya oda havasında bulunan oksijen miktarından daha yüksek konsantrasyonda oksijen uygulanması olarak tanımlanabilir

Oksijen Tedavisi

Oksijen Tedavisi

- Hipoksemi pO2<80 mmhg
- Hipoksi
- Akut tedavi
- Kronik tedavi

https://www.toraks.org.tr/uploadFiles/book/file/1342011181228-1218.pdf

Oksijen Tedavisi

Akut tedavi Kesin Endikasyonlar

- Akut Hipoksemi (PaO_2<60 mmHg, SaO_2<%90)
- Kardiyak ve solunum arrest
- Hipotansiyon (sistolik kan basıncı<100 mmHg)
- Düşük kardiyak output ve metabolik asidoz(bikarbonat <18mmol/L)
- Respiratuar distres (solunum hızı>24/dk)

Rölatif Endikasyon

- Hipoksemi olmaksızın dispne

Özlü. T, Çiledaş A., Kaya A. Oksijen Tedavisi ve Diğer Solunumsal Tedaviler: Solunum Sistemi Hastalıkları. Ed. Özlü T, Metintaş M, Karadaş M, Kaya A. istanbul Tıp Kitabevi, 2010; 1861-74.

Oksijen Tedavisi

Uzun Süreli Oksijen Tedavisi Endikasyonlar

- Hiperkapnik olsun ya da olmasın $PaO_2 < 55$ mmHg veya $SaO_2 < \%88$ olması
- $PaO_2 < 55$-60 mmHg ve/veya $SaO_2 < \%89$ ve aşağıdaki durumlardan birinin varlığı

➢ Pulmoner hipertansiyon

➢ Polisitemi (hematokrit >%55)

➢ Periferik ödem

➢ Kalp yetersizliği

Özlü. T, Çiledaş A., Kaya A. Oksijen Tedavisi ve Diğer Solunumsal Tedaviler: Solunum Sistemi Hastalıkları. Ed. Özlü T, Metintaş M, Karadaş M, Kaya A. istanbul Tıp Kitabevi, 2010; 1861-74.

Oksijen Verme Yöntemleri

- Nazal kanül
- Basit yüz maskesi
- Rezervuarlı yüz maskesi

Akım hızı(L/dk)	FiO2
NAZAL KANÜL	
1	24
2	28
3	32
4	36
5	40
6	44
BASİT YÜZ MASKESİ	
5-6	40
6-7	50
7-8	60
REZERVUARLI MASKE	
7	65
8-10	70-85

