

Antibiyotik Dışı Tedaviler ve Yara Bakım Ürünleri

Ömer COŞKUN

GATA Enfeksiyon Hast. Kl. Mik. AD

Ankara

H

Enfeksiyon tedavisi

E

Cerrahi (Debridman – Ampütasyon)

D

Metabolik kontrol

E

Revaskülarizasyon

F

Yaranın yeniden açılmasını önlemek
ve yükten kurtarma

İnterdisipliner yaklaşım

ULUSAL HASTALIK
TIBBİ KONGRESİ
YILLESU SAĞLIK
HİZMETLERİ
HİPERBARİK
TIP KONGRESİ

02.10.2015 11:36

MD yaklaşım etkindir*

**Multi
disipli
ner
yakla
şım**

SB TSHi Gn.Md.lüğü'nün 2011-2014 Türkiye Diyabet Önleme ve Kontrol Programı'nda üçüncü basamak hastanelerde DA kurullarının kurulması **

Endokrin, İç hastalıkları, Enfeksiyon, Cildiye, Ortopedi, FTR, KDC, Plastik cerrahi, Radyoloji, DA kurulu hemşiresi, Fizyoterapist, Diyetisyen

*Lipsky BA, Clin Infect Dis. 2012; 54(12): e132-73.

**Türkiye Diyabet Önleme ve Kontrol Programı Eylem Planı [İnternet]. Ankara: T.C. Sağlık Bakanlığı Temel Sağlık Hizmetleri Genel Müdürlüğü [erişim 5 Ocak 2015]. <http://www.saglik.gov.tr/HM/dosya/1-71375/h/turkiye-diyabet-onleme-ve-kontrol-programi.pdf>

Metabolik Kontrol

Hiperglisemi

Analjezikler,

α -lipoik asid,

Karbamazepin,

Gabapentin ve pregabalin

Amitriptilin,

Spesifik serotonin "reuptake" inhibitörleri

Opioid alkaloidler

Nöropati

Hipertansiyon

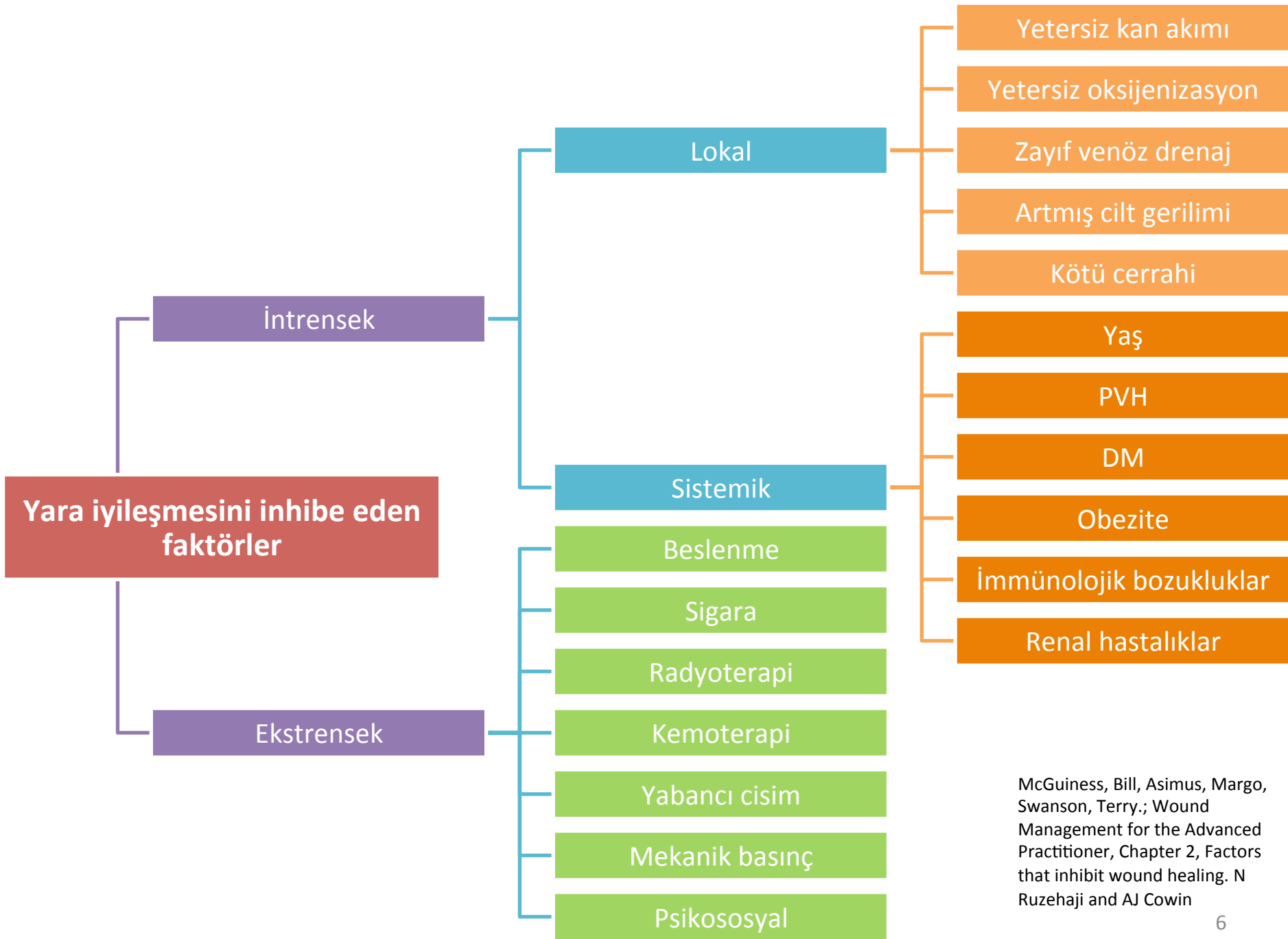
Hedefi <140/80 mmHg

Hiperlipidemi

LDL<100 mg/dl

HDL-E >40 mg/dl, K >50 mg/dl,

Trigliserid <150 mg/dl



McGuiness, Bill, Asimus, Margo, Swanson, Terry.; Wound Management for the Advanced Practitioner, Chapter 2, Factors that inhibit wound healing. N Ruzehaji and AJ Cowin

Lokal yara bakımı prensipleri

D E N E

Debridman

Enfeksiyonun kontrolü

Nemin dengelenmesi

Epitel ilerlemesinin desteklenmesi

Yara debridmanı

Cerrahi debridman

Enzimatik debridman

Larva tedavisi



Neden Debrid man ?



Doku hasarının gerek boyutlarını maskeler



Day #1



Day #2



Day #2



Day #8



15-9.
10(2): 115-8.
95(3): 254-7.

MAGGOT

Diđer klasik
debridman
uygulamalarıyla
karşılaştırıldığında,
daha hızlı iyileşme
oranlarına sahip

MAGGOT

Salgılarında;

- Proteolitik enzimler (*Serin proteaz, Aspartil proteaz, MMP*)
- Antimikrobiyaller ve
- Amonyum bulunur

Nekrotik doku sıvı hale geçer ve sindirilir

Bakteri yükünü azaltır

Anjiogenezi uyarır

Biyofilme etkilidir

Ülkemizde ilk kez 2002 yılında GATA'da uygulanmıştır

Abstract

Send to

Olumlu

See 1 citation found by title matching your search:

Dermatology. 2005;210(2):115-8.

Maggot debridement therapy in the treatment of chronic wounds in a military hospital setup in Turkey.

Tanyuksel M¹, Araz E, Dundar K, Uzun G, Gumus H, Arslan F, Sarikaya M, Immutok K.