Oksijen Tedavisinin Monitörizasyonu

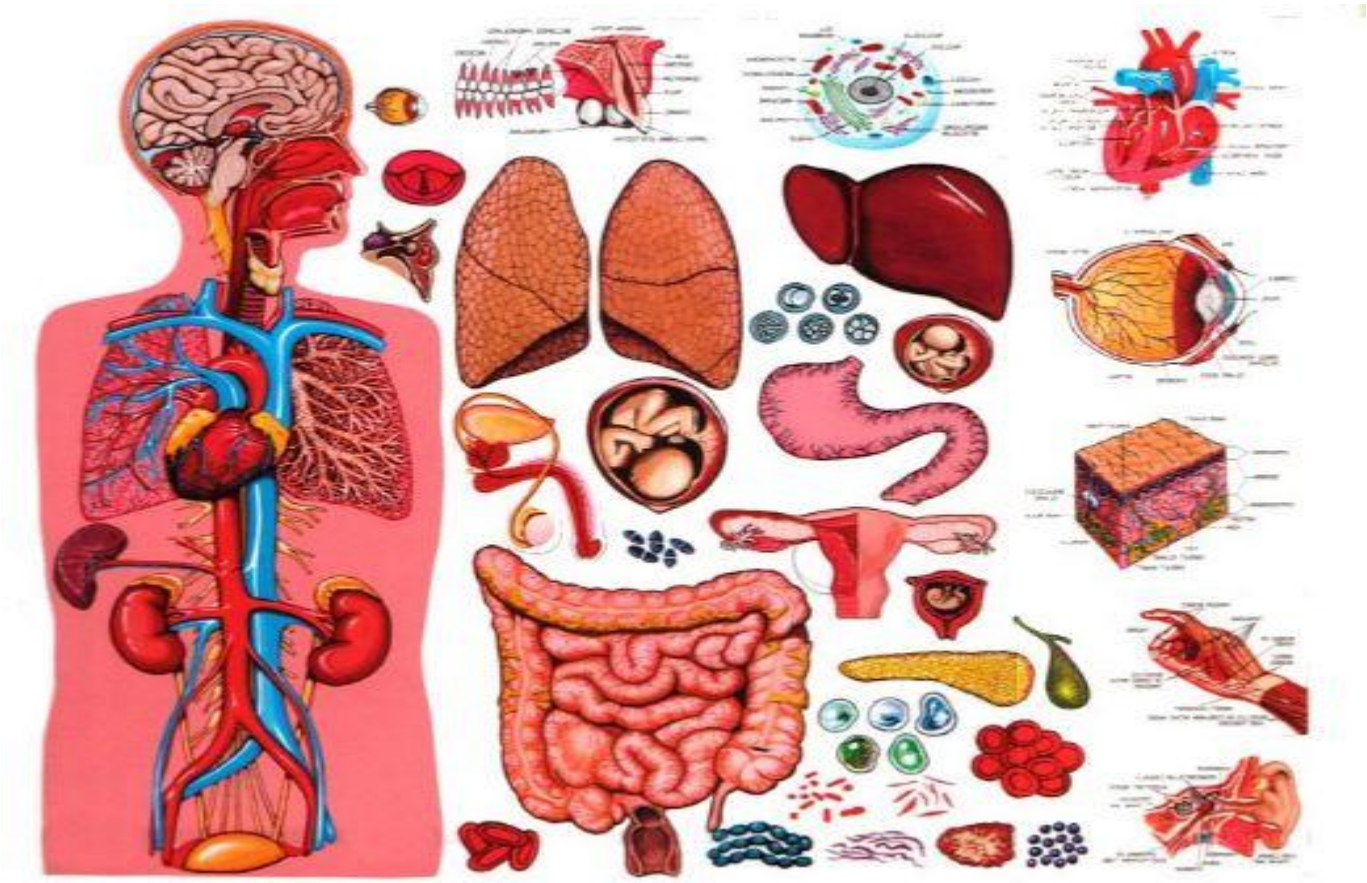
- Pulse oksimetre
- Arter Kan Gazı

Oksijen Tedavisinin Sonlandırılması

Oksijen Tedavisinin Tehlikeleri

Oksijen Tedavisinin Tehlikeleri

- %50-84
- İstenmeyen etki



Helmerhorst HJ, Schultz MJ, van der Voort PH, et al. Self-reported attitudes versus actual practice of oxygen therapy by ICU physicians and nurses. Ann Intensive Care 2014; 4: 23.

Oksijen Tedavisinin Tehlikeleri

- Sitotoksik Etki
- Serbest Oksijen Radikalleri

➢ Hücre membran ve organallerinde hasara yol açan lipit peroksidasyon

➢Transport proteinlerinde denatürasyon

➢Hücre bölünme ve büyümesinde inhibisyon

➢Surfaktan inaktivasyonu

➢DNA değişiklikleri

Beers MF. Oxygen Therapy and Pulmonary Oxygen Toxicity. In: Fishman's Pulmonary Diseases and Disorders. McGrawHill Companies; 2008; 149: 2613-29.

Oksijen Tedavisinin Tehlikeleri

- Pulmoner
- Santral Sinir Sistemi
- Vazokonstriksiyon

Helmerhorst HJ, Schultz MJ, van der Voort PH, et al. Self-reported attitudes versus actual practice of oxygen therapy by ICU physicians and nurses. Ann Intensive Care 2014; 4: 23.

Oksijen Toksisitesi Klinik Semptomları

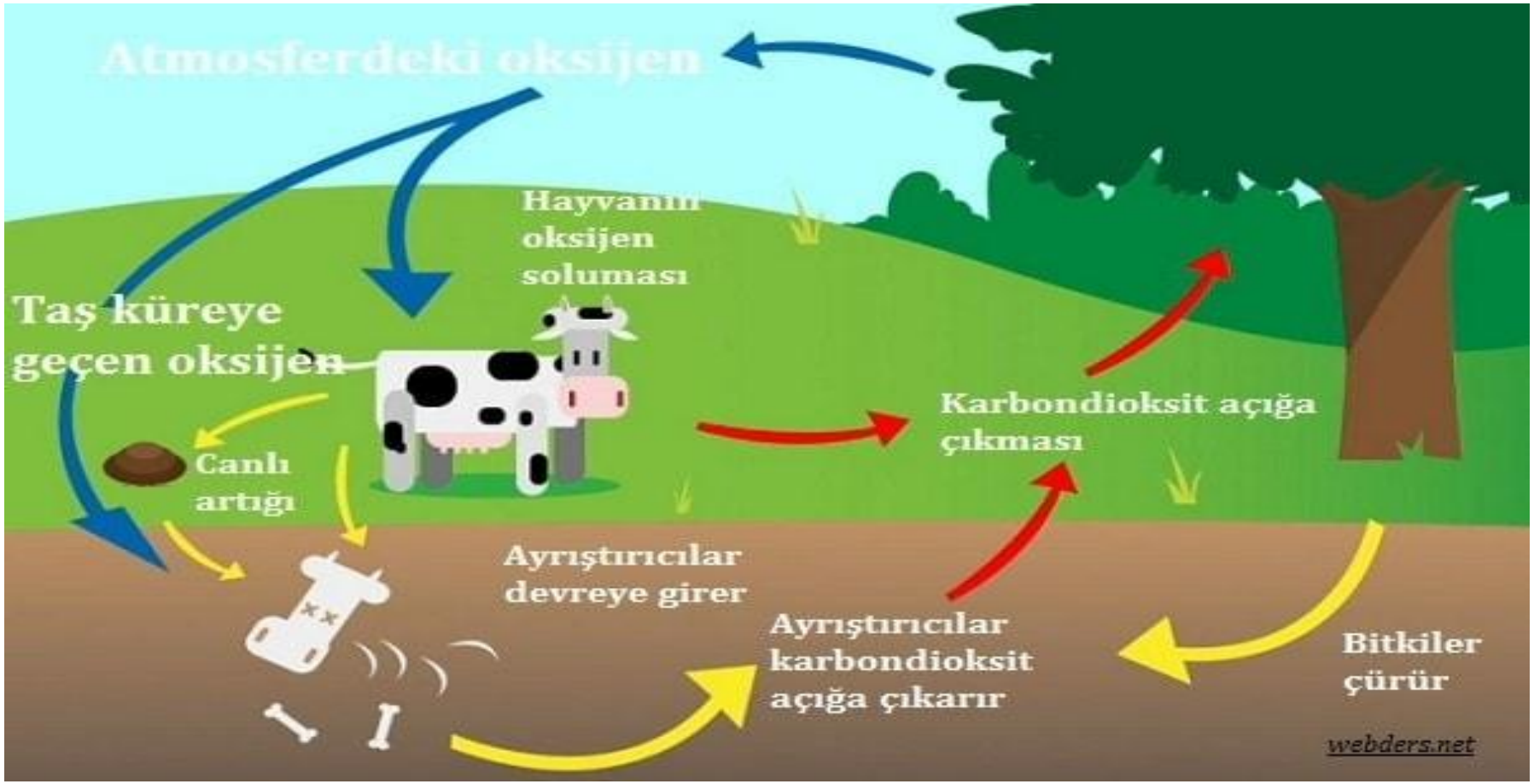
- Substernal ağrı, stres
- Öksürme
- Derin nefes alma alma ihtiyacı, dispne
- Göz irritasyon, konjonktivit
- Kulak ağrısı
- Baş dönmesi
- Kas ağrıları, kramp

Oksijen Toksisitesi Klinik Semptomları

- Pulmoner konjesyon, ödem
- Trekeabronşit
- Sekresyonlarda artma
- Ventilasyon perfüzyon oranında değişme
- Eritropoezde azalma

Oksijen Tedavisi

- 1885
- %34
- %25
- %15



O'Driscoll BR, Howard LS, Earis J, Mak V, British Thoracic Society Emergency Oxygen Guideline Group, BTS Emergency Oxygen Guideline Development Group. BTS guideline for oxygen use in adults in healthcare and emergency settings. Thorax 2017; 72 (suppl 1):ii1–90

Ambulansta Oksijen Tedavisi

- SpO2>90
- Hiperkapni

Murphy R, Mackway-Jones K, Sammy I, et al. Emergency oxygen therapy for the breathless patient. Guidelines prepared by North West Oxygen Group. Br Med J 2001; 18: 421-3..

Acil Serviste Oksijen Tedavisi

- Solunum sayısı artmış veya siyonuzu olan hasta
- Akut akciğer yaralanması
- Azalmış ventilasyon
- Önemli organlara oksijen dağılımı kötü ise geri solumasız rezervuarlı maskeler aracılığı ile verilebilir
- CO2 retansiyonu-venturi maskesi ile %24-28 oranında

Madison JM, Irwin RS. Chronic obstructive pulmonary disease. Lancet 2008; 9126: 467-73..

Akut Astımda Oksijen Tedavisi

- FiO2’nin %24 olarak verilmeli

Chien JW, Ciufo R, Novak R, et al. Uncontrolled oxygen administration and respiratory failure in acute asthma. Chest 2000; 117: 728-33.

KOAH Akut Atağı ve Oksijen Tedavisi

- PaO2>50 mmHg
- Fio2 24 veya FiO2 28(venturi maske veya nazal kanül)
- **CO2 retansiyonu korkusunun hipokseminin düzeltilmesini engellememeli**

Bone RC, Pierce AK, Johnson RL. Controlled oxygen administration in acute respiratory failure in chronic obstructive pulmonary disease: A reappraisal. Am J Med 2008; 65: 896-902. 23.
Murphy R, Driscoll P, O'Driscoll R. Emergency oxygen therapy for the COPD patient. Br Med J 2001; 18: 333-9. 24.
Kızkın Ö, Hacıevliyagil SS, Günen H, Yoloğlu S. Kronik obstrüktif akciğer hastalığının akut atağında reversibl hiperkapni. Solunum Hastalıkları 2002; 13: 177-83. .

Egzersiz ve Akut Oksijen Tedavisi

- Kronik Akciğer hastalığı önerilir.
- Egzersiz kapasitesi %30-50 artış

Barnes PJ. (çeviri: Aker A). Kronik Obstruktif Akciğer Hastalığına Yaklaşım. İstanbul: Turgut Yayıncılık, 2000: 35-49.

Karbonmonoksit Zehirlenmesinde Oksijen Tedavisi

- Hiperbarik Oksijen Tedavisi

Uçak Yolculuğu ve Oksijen Tedavisi

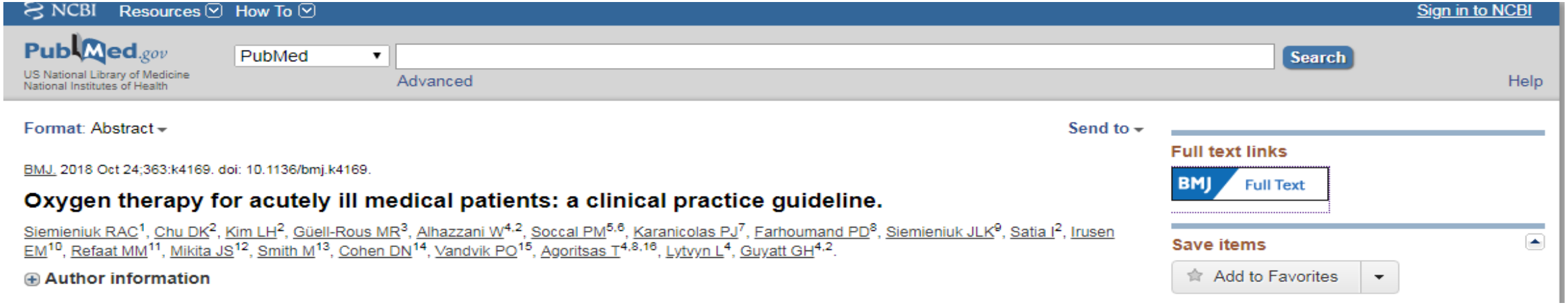
- PaO2 70 mmHg
- PaO2 50 mmHg
- Nazal kanül

Erdinç M. Kronik obstruktif akciğer hastalığı ve uçak yolculuğu. Umut S, Erdinç E (editörler). Kronik Obstruktif Akciğer Hastalığı. İstanbul: Turgut Yayıncılık ve Tic AŞ, 2000: 261-6..