Author information

Abstract

BACKGROUND: The medicinal use of maggots for the biological debridement of chronic wounds is increasing rapidly due to its efficacy, safety and simplicity. Thousands of patients have been treated in private and governmental hospitals during the last 10 years.

OBJECTIVE: To examine the efficacy of maggot debridement therapy (MDT) in the debridement of chronic wounds in a military hospital.

METHODS: MDT was applied for 7-9 days to 7 male and 4 female soldiers or their family members (21-72 years old) with chronic wounds.

RESULTS: Complete debridement was achieved in 10 out of 11 patients, while in 1 patient the wound could be cleaned only partially. A remarkable reduction in the odor emanating from the wound and notable granulation were observed in all debrided wounds. Increased pain was observed in 1 patient with a venous stasis ulcer.

CONCLUSION: We believe that MDT is a rapid and effective method for the debridement of chronic wounds in a military environment especially in times of war in developing countries.



Therapeutic applications of the larvae for wound debridement

Arif Turkmen ^{a,*}, Ken Graham ^b, D.A. McGrouther ^c

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^b Department of Plastic Surgery, Whiston Hospital, Liverpool, UK

^c Department of Plastic Surgery, South Manchester University Hospital, Manchester, Southmoor Road, Manchester M23 9LT, UK

- 34 hastadan 29'unda başarı (%85)
- Serbest larva uygulaması
- Tedavisinde sıkıntılar yaşanan yaralarda bir tedavi seçeneği

Maggot Therapy for Treating Diabetic Foot Ulcers Unresponsive to Conventional Therapy

Scott A. Stromborg, MD

OBJECTIVE — To assess the efficacy of maggot therapy for treating diabetic foot ulcers unresponsive to conventional therapy.

RESEARCH DESIGN AND METHODS — Twelve patients with non-healing diabetic foot ulcers unresponsive to conventional therapy were treated with maggot therapy.

RESULTS — Treatment with 1000 live larvae of the green medicine fly (*Lucilia sericata*) resulted in complete healing of all ulcers within 2 weeks. All ulcers were completely healed within 2 weeks of treatment. All ulcers were completely healed within 2 weeks of treatment. All ulcers were completely healed within 2 weeks of treatment. All ulcers were completely healed within 2 weeks of treatment.

CONCLUSIONS — Maggot therapy may be an effective treatment for diabetic foot ulcers unresponsive to conventional therapy.

Diabetes Care 2003; 26: 446-451

Impaired wound healing in extremities and ulcers are a major complication of diabetes mellitus. Diabetic foot ulcers are a common complication of diabetes mellitus, and most patients with diabetes mellitus will develop a foot ulcer at some point in their lives. The prevalence of diabetic foot ulcers is 15-20% in type 2 diabetes mellitus and 40-60% in type 1 diabetes mellitus. Diabetic foot ulcers are a major cause of lower extremity amputation in the United States.

The objective of this study was to evaluate the efficacy of maggot therapy for treating diabetic foot ulcers unresponsive to conventional therapy. Twelve patients with non-healing diabetic foot ulcers were treated with maggot therapy. All ulcers were completely healed within 2 weeks of treatment. All ulcers were completely healed within 2 weeks of treatment.

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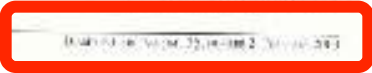
RESEARCH DESIGN AND METHODS

Enrollment — Twelve patients with non-healing diabetic foot ulcers were enrolled in the study. All patients had a history of diabetes mellitus and were treated with insulin. All patients had ulcers that were unresponsive to conventional therapy.

- ABD, Kaliforniya Üniversitesi
- 18 hasta
 - 6'sına MT,
 - 6'sına konvansiyonel tedavi,
 - 8'i önce konvansiyonel sonra MT

- 5 hafta sonrası konvansiyonel tedaviyle yarada nekrotik doku varlığının devamı
- MT'de grubunda tamamen iyileşme (debridman ve yara iyileşmesi)
- **Sonuç** : MT etkin, güvenli ve ekonomik

Diabetes Care 2003; 26: 446-451



Amputation-Sparing Treatment by Nature: "Surgical" Maggots Revisited

R. E. Johnson,¹ A. G. Mearns,¹ K. T. Braxton,¹ P. Swinnerton,¹ B. Taheri-Niazi,¹ and J. T. van Dyke²

¹School of Infectious Diseases and ²College of Medical Biotechnology, University of Central Florida, Orlando, Florida, United States

Maggots were used as adjunct treatment for infected wounds that showed no response to the classical approach of wound debridement and antibiotic therapy. We summarize findings for 11 patients with necrotic wounds who received treatment with "surgical" maggots (100–2000 applied in 3–10 changes of dressing for 11–34 days), which reportedly aided in tissue remodeling and cure, and describe 7 typical patients in detail.

In these times of high-tech medicine, it can still be difficult to recall the basic principles that have guided us since and that may help the physician consider specific medical problems (1–6). For instance, traumatic wounds that fail to heal because of vascular insufficiency and underlying pathology such as vascular insufficiency or diabetes mellitus, often leave physicians in a quandary as to how to best treat the patient's wounds. This will not compromise the patient's quality of life, but for large wounds on the extremities, it often occurs in patients with vascular insufficiency or diabetes mellitus, amputation of part of a limb can be the only option. In selected cases, use of topical remedies of maggots and infected tissue—maggots (termed larvae of *Cyrtophora vicinaria*)—may result in adequate wound healing and prevent the need to amputate (7,8). In the past 5 years, we have applied sterile maggots to help resolve infected wounds from 11 selected patients. We describe 7 of these patients in detail.

Case history 1. A 48-year-old male patient was admitted to an intensive care unit because of respiratory acidosis. The diagnosis was made on the basis of culture of his tracheal con-

tent, which yielded *Pseudomonas aeruginosa* serogroup C. The patient received intravenous treatment with ceftriaxone in combination with gentamicin and rifampin after a few days. Therapy was changed to meropenem (0.6 g, 12 × 10³ U is per day). The patient survived the acute episode of meningococcal sepsis but developed infection at the region of the extremities of the hand and feet (figure 1). The patient was transferred to the intensive care unit of our institution (Duke University Medical Center, Durham, The Netherlands) at admission, where still severe. Surgical debridement and coverage of all initially purulent ulcers of the second through the fifth fingers of the left and right hands and a resection of the distal phalanx of the left and right thumbs were done. In addition, Syme's amputation (amputation of the knee of the right limb) of the right foot was done, as well as extensive soft-tissue debridement of the left foot.

Empirical treatment with doxycycline, 1.2 g b.i.d. (twice daily) was administered. Staphylococci strains susceptible to fluoroquinolones were isolated from cultures of swabs of the amputated wounds of the fingers, of the stump from the Syme's amputation, and of the left foot, second. Several hundred fifty sterile maggots (*Cyrtophora vicinaria*) in 20 cages, packed in alcohol (70%) "bags" ("bags" were placed on the wounds independently (figure 2). After 3 days, the patient's clinical situation had improved substantially, and the high fever had subsided. The wounds showed significant improvement: granulating tissue had begun to grow and the amount of necrotic tissue was reduced. Therapy with maggots in biobags was administered 7 times, and additional surgical debridement was not necessary. After 5 weeks, a surgical soft-tissue cover at the top of the partial amputation of the fifth finger of the right hand and the wound on the left foot were covered with autologous micro-graft. After 2 months, the patient was discharged from the hospital to a rehabilitation center, and at 6 months all tissue debridement healed. The patient is able to walk with a prosthesis, without the help of crutches, and he is able to use both limbs well (figure 3).