Girişimsel işlemler ve Oksijen Tedavisi

- Spo2>90

McCain TW, Dunagan DP, Adair NE, Chin R. Prospective randomized trial comparing oxygen administration during nasal flexible bronchoscopy. Chest 2001; 120: 1671-4.



Kılavuzda akut medikal hastalarda O2 saturasyonunun (SaO2), O2 alan hastalarda 96 ve altında tutulması öneriliyor. (karbonmonoksit zehirlenmesi, küme tipi baş ağrısı, orak hücre krizi ve pnömotoraks hariç)

Akut inme ya da akut miyokard infarktüsünde SaO2 ≥93 olan hastalara O2 verilmesine gerek yoktur.

Air Versus Oxygen in ST-Segment–Elevation Myocardial Infarction

Dion Stub, MBBS, PhD; Karen Smith, BSc, PhD; Stephen Bernard, MBBS, MD; Ziad Nehme, BEmergHlth(Pmedic); Michael Stephenson, RN, BHlthSc, Grad Dip (MICA); Janet E. Bray, RN, PhD; Peter Cameron, MBBS, MD; Bill Barger, MACAP; Andris H. Ellims, MBBS, PhD; Andrew J. Taylor, MBBS, PhD; Ian T. Meredith, BSc, MBBS, PhD; David M. Kaye, MBBS, PhD; on behalf of the AVOID Investigators*

Background—Oxygen is commonly administered to patients with ST-elevation–myocardial infarction despite previous studies suggesting a possible increase in myocardial injury as a result of coronary vasoconstriction and heightened oxidative stress.

Methods and Results—We conducted a multicenter, prospective, randomized, controlled trial comparing oxygen (8 L/min) with no supplemental oxygen in patients with ST-elevation–myocardial infarction diagnosed on paramedic 12-lead ECG. Of 638 patients randomized, 441 patients had confirmed ST-elevation–myocardial infarction and underwent primary end-point analysis. The primary end point was myocardial infarct size as assessed by cardiac enzymes, troponin I, and creatine kinase. Secondary end points included recurrent myocardial infarction, cardiac arrhythmia, and myocardial infarct size assessed by cardiac magnetic resonance imaging at 6 months. Mean peak troponin was similar in the oxygen and no oxygen groups (57.4 versus 48.0 μg/L; ratio, 1.20; 95% confidence interval, 0.92–1.56; P=0.18). There was a significant increase in mean peak creatine kinase in the oxygen group compared with the no oxygen group (1948 versus 1543 U/L; means ratio, 1.27; 95% confidence interval, 1.04–1.52; P=0.01). There was an increase in the rate of recurrent myocardial infarction in the oxygen group compared with the no oxygen group (5.5% versus 0.9%; P=0.006) and an increase in frequency of cardiac arrhythmia (40.4% versus 31.4%; P=0.05). At 6 months, the oxygen group had an increase in myocardial infarct size on cardiac magnetic resonance (n=139; 20.3 versus 13.1 g; P=0.04).

Conclusion—Supplemental oxygen therapy in patients with ST-elevation–myocardial infarction but without hypoxia may increase early myocardial injury and was associated with larger myocardial infarct size assessed at 6 months.

Clinical Trial Registration—URL: http://www.clinicaltrials.gov. Unique identifier: NCT01272713.

(*Circulation*. 2015;131:2143-2150. DOI: 10.1161/CIRCULATIONAHA.114.014494.)

Key Words: myocardial infarction ■ oxygen ■ ST-segment elevation myocardial infarction

SPO2 >93 olan hastalar çalışmaya alınmış

Oksijen verilen(n=218), verilmeyen grup(n=223)

Oksijen verilmeyen grupta CK değerleri ve İnfark alanı daha az

Rutin oksijen kullanımı infarkt alanını genişlemesine neden olabiliyor

ORIGINAL ARTICLE

Oxygen Therapy in Suspected Acute Myocardial Infarction

Robin Hofmann, M.D., Stefan K. James, M.D., Ph.D., Tomas Jernberg, M.D., Ph.D., Bertil Lindahl, M.D., Ph.D., David Erlinge, M.D., Ph.D., Nils Witt, M.D., Ph.D., Gabriel Arefalk, M.D., Mats Frick, M.D., Ph.D., Joakim Alfredsson, M.D., Ph.D., Lennart Nilsson, M.D., Ph.D., Annica Ravn-Fischer, M.D., Ph.D., Elmir Omerovic, M.D., Ph.D., Thomas Kellerth, M.D., David Sparv, B.Sc., Ulf Ekelund, M.D., Ph.D., Rickard Linder, M.D., Ph.D., Mattias Ekström, M.D., Ph.D., Jörg Lauermann, M.D., Urban Haaga, B.Sc., John Pernow, M.D., Ph.D., Ollie Östlund, Ph.D., Johan Herlitz, M.D., Ph.D., and Leif Svensson, M.D., Ph.D., for the DETO2X–SWEDEHEART Investigators*

ABSTRACT

BACKGROUND

The clinical effect of routine oxygen therapy in patients with suspected acute myocardial infarction who do not have hypoxemia at baseline is uncertain.