Case history 2. A 34-year-old man with insulin-dependent diabetes mellitus and a smoking history of 28 pack-years had undergone an amputation of the first (great) toe of his left foot because of a necrotizing small vessel. A surgical wound infection with 3 nerves spread to the lower left leg, and amputation of the lower limb was done. Subsequently, the stump became infected and would have required an extended amputation (figure 4). At this point, the patient was transferred to our hospital. At admission, he had a severe infection with

Hollanda, Leiden Üniv (Cerrahi – Travmatoloji Bölümü)

- Klasik tedaviye yanıtızsız (antibiyotik + debridman) 11 hastaya MT yapılmış
- 9'unda tam iyileşme

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See 1 citation found using an alternative search:

[J Wound Care](#). 2013 Sep;22(9):462-9.

Maggot debridement therapy for the treatment of diabetic foot ulcers: a meta-analysis.

[Tian X¹](#), [Liang XM](#), [Song GM](#), [Zhao Y](#), [Yang XL](#).

Author information

Abstract

OBJECTIVE: To assess the potential efficacy of maggot debridement therapy (MDT) compared with standard care for diabetic foot ulcers (DFUs).

METHOD: A meta-analysis was performed on the evidence for MDT for DFUs. Databases, including PubMed, Web of Science, the Cochrane Library, EMBase, EBSCOhost, Springer Link, ScienceDirect and Ovid-Medline, were electronically searched for randomised controlled trials, case-control studies and controlled clinical trials up to 31 December 2012, and relevant references of included articles were manually searched. The literature was screened, the data were extracted and the methodological quality of the included studies was assessed. Meta-analyses were performed on the included data, for the outcomes healing rate, time to healing, incidence of infection, amputation rate and antibiotic-free days or antibiotics usage.

RESULTS: Overall, four studies comparing MDT with standard therapy included 356 participants. The results of meta-analyses suggested that the MDT group was significantly superior to the control group in the percentage of DFUs to achieve full healing (RR=1.8, 95%CI=1.07; 3.02; p=0.03), amputation rate (RR=0.41, 95%CI=0.20; 0.85; p=0.02), time to healing (RR=-3.70, 95%CI=-5.76; -1.64; p=0.0004) and number of antibiotic-free days (126.8 ± 30.3 days vs 81.9 ± 42.1 days; p=0.001); however, collated differences in incidence of infection after intervention revealed no evidence of a difference between the MDT and control groups (RR=0.82, 95%CI=0.65; 1.04, p=0.10).

CONCLUSION: Although MDT may be a scientific and effective therapy in treatment of DFUs, the evidence is too weak to routinely recommend it for treatment. Large studies and sample sizes are needed to assess the efficacy and safety of MDT in the treatment of DFUs.

DECLARATION OF INTEREST: There were no external sources of funding for this study. The authors have no conflicts of interest to declare with regard to this work or its contents. X. Tian and X.M. Liang contributed equally to this work.

Olumsuz

DAE de Maggot

etkinliğinin araştırıldığı

meta analiz; DAE etkin

fakat rutin kullanılması

için güçlü kanıt yok

MAGGOT

Sonuç: Debridman yöntemi olarak değerlendirilebilir, bir tedavi yöntemi değildir.

Bilimsel kanıtlar eksik olduğundan rutin kullanımı önerilmez

Debridman mı?

Aktif enfeksiyon varsa, acilen debridman

Revaskülarizasyon mu?

Enfeksiyonun klinik belirtileri olmaksızın yara veya kuru gangren varsa önce revaskülarizasyon

Revask ülarizas yon

Cerrahi baypas

Safen ven

Kol venleri

Radiyal arter

Yöntem leri

Endovasküler yöntemler

PTA

Stent

Debulking

Yara bakımı

Epitel
ilerlemesi
nin
desteklen
mesi

Ameliyat Graft

Flep

Yaraya uygun pansuman
yöntemi seçimi

Yara
nem
ilişki
si

Çoğu pansuman
materyali **nemli** bir ortam
sağlamak için dizayn
edilmiştir



Klinikte ve cerrahideki ilk yaraya, hasta için uygun bir doku olan devitalize dokuların çıkarılması ve yerine uygun bir materyal seçilmeli.

İdeal Pans uma n

Yarayı kapatıp uygun nem dengesini sağlamalı

Aşırı eksüdayı uzaklaştırmalı

Yara kenarı maserasyonuna izin vermemeli,

Bakterilere ve yabancı cisimlere karşı bariyer olmalı

Gaz geçişine izin vermeli

Yarayı optimum sıcaklıkta tutmalı

Değiştirilmesi kolay ve ağrısız olmalı

Kokuyu engellemeli

Alerjik olmamalı

Yaraya mekanik destek vermeli

Estetik ve ucuz

SF etkin ve kullanışlı

**Yara
temizliği
-
Pansum
an**

Sürfaktanlar da kullanılabilir fakat granülasyon dokusuna zararlıdır ve SF'e üstünlüğü yok

Yara deze nfek siyo nu

En sık kullanılanları

Povidon iyot

İyonize gümüş

Klorheksidin

Alkol

Asetik asit

Hidrojenperoksit

Sodyum hipoklorit (Dakin solüsyonu)

Çoğu insan fibroblast
hücrelerine karşı toksik

Yara deze nfeks iyonu

Bu etkiler
arındırılm
formulası



preparatlar

Çok geniş bir spektrumda etkili

Biyofilm tabakasına karşı da etkilidirler.

**Gümüş
kontam**

Yara Dez enfe ksiy onu



Yüzeyel kulture;

Bakteri yükünü ve eksudayı azaltır,

Yara iyileşmesini hızlandırır

Derin dokuda bakteri yükünü deęiřtirmiyor

**Yara
Bakım
Malzeme
leri**

**Nemli yara
bakımı, altın
standarttır**

Yarayı basitçe kapatan primer kapatıcılar

En sık

GAZLI BEZ VE TAMPON



Jelatin, pektin veya karboksimetil selülozdan yapılan ve
eksüda emici özelliği düşük olan
HİDROKOLOİDLER



Yosundan elde edilen, özel biçimde dokunmuş, eksüda emici özelliği yüksek olan

ALGİNATLAR

Algisite, Algosteril, Melgisorb, Curasorb, Kaltostat, Sorbsan, Sorbalgo



Yaprak alginat



Şerit alginat

**Poliüretan veya silikondan elde edilen, eksüda emici
özelliđi yüksek olan
KÖPÜK ÖRTÜLER**

Allewyn, Allewyn cavity, EPILOCK, Flexzan, Lyofoam,
Mitraflex, NUDERM, Tielle Biatain



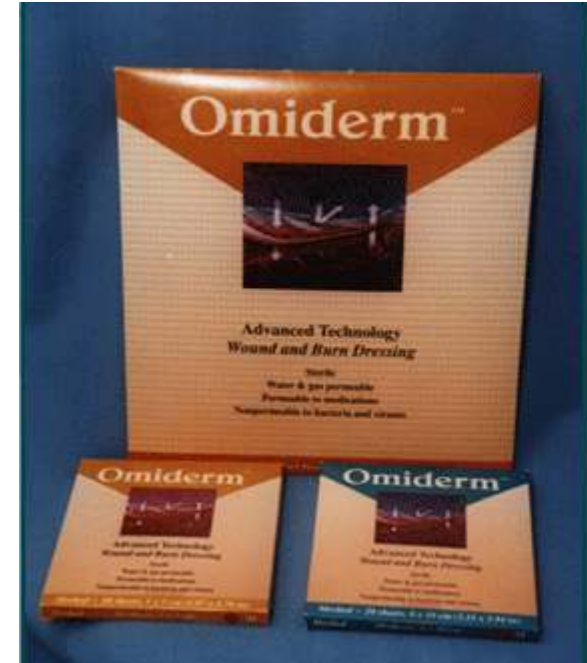
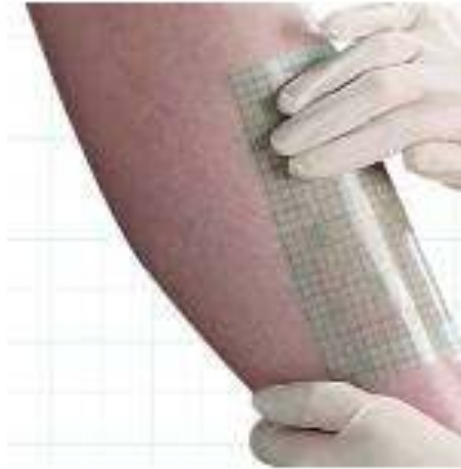
Niřasta polimerleri ve suyla oluřturulan HİDROJELLER