METHODS

In this registry-based randomized clinical trial, we used nationwide Swedish registries for patient enrollment and data collection. Patients with suspected myocardial infarction and an oxygen saturation of 90% or higher were randomly assigned to receive either supplemental oxygen (6 liters per minute for 6 to 12 hours, delivered through an open face mask) or ambient air.

RESULTS

A total of 6629 patients were enrolled. The median duration of oxygen therapy was 11.6 hours, and the median oxygen saturation at the end of the treatment period was 99% among patients assigned to oxygen and 97% among patients assigned to ambient air. Hypoxemia developed in 62 patients (1.9%) in the oxygen group, as compared with 254 patients (7.7%) in the ambient-air group. The median of the

- 30 yaş üstü olan ve satürasyon değerleri %90 üstü olan STEMI hastaları dahil edildi.
- Oksijen verilen(n=1361), verilmeyen(n=1446)
- Birincil sonlanım noktaları tüm nedenlere bağlı ölüm, MI nedeniyle tekrar hastaneye yatış, kardiyojenik şok ve stent trombozu olarak belirlenmiş, İkincil sonlanım noktalaları ise troponin değerleri, kardiyojenik şok gelişme durumu
- Birincil ve ikincil sonlanımda fark yok
- Tek fark oksijen almayan grup daha fazla destek tedavisi gereksinimi

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Crit Care Med. 2014 Jun;42(6):1463-70. doi: 10.1097/CCM.0000000000000228.

Arterial blood gas tensions after resuscitation from out-of-hospital cardiac arrest: associations with long-term neurologic outcome.

Vaahersalo J[1], Bendel S, Reinikainen M, Kurola J, Tiainen M, Raj R, Pettilä V, Varpula T, Skrifvars MB; FINNRESUSCI Study Group.

Collaborators (63)

Author information

Abstract

OBJECTIVES: Optimal oxygen and carbon dioxide levels during postcardiac arrest care are currently undefined and observational studies have suggested harm from hyperoxia exposure. We aimed to assess whether mean and time-weighted oxygen and carbon dioxide levels during the first 24 hours of postcardiac arrest care correlate with 12-month neurologic outcome.

DESIGN: Prospective observational cohort study.

SETTING: Twenty-one ICUs in Finland.

PATIENTS: Out-of-hospital cardiac arrest patients treated in ICUs in Finland between March 2010 and February 2011.

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Wolters Kluwer

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Post-resuscitation arterial oxygen and carbon dioxide and outcomes after [Resuscitation. 2017]

Short- and long-term outcome in elderly patients after out-of-hospital cardiac [Crit Care Med. 2014]

Review The impact of oxygen and carbon

- Kardiyak arrest sonrası sponton dolaşımı dönen hastalara yoğun bakım ünitesinde 24 saat yüksek oksijen
- 12 ay takip edilmiş
- Hiperoksi ile normal oksijenlenme arasında nörolojik sağ kalım ve mortalite ile ilişkili değil

https://www.ncbi.nlm.nih.gov/pubmed/23944204

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Crit Care Resusc. 2013 Sep;15(3):186-90.

Hyperoxia in the intensive care unit and outcome after out-of-hospital ventricular fibrillation cardiac arrest.

Ihle JF[1], Bernard S, Bailey MJ, Pilcher DV, Smith K, Scheinkestel CD.

Author information

Abstract

BACKGROUND: Laboratory and clinical studies have suggested that hyperoxia early after resuscitation from cardiac arrest may increase neurological injury and worsen outcome. Previous clinical studies have been small or have not included relevant prehospital data. We aimed to determine in a larger cohort of patients whether hyperoxia in the intensive care unit in patients admitted after out-of-hospital cardiac arrest (OHCA) was associated with increased mortality rate after correction for prehospital variables.

METHODS: Data from the Victorian Ambulance Cardiac Arrest Registry (VACAR) of patients transported to hospital after resuscitation from OHCA and an initial cardiac rhythm of ventricular fibrillation between January 2007 and December 2011 were linked to the Australian and New Zealand Intensive Care Society Adult Patient Database (ANZICS-APD). Patients were allocated into three groups (hypoxia [PaO2<60mmHg], normoxia [PaO2,60-299mmHg] or hyperoxia [PaO2≥300mmHg]) according to their most abnormal PaO2 level in the first 24 hours of ICU stay. The relationship between PaO2 and hospital mortality was investigated using multivariate logistic regression analysis to adjust for confounding prehospital and ICU factors.

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Prevalence and factors correlating with hyperoxia exposure [Scand J Trauma Resusc Emerg Me...]

Out-of-hospital cardiac arrest surveillance --- Cardiac Arrest Reg [MMWR Surveill Summ. 2011]

Review Management of Refractory Ventricular Fibrillation (Prehospital and E [Cardiol Clin. 2018]

Review The impact of oxygen and carbon dioxide management [Curr Opin Crit Care. 2014]

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See all

- Hastane dışı VF'ye bağlı kardiyak arrest
- İlk 24 saat hiperoksijenlenme uygulanmış
- Hastane içi mortalitede fark bulunamamış

Crit Care. 2015 Sep 29;19:348. doi: 10.1186/s13054-015-1067-6.