Granufleks, Comfeel, Cutinova Hydro, Biofilm, Duo-Derm, Restore, Replycare,
Tegasorb, Nu-derm



Sodyum karboksimetil selülozdan özel bir dokumayla elde edilen fiber örtüler
POLİÜRETAN FİLM

Biobrane Opsite Omiderm Tegaderm



Kolajen İçerikliler



DERİ EŞDEĞERLERİ

Alloderm, Trancyte, Integra, Dermagraft, Tegaderm

Tegaderm



Temel malzemelerle antibakteriyel, ađrı kesici büyüme faktörleri vb.nin kombinasyonları
Antibakteriyel (Chlorhexidine)



Antibakteriyel (Gümüş)

Acticoat, Actisorb silver 220, Metrotop jel, Aquacel Ag



Yarada doku tipi	Tedavi hedefi	Pansumanın rolü	Tedavi seçenekleri		
			Yara yatağı hazırlama	Primer pansuman	Sekonder pansuman
Nekrotik Siyah Kuru	Devitalize dokuyu al, Vaskülarizasyon yetersizse debridman yapma Kuru tut Vaskülarizasyonu araştır	Yarayı nemli tut Otolitik debridman kullan	Cerrahi veya mekanik debridman	Hidrojel Bal	Poliüretan film kaplama
Çamurumsu (sloughy) Sarı kahverengi siyah gri Kuru-hafif eksudadif	Dokuyu al Granulasyon oluşması için yara yatağını temizle	Yara yatağını nemli tut Nemi dengele Otolitik debridman kullan	Uygunsa cerrahi veya mekanik debridman Yara temizliği (Antiseptikli solüsyonu)	Hidrojel Bal	Poliüretan film kaplama Düşük yapışkan özelliğe sahip (silikon) pansuman
Çamurumsu Sarı kahverengi siyah gri Orta-fazla eksudadif	Dokuyu al Granulasyon oluşması için yara yatağını temizle Eksudayı temizle	Aşırı sıvıyı absorbe et Yara kenarlarını maserasyondan koru Otolitik debridman kullan	Uygunsa cerrahi veya mekanik debridman Yara temizliği (Antiseptikli solüsyon) Bariyer ürünleri	Emici pansuman (Alginat/CMC/Köpük/)	Retansiyon bandajı veya Poliüretan film pansuman

Granülize, temiz, kırmızı, kuru veya düşük eksüda	Granülasyon, Epitelizasyon için uygun yara yatağı hazırlama	Nem dengesini sağlama, Yeni dokuyu koruma	Yara temizliği	Hidrojel Düşük yapışma özellikli pansuman (silikon), derin yara içim kavite stripleri, kauçuk versiyonları	Ped ve/veya retansiyon bandajı Bandajın maserasyon veya tıkanıklık yapmamasına dikkat edilmeli, Bandaj malzemelerin in allerjik olma ihtimaline karşı dikkatli olmalıdır.
Granülize, temiz, kırmızı, hafif veya fazla eksüda	Eksüda yönetimi, Sağlıklı yara yatağı oluşturulması	Nem dengesini sağlama, Yeni dokuyu koruma	Yara temizliği Bariyer ürünlerin kullanımını düşün	Emici pansuman (Alginat/CMC/köpük) Silikon pansuman, derin yara içim kavite stripleri, kauçuk versiyonları	
Epitelize, pembe veya kırmızı, ekudatif	Epitelizasyon ve yara matürasyonu oluşması (kontraksiyon)	Yeni dokuyu koruma	Uygunsa cerrahi veya mekanik debridman Yara temizliği (Antiseptik solüsyon) Bariyer ürünleri	Hidrokolloid (ince) Poliüretan filim pansuman, Silikon pansuman	
Enfekte, düşük veya fazla eksüdatif	Bakteri yükünü azaltma, Eksüda yönetimi, Koku kontrolü	Antimikrobiyal etki, Nemli yara iyileşmesi, Koku absorpsiyonu	Yara temizliği (Antiseptik solüsyon) Bariyer ürünleri	Antimikrobiyal pansuman	

V
A
C



Ortalama 75-125 mm Hg

VAC

Aralıklı veya sürekli uygulama

**Nasıl
Uygul
malı
m?**

Akıntılı yarada yüksek ve devamlı modda

Yüzeyel, az akıntılı yarada düşük basınç ve aralıklı modda

VAC

Randomize kontrollü alıřmalar;

Daha hızlı ve fazla iyileřme oranı

Ampütasyon oranını azaltıyor

Yararlı mı?

Yara iyileřmesine olumlu bir etkisi yok*

VAC

Venöz ülser

Diyabetik ayak

Bası yaraları

**End
ikas
yon
ları**

Alt ekstremitte açık kırıklarında ve fasyotomi
hatlarının kapatılmasında

Akut geniş yanıklı hastalar

Sternotomi sonrası yaralar

"Open abdomen"

Greft ve Flep üzerine

VAC

Kontr endik asyon ları

Debride edilmemiş yara

Ekspoze damar veya sinir

Anastomoz alanları

Malign kitle üzerine

Non-enterik nedeni açıklanamayan fistül

Kollajen doku hastalığı olanlarda

Kronik steroid kullanan hasta

Yarada aktif kanama varlığı

Antikoagülan kullanımında

VAC

Enfeksiyon

Kom

plik

asyo

ları

Kanama

Api ter api

Halk arasında yüzyıllardır biliniyor

Yarada antimikrobiyal

Debride etme

Granülasyon dokusu oluşturma

Epitelizasyonu arttırma

Doku kanlanmasını arttırma

İnflamasyonu azaltma

Ödemi azaltma

The clinical and cost effectiveness of bee honey dressing in the treatment of diabetic foot ulcers

A.M. Moghazy^{a,*}, M.E. Shams^a, O.A. Adly^a, A.H. Abbas^a, M.A. El-Badawy^a,
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Bacak ülserleri

Deri grefti sonrası

DAE

Basınç ülserleri



available at www.sciencedirect.com
BURNS
journal homepage: www.elsevier.com/locate/burns



A different and safe method of split thickness skin graft fixation: Medical honey application

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Infection

Graft reject

Honey has been used for medicinal purposes since ancient times. Its antibacterial effects have been established during the past few decades. Still, modern medical practitioners hesitate to apply honey for local treatment of wounds. This may be because of the expected unpleasantness of such local application. Hence, if honey is to be used for medicinal purposes, it has to meet certain criteria. The authors evaluated its use for the split thickness skin graft fixation because of its adhesive and other beneficial effects in 11 patients. No complications such as graft loss, infection, and graft rejection were seen. Based on these results, the authors advised honey as a new agent for split thickness skin graft fixation.

In recent years there has been a renewed interest in honey wound management. There are a range of regulated wound care products that contain honey available on the Drug Tariff. This article addresses key issues associated with the use of honey, outlining how it may be best used, in which methods of split thickness skin graft fixations it may be used, and what clinical outcomes may be anticipated. For this reason, 11 patients who underwent

Abstract

Send to

J Wound Ostomy Continen Nurs. 2007 Mar-Apr;34(2):184-90.

Effectiveness of a honey dressing for healing pressure ulcers.

Yapucu Güneş U¹, Eser I.

Author information

Abstract

OBJECTIVE: To compare the effect of a honey dressing vs an ethoxy-diaminoacridine plus nitrofurazone dressing in patients with pressure ulcers.

DESIGN: Randomized controlled trial.

SETTING: A tertiary care hospital.

INSTRUMENTS: None.

MEASUREMENTS AND MAIN RESULTS: The honey dressing group had a significantly higher rate of healing (p < 0.05) compared with the control group. The use of a honey dressing is effective and practical.

RESULTS: The honey dressing group had a significantly higher rate of healing (p < 0.05) compared with the control group.

CONCLUSIONS: The use of a honey dressing is effective and practical.

PMID: 1740836 [PubMed - indexed for MEDLINE]



- BAL

- Rivanol + Furacin pansumanı

Bal grubunda iyileşme 4 kat daha etkin

Radyasyon mukozitinden
korunma

**Apit
era
pi**

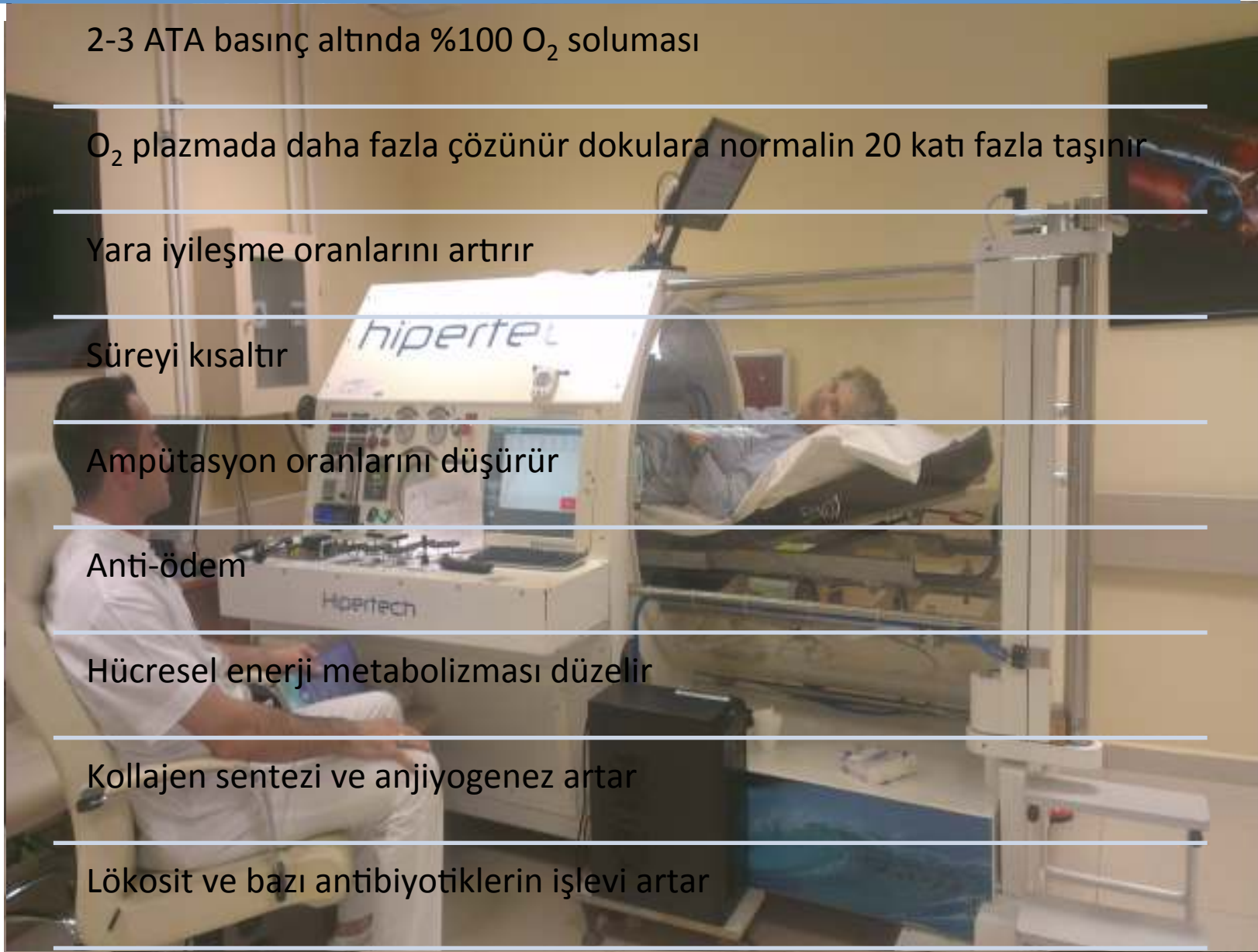
Küçük yanıkların tedavisinde
ümit veren bulgular var

Daha ileri çalışmalara ihtiyaç var





H B O



2-3 ATA basınç altında %100 O₂ soluması

O₂ plazmada daha fazla çözünür dokulara normalin 20 katı fazla taşınır

Yara iyileşme oranlarını artırır

Süreyi kısaltır

Ampütasyon oranlarını düşürür

Anti-ödem

Hücrel enerji metabolizması düzelir

Kollajen sentezi ve anjiyogenez artar

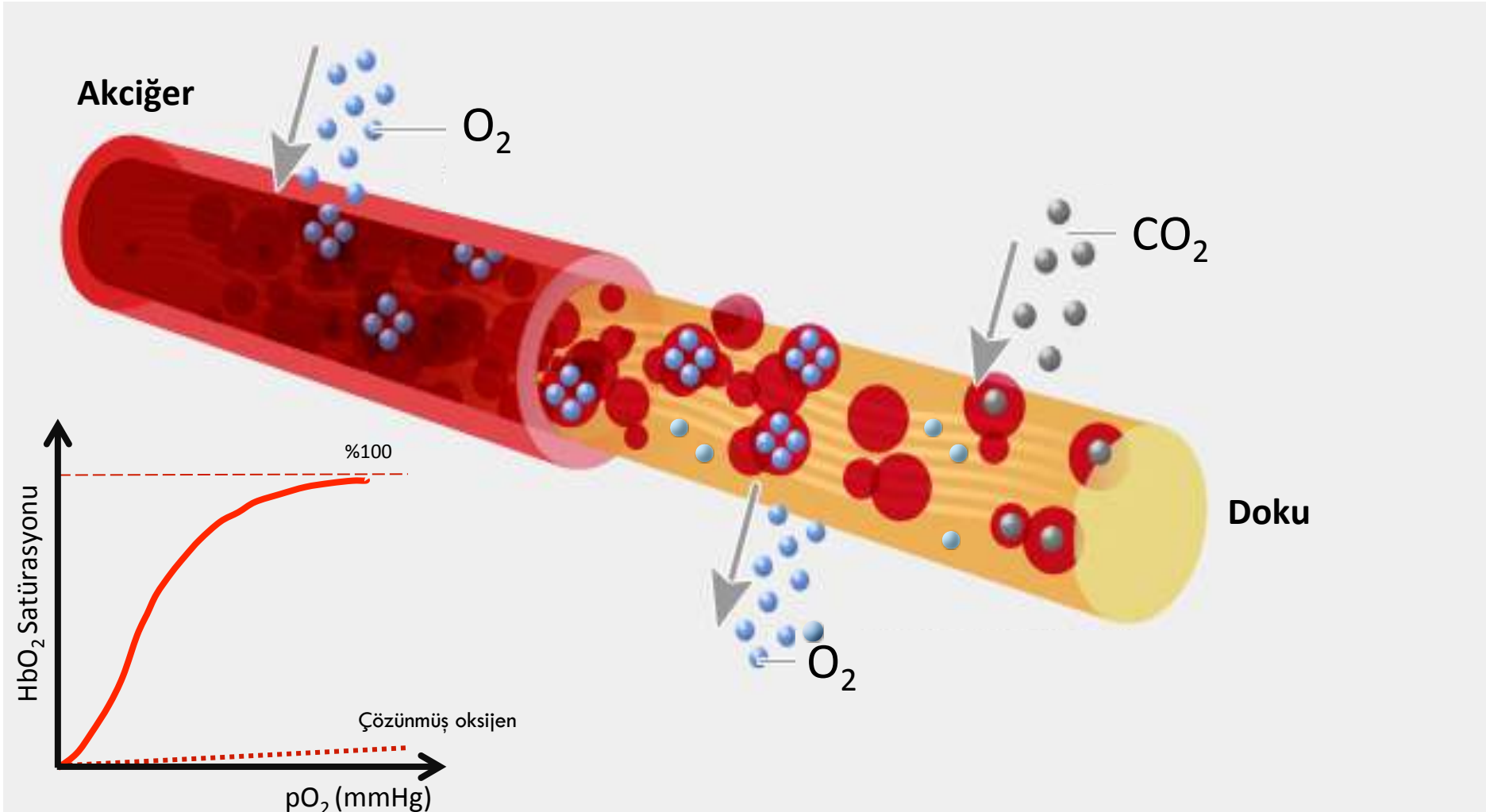
Lökosit ve bazı antibiyotiklerin işlevi artar