Associations of arterial carbon dioxide and arterial oxygen concentrations with hospital mortality after resuscitation from cardiac arrest.

Helmerhorst HJ[1,2], Roos-Blom MJ[3,4], van Westerloo DJ[5], Abu-Hanna A[6], de Keizer NF[7,8], de Jonge E[9,10].

Author information

Abstract

INTRODUCTION: Arterial concentrations of carbon dioxide (PaCO2) and oxygen (PaO2) during admission to the intensive care unit (ICU) may substantially affect organ perfusion and outcome after cardiac arrest. Our aim was to investigate the independent and synergistic effects of both parameters on hospital mortality.

METHODS: This was a cohort study using data from mechanically ventilated cardiac arrest patients in the Dutch National Intensive Care Evaluation (NICE) registry between 2007 and 2012. PaCO2 and PaO2 levels from arterial blood gas analyses corresponding to the worst oxygenation in the first 24 h of ICU stay were retrieved for analyses. Logistic regression analyses were performed to assess the relationship between hospital mortality and both categorized groups and a spline-based transformation of the continuous values of PaCO2 and PaO2.

RESULTS: In total, 5,258 cardiac arrest patients admitted to 82 ICUs in the Netherlands were included. In the first 24 h of ICU admission,

- 5258 hasta
- Kardiyak arrest sonrası ilk 24 saat hiperoksi
- Hiperoksi mortalite ile ilişkili değil

Bellomo et al. Critical Care 2011, 15:R90
http://ccforum.com/content/15/2/R90

CRITICAL CARE

RESEARCH Open Access

Arterial hyperoxia and in-hospital mortality after resuscitation from cardiac arrest

Rinaldo Bellomo[1*], Michael Bailey[1], Glenn M Eastwood[3], Alistair Nichol[1], David Pilcher[2], Graeme K Hart[2], Michael C Reade[3], Moritoki Egi[4], D James Cooper[1], the Study of Oxygen in Critical Care (SOCC) Group

Abstract

Introduction: Hyperoxia has recently been reported as an independent risk factor for mortality in patients resuscitated from cardiac arrest. We examined the independent relationship between hyperoxia and outcomes in such patients.

Methods: We divided patients resuscitated from nontraumatic cardiac arrest from 125 intensive care units (ICUs) into three groups according to worst PaO_2 level or alveolar-arterial O_2 gradient in the first 24 hours after admission. We defined 'hyperoxia' as PaO_2 of 300 mmHg or greater, 'hypoxia/poor O_2 transfer' as either PaO_2 < 60 mmHg or ratio of PaO_2 to fraction of inspired oxygen (FiO_2) < 300, 'normoxia' as any value between hypoxia and hyperoxia and 'isolated hypoxemia' as PaO_2 < 60 mmHg regardless of FiO_2. Mortality at hospital discharge was the main outcome measure.

Results: Of 12,108 total patients, 1,285 (10.6%) had hyperoxia, 8,904 (73.5%) had hypoxia/poor O_2 transfer, 1,919

- 12108 hasta
- Kardiyak arrest ilk 24 saat
- Hiperoksi mortalite üzerine etkisi yok

Kardiyak Arrest Hastalarında Oksijen Tedavisi

- Yapılan çalışmalar göstermiştir ki hiperoksinin post CPR hastalara zarar verme durumu kanıtlanamamıştır

https://www.ncbi.nlm.nih.gov/pubmed/22404056

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Crit Care Resusc. 2012 Mar;14(1):14-9.

The association between early arterial oxygenation and mortality in ventilated patients with acute ischaemic stroke.

Young P[1], Beasley R, Bailey M, Bellomo R, Eastwood GM, Nichol A, Pilcher DV, Yunos NM, Egi M, Hart GK, Reade MC, Cooper DJ; Study of Oxygen in Critical Care (SOCC) Group.

Author information

Abstract

BACKGROUND: There are conflicting data that suggest that hyperoxia may be associated with either worse or better outcomes in patients suffering a stroke.

OBJECTIVES: To investigate the association between PaO(2) in the first 24 hours in the intensive care unit and mortality among ventilated patients with acute ischaemic stroke.

DESIGN: Retrospective cohort study.

SETTING: Data were extracted from the Australian and New Zealand Intensive Care Society Adult Patient Database.

PARTICIPANTS: Adults ventilated for ischaemic stroke in 129 ICUs in Australia and New Zealand, 2000-2009.

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Mortality and intensive care volume in ventilated patients from 1995 to 2009 [Crit Care Med. 2012]
Review Arterial hyperoxia and mortality in critically ill patients: a systematic [Crit Care. 2014]
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- 2643 iskemik inme hastası erken evre hiperoksi
- Kötü fonksiyonel sonuç veya artmış mortalite ile ilişkili değildir

A Pilot Study of Normobaric Oxygen Therapy in Acute Ischemic Stroke

Aneesh B. Singhal, MD; Thomas Benner, PhD; Luca Roccatagliata, MD; Walter J. Koroshetz, MD; Pamela W. Schaefer, MD; Eng H. Lo, PhD; Ferdinando S. Buonanno, MD; R. Gilberto Gonzalez, MD, PhD; A. Gregory Sorensen, MD

Background and Purpose—Therapies that transiently prevent ischemic neuronal death can potentially extend therapeutic time windows for stroke thrombolysis. We conducted a pilot study to investigate the effects of high-flow oxygen in acute ischemic stroke.