*Abidia A. Eur J Vasc Endovasc Surg. 2003; 25(6): 513-8.

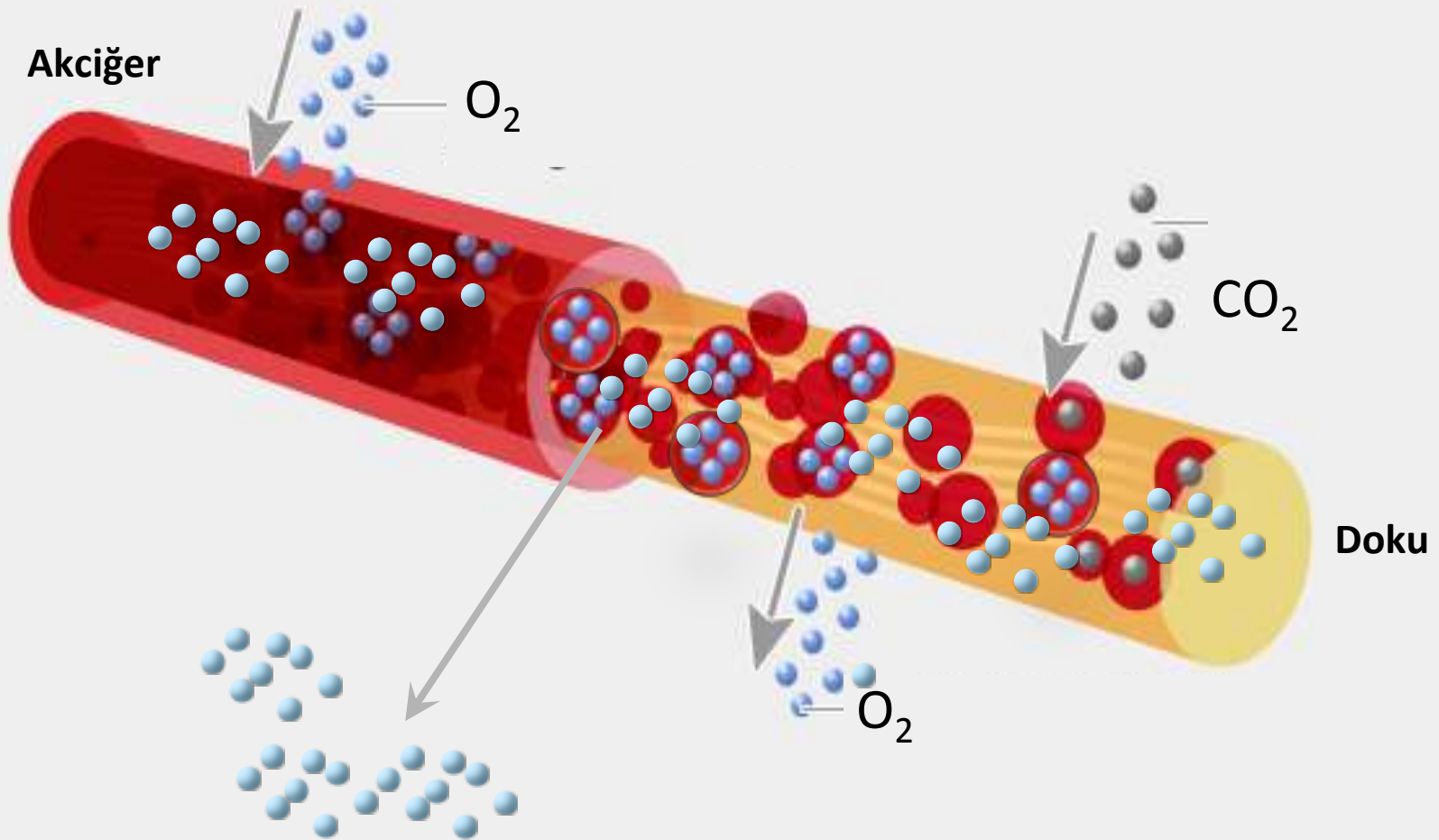
**Kalani M. J Diabetes Complications. 2002; 16(2):153-8.

***Faglia E. A randomized study. Diabetes Care. 1996; 19(12): 1338-43

Dokulara oksijen transportu



Dokulara oksijen transportu



Hyperbaric oxygen therapy mediates increased nitric oxide production associated with wound healing: a preliminary study.

Boykin JV Jr¹, Baylis C.

⊕ Author information

Abstract

OBJECTIVE: The objective of this preliminary study was to document general somatic and wound nitric oxide (NO) levels during and after hyperbaric oxygen therapy (HBOT).

DESIGN: The study evaluated 6 chronic wound patients that responded favorably to HBOT treatment (20 treatments; 2.0 atmosphere absolute [ATA] x 90 minutes). Successful HBOT was associated with increased wound granulation tissue formation and significantly improved wound closure. Wound fluid and fasting plasma samples were obtained for measurement of nitrate and nitrite (NOx), the stable oxidation products of NO; plasma L-arginine (L-Arg); and asymmetric dimethylarginine (ADMA). NOx measurements were obtained before treatment (baseline), after 10 and 20 treatments, and at 1 and 4 weeks after therapy.

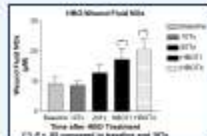
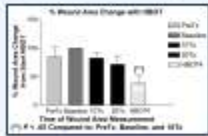
RESULTS: Wound fluid NOx levels tended to increase during treatments, were significantly elevated at 1 and 4 weeks after therapy, and correlated with reductions in wound area. Plasma L-Arg and ADMA were unchanged during and after HBOT.

CONCLUSION: This preliminary study documents a significant increase in local wound NO levels (by NOx measurements) after successful HBOT and suggests that this mechanism may be an important factor in promoting enhanced wound healing and wound closure associated with this therapy.

PMID: 17620739 [PubMed - indexed for MEDLINE] PMCID: PMC2756815 [Free PMC Article](#)



Images from this publication. [See all images \(3\)](#) [Free text](#)



HBO

Yara sıvısında NO miktarını arttırır ve dolayısıyla Granülasyon dokusunu arttırır

HBO & Büyü me faktör leri

İskemik yarada VEGF sentezini artırır

[Arch Surg. 2000;135(11):1293-7]

İnsan dermal fibroblastlarından bFGF (basic fibroblast growth factor) ve TGF- β 1 (transforming growth factor- β 1) salınımını artırır

[Arch Facial Plast Surg. 2004;6(1):31-5.]

İnsan umbilikal ven endotel hücrelerinden anjiopoietin-2 salınımını artırır

[Biochem Biophys Res Commun.2002;296(3):710-5.]

HBO & Büyü me faktö rleri

Deneysel yaralarda PDGF reseptör sayısını artırır

[Undersea Hyperb Med. 1998;25(4):211-6.]

İnsan mezenkimal kök hücrelerinden PGF (plasental growth factor) sentezini artırır.

[Life Sci 83;65:2008]

Deneysel yanık yarasında kollajen sentezini artırır.

[Burns 2008;34:467-73]

Kollajen matürasyonu

pO_2 ve prolil hidroksilaz aktivitesi

pO_2

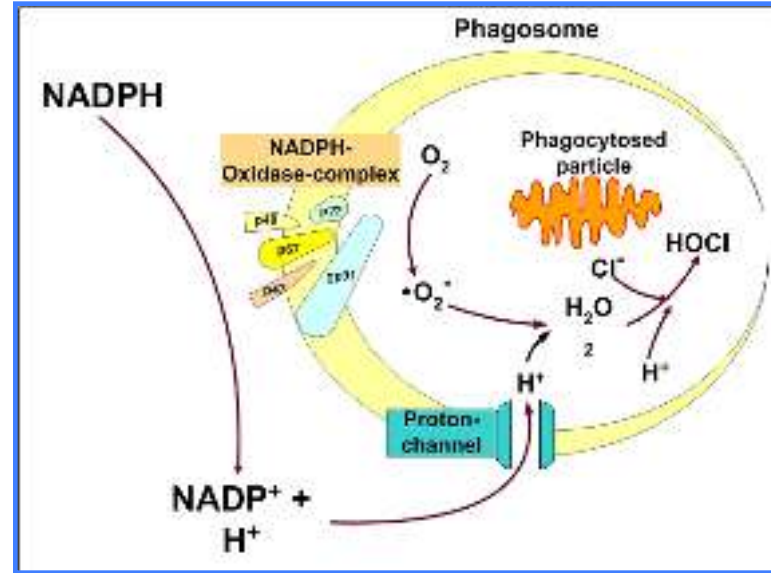
20 mmHg

Enzim maksimum enzimatik hızın yarısı hızda çalışır.

150 mmHg

Maksimum enzimatik hızın %90' ında çalışır.

pO₂ ve NADPH oksidaz aktivitesi



< 30 mmHg

Bakteriyel öldürme kapasitesinde ciddi kayıp olur.

45-80 mmHg

Enzim maksimum enzimatik hızın yarısı hızda çalışır.

300 mmHg

Maksimum enzimatik hızın %90' ında çalışır.

Seçilmiş olgularda etkin bir yardımcı tedavi olduğu kabul edilmektedir

H

Maliyet yüksek?

B

Ülkemizde HBO olanakları iyi, yaygın ve ucuz (55TL)

O

Geri ödeme var

O Z O N



O Z O N

Üç adet kontrollü çalışma var

Topikal O₃ alan grupta iyileşme hızı kontrol grubuna göre yüksek.

Zhang J. *Oxid Med Cell Longev.* 2014;2014:273475

Standart tedavi / ST+O₃ karşılaştırılmış

O₃ grubunda iyileşme daha hızlı.

Fakat tam iyileşme gerçekleşen hasta sayısı her iki grupta da aynı.

Martínez-Sánchez G. *Eur J Pharmacol.* 2005;523(1-3):151-61.

DAE'lu 61 hasta O₃ ve plesebo grupları karşılaştırılmış.

Sonuç; 5 cm²'den daha küçük yaralarda standart tedaviye eklenen O₃ yara iyileşmesini hızlandırıyor

Ama standart tedaviye bir üstünlüğü yok

Wainstein J. 2011;13(12):1255-60.

O Z O N

Sonuç;

O₃ uygulaması kronik yara tedavisinde standart bir tedavi olarak önerilemez

O₃'e bağılı ciddi komplikasyonlar gelişebilir

1930

Karbondioksitle
çil tedavisi



T O₂ T

Kapatılan yara yüzeyine %100 O₂ 1 atm.den biraz fazla bir basınçla uygulanır

Klinik çalışmalarda sonuçlar tutarsız

DAE'de iki randomize çalışma var

* TOT alanlarda almayanlara göre yara iyileşme süresi daha uzun

**4 hafta TOT uygulanmış, kontrol grubuna kıyasla yara çapının anlamlı düzeyde daha fazla gerilediği gösterilmiş

Piantadosi CA. Undersea & hyperbaric medicine : journal of the Undersea and Hyperbaric Medical Society, Inc. 2003;30(4):267-9

*Leslie CA. Diabetes care. 1988;11(2):111-5.

**Driver VR. Ostomy/wound management. 2013;59(11):19-26.

T O₂ T

TO₂T'un yara tedavisinde kullanımı tartışmalı

Topikal O₂ kemiğe diffüze olmaz

Dolayısıyla Wagner3 ve üstü DAE'de etkili değil

Wagner 1 ve 2'de ise standart tedavi yeterli

Venöz staz ülserlerinde ise yeterli çalışma yok

PDGF

EGF



tırır (4)

lır

ş olgularda?