Methods—We randomized patients with acute stroke (<12 hours) and perfusion-diffusion "mismatch" on magnetic resonance imaging (MRI) to high-flow oxygen therapy via facemask for 8 hours (n=9) or room air (controls, n=7). Stroke scale scores and MRI scans were obtained at baseline, 4 hours, 24 hours, 1 week, and 3 months. Clinical deficits and MR abnormalities were compared between groups.

Results—Stroke scale scores were similar at baseline, tended to improve at 4 hours (during therapy) and 1 week, and

- Hiperoksi tedavisi alan grup klinik ve MR bulgularında geçici bir iyileşme tespit edildi
- 3 ay sonra her iki grup aynı klinik ve MR görüntüsü

Ann Indian Acad Neurol

Normobaric oxygen therapy in acute ischemic stroke: A pilot study in Indian patients

M. V. Padma, A. Bhasin, R. Bhatia, A. Garg,[1] M. B. Singh, M. Tripathi, and K. Prasad

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Abstract

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Purpose:

Clinical and radiological assessment of effects of normobaric high-flow oxygen therapy in patients with acute ischemic stroke (AIS).

Materials and Methods:

Patients with anterior circulation ischemic strokes presenting within 12 h of onset, ineligible for

- 3 ay takip sonrası hiperoksi grubu diğer grup arasında nörolojik iyileşme arasında bir fark tespit edilemedi.

İskemik Stroke Hastalarında Oksijen Tedavisi

- Yapılan çalışmalar hiperoksi uygulanan hastalarda diğer gruplara göre bir fark tespit edilememiş

JOURNAL OF NEUROTRAUMA 26:2217–2223 (December 2009)

DOI: 10.1089/neu.2009.0940

Both Hypoxemia and Extreme Hyperoxemia May Be Detrimental in Patients with Severe Traumatic Brain Injury

Daniel P. Davis,[1] William Meade, Jr.,[1] Michael J. Sise,[2] Frank Kennedy,[3] Fred Simon,[4] Gail Tominaga,[4] John Steele,[5] and Raul Coimbra[6]

Abstract

An association between hypoxemia and poor outcomes from traumatic brain injury (TBI) is well documented. However, it is unclear whether hyperoxygenation is beneficial. This registry-based analysis explores the relationship between early hypoxemia and hyperoxemia on outcome from moderate-to-severe TBI. TBI patients (Abbreviated Injury Scale score 3+) were identified from the San Diego County trauma registry. Patients were stratified by arrival partial oxygen pressure (Po_2) value. Trauma and injury severity score (TRISS) was then used to calculate predicted survival for each patient, with the mean observed-predicted survival differential determined for each arrival Po_2 stratification. Logistic regression was used to quantify the relationship between hypoxemia, hyperoxemia, and outcome from TBI after adjusting for multiple variables including intubation and ventilation status. A total of 3420 patients were included in the analysis. TRISS calculations revealed worse outcomes than predicted for both hypoxemia and extreme hyperoxemia. Logistic regression revealed an optimal Po_2 range (110–487 mm Hg), with an independent association observed between decreased survival and both hypoxemia (OR 0.54; 95% CI 0.42, 0.69; $p < 0.001$) and extreme hyperoxemia (OR 0.50; 95% CI 0.36, 0.71; $p < 0.001$). The association between hypoxemia and extreme hyperoxemia and worse outcomes was also present with use of "good outcomes" as the outcome variable (discharge to home, rehabilitation, jail, or psychiatric facility, or leaving against medical advice). We conclude that both hypoxemia and extreme hyperoxemia are associated with increased mortality and a decrease in good outcomes among TBI patients.

Key words: head trauma; hyperoxemia; hypoxemia; intubation; oxygen; oxygenation; paramedic; prehospital;

- 3420 hasta
- Şiddetli Travmatik beyin hasarı olan hastalar
- Hiperoksi uygulanan grupta mortalite daha fazla ve iyi klinik sonuç daha az

Significance of arterial hyperoxia and relationship with case fatality in traumatic brain injury: a multicentre cohort study

Fred Rincon[1, 2], Joon Kang[1], Matthew Vibbert[1, 2], Jacqueline Urtecho[1, 2], M Kamran Athar[2, 3], Jack Jallo[2]

Author affiliations +

Abstract

Objective In this retrospective multi-centre cohort study, we tested the hypothesis that hyperoxia was not associated with higher in-hospital case fatality in ventilated traumatic brain injury (TBI) patients admitted to the intensive care unit (ICU).

Methods Admissions of ventilated TBI patients who had arterial blood gases within 24 h of admission to the ICU at 61 US hospitals between 2003 and 2008 were identified. Hyperoxia was defined as PaO_2 ≥300 mm Hg (39.99 kPa), hypoxia as any PaO_2 <60 mm Hg (7.99 kPa) or PaO_2/FiO_2 ratio ≤300 and normoxia, not defined as hyperoxia or hypoxia. The primary outcome was in-hospital case fatality.

Results Over the 5-year period, we identified 1212 ventilated TBI patients, of whom 403 (33%) were normoxic, 553 (46%) were

- 1212 hasta
- 24 saat hiperoksi
- Hastane içi mortalite ile ilişkili

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Hyperoxemia and long-term outcome after traumatic brain injury

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Abstract

Introduction: The relationship between hyperoxemia and outcome in patients with traumatic brain injury (TBI) is controversial. We sought to investigate the independent relationship between hyperoxemia and long-term mortality in patients with moderate-to-severe traumatic brain injury.