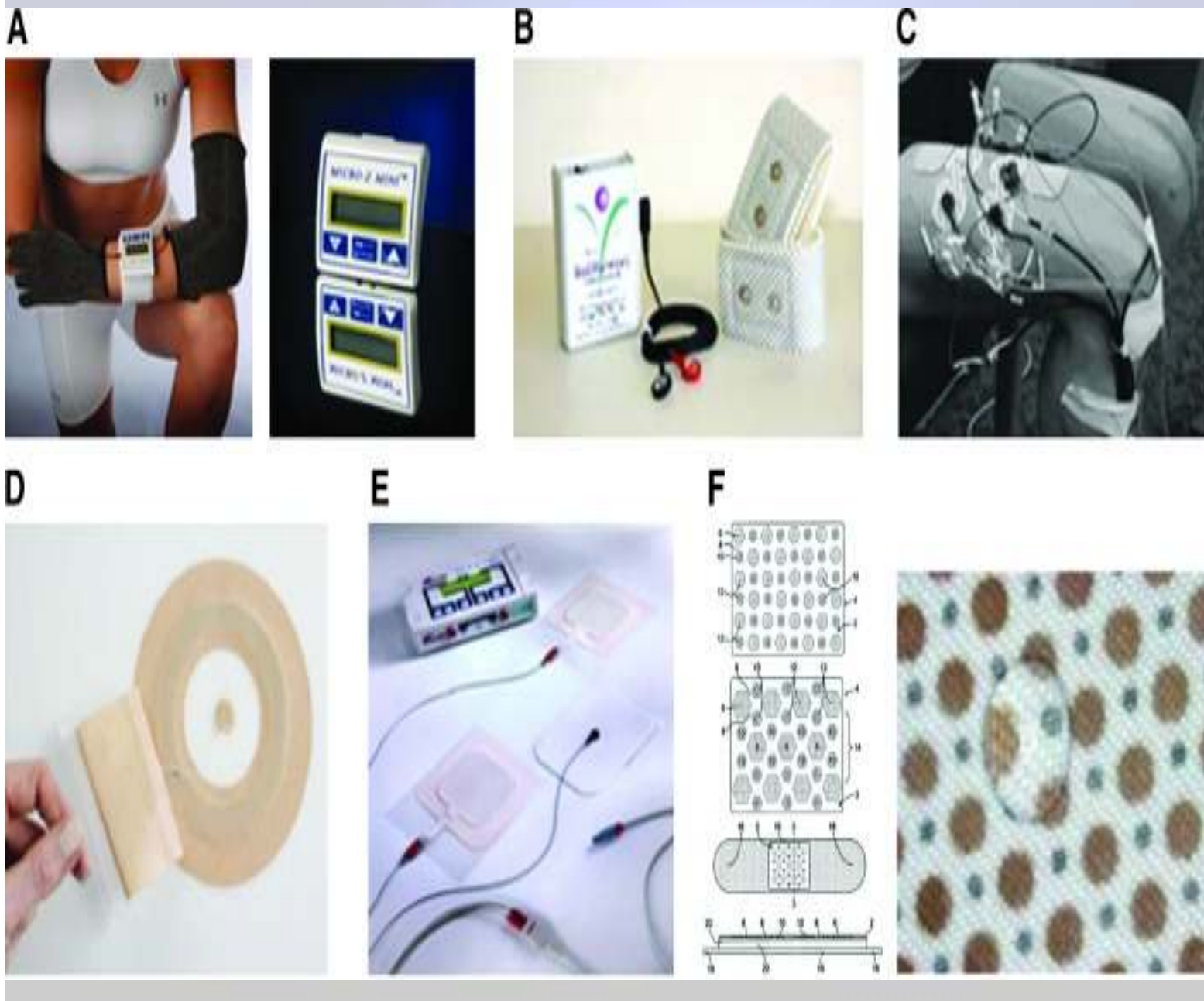
1-Steed DL. Diabetic Ulcer Study Group. J Vasc Surg. 1995; 21(1): 71-8; discussion 79-81.

2-d'Hemecourt P. Wounds. 1998; 10: 69-75.

3-Hong JP. Ann Plast Surg.2006; 56(4): 394-8; discussion 399-400

4-Mohan VK. Diabetes Res Clin Pract.2007; 78(3): 405-11

Elektrik Stimülasyonu



USG

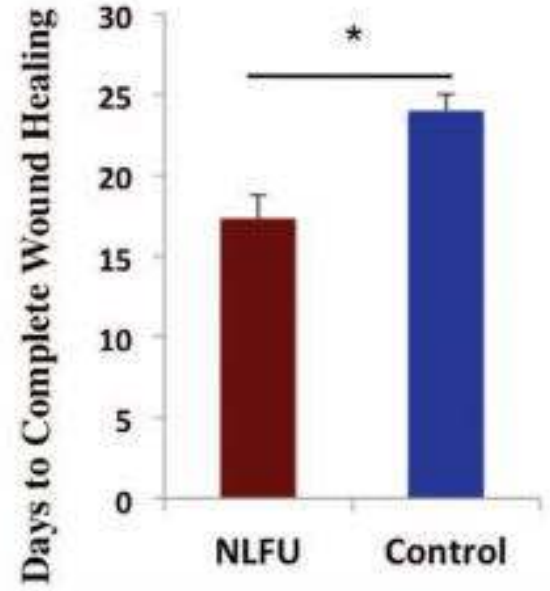
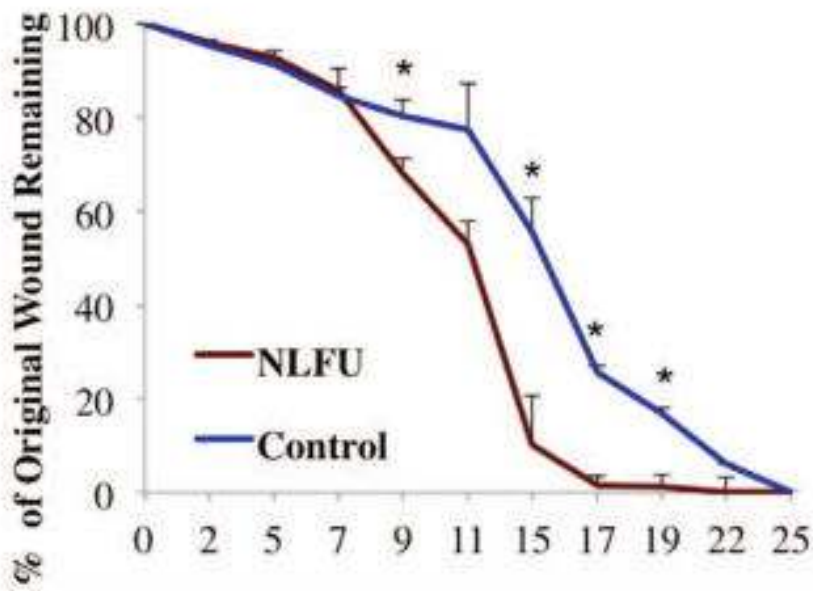
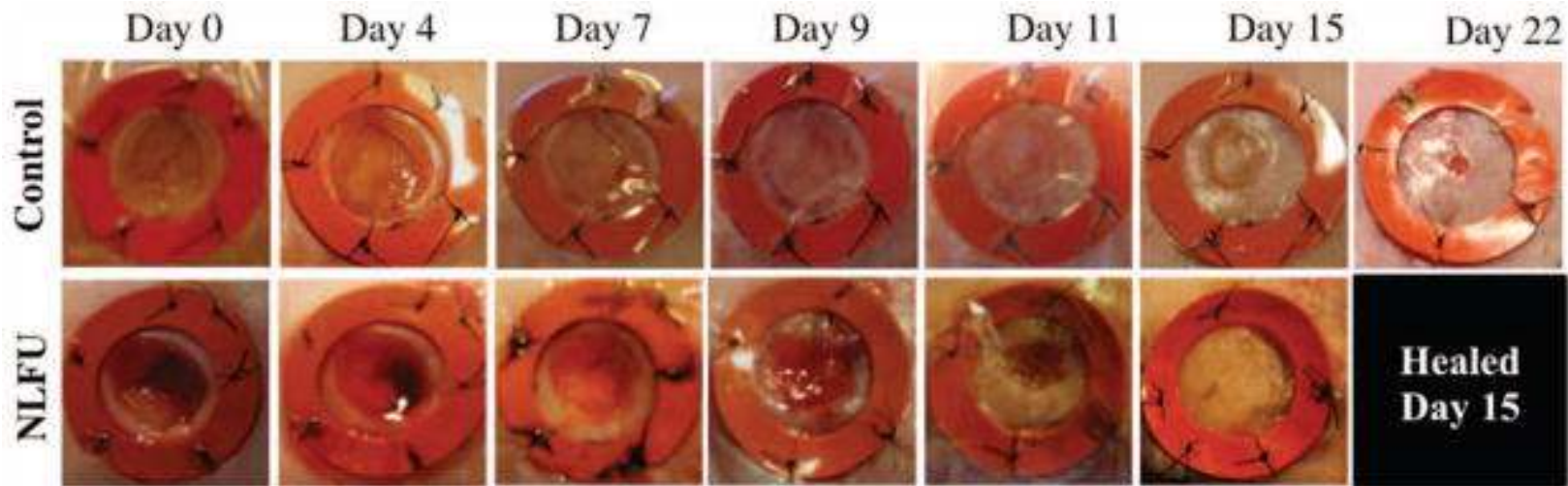