Methods: The Finnish Intensive Care Consortium database was screened for mechanically ventilated patients with a moderate-to-severe TBI. Patients were categorized, according to the highest measured alveolar-arterial O_2 gradient or the lowest measured PaO_2 value during the first 24 hours of ICU admission, to hypoxemia (<10.0 kPa), normoxemia (10.0 to 13.3 kPa) and hyperoxemia (>13.3 kPa). We adjusted for markers of illness severity to evaluate the independent relationship between hyperoxemia and 6-month mortality.

Results: A total of 1,116 patients were included in the study, of which 16% (n = 174) were hypoxemic, 51% (n = 567) normoxemic and 33% (n = 375) hyperoxemic. The total 6-month mortality was 39% (n = 435). A significant association between hyperoxemia and a decreased risk of mortality was found in univariate analysis ($P = 0.012$). However, after adjusting for markers of illness severity in a multivariate logistic regression model hyperoxemia

- 1116 hasta
- Hiperoksemi ile 6 aylık mortalite arasında ilişki tespit edilemedi.

Travmatik Beyin Hasarı Olan Hastalarda Oksijen Tedavisi

- Travmatik beyin hasarı olan hastalarda hiperoksi mortaliteyi artırdığı söylenebilir.

Variability in targeted arterial oxygenation levels in patients with severe sepsis or septic shock

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Background: Supplemental oxygen therapy is used for intensive care (ICU) patients with severe sepsis, but with no general guidelines and few safety data. The aim of this observational study was to describe the variability in oxygen administration as well as the association between partial pressure of arterial oxygen (PaO_2) and mortality.
Methods: We extracted data from two Scandinavian clinical trials of ICU patients with severe sepsis or septic shock. We calculated average PaO_2 and fraction of inspired oxygen (FiO_2) from trial inclusion and the following 5 days, and assessed the association between PaO_2 and 90-day mortality.
Results: The median PaO_2 was 9.8 kPa [5–95% range 6.4–19.9] and FiO_2 was 0.51 [5–95% range 0.27–1.00], respectively. Eight

- Hiperoksinin mortalite üzerine etkisi yok
- Fio2>60 ise mortalite ile ilişkili olarak tespit edildi.

Multicenter Study of Central Venous Oxygen Saturation ($ScvO_2$) as a Predictor of Mortality in Patients With Sepsis

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Study objective: Abnormal (both low and high) central venous saturation ($ScvO_2$) is associated with increased mortality in emergency department (ED) patients with suspected sepsis.

Methods: This was a secondary analysis of 4 prospectively collected registries of ED patients treated with early goal-directed therapy–based sepsis resuscitation protocols from 4 urban tertiary care hospitals. Inclusion criteria were sepsis, hypoperfusion defined by systolic blood pressure less than 90 mm Hg or lactate level greater than or equal to 4 mmol/L, and early goal-directed therapy treatment. $ScvO_2$ levels were stratified into 3 groups: hypoxia ($ScvO_2$ <70%); normoxia ($ScvO_2$ 71% to 89%); and hyperoxia ($ScvO_2$ 90% to 100%). The primary exposures were initial $ScvO_2$ and maximum $ScvO_2$ achieved, with the primary outcome as inhospital mortality. Multivariate analysis was performed.

Results: There were 619 patients who met criteria and were included. For the maximum $ScvO_2$, compared with the mortality rate in the normoxia group of 96 of 465 (21%; 95% confidence interval [CI] 17% to 25%), both the hypoxia mortality rate, 25 of 62 (40%; 95% CI 29% to 53%) and hyperoxia mortality rate, 31 of 92 (34%; 95% CI

- Hiperoksi mortalite ile ilişkili bulunmuş

Oxygen therapy for sepsis patients in the emergency department: a little less?

Renate Stolmeijer[a], Jan C. ter Maaten[a], Jan G. Zijlstra[b] and Jack J.M. Ligtenberg[a]

Liberal oxygen therapy has been a cornerstone in the treatment of critically ill patients. Recently, awareness of hyperoxia toxicity has emerged. We investigated the partial pressure of oxygen in arterial blood (PaO_2) in sepsis patients admitted to the emergency department treated with a reduced inspired oxygen fraction of 0.4 instead of 0.6–0.8. A prospective pilot study was carried out over a 3-month period. Patients admitted with two or more SIRS criteria and a suspicion of infection were included. They received 10 l O_2/min through a VentiMask 40%. Of 83 patients, 77 had a PaO_2 greater than 9.5 kPa with 10 l O_2/min, of whom 51 had hyperoxia. Six patients showed hypoxia with 10 l O_2/min. Of the hyperoxic patients, 8% died in hospital versus 6% with normoxia. Less than 8% of patients had hypoxia with 10 l O_2/min; 66% were hyperoxic. Titration of oxygen therapy to normoxia in the emergency department should be evaluated. *European Journal of Emergency Medicine* **21:233–235**

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Keywords: emergency department, hyperoxia, oxygen, sepsis

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- Mortalite ile hiperoksi arasında ilişki tespit edilmemiş.

Sepsis Hastalarında Oksijen Tedavisi

- Fikir birliği tam sağlanamamıştır.

- TEŞEKKÜRLER
- SORU???
- KATKI???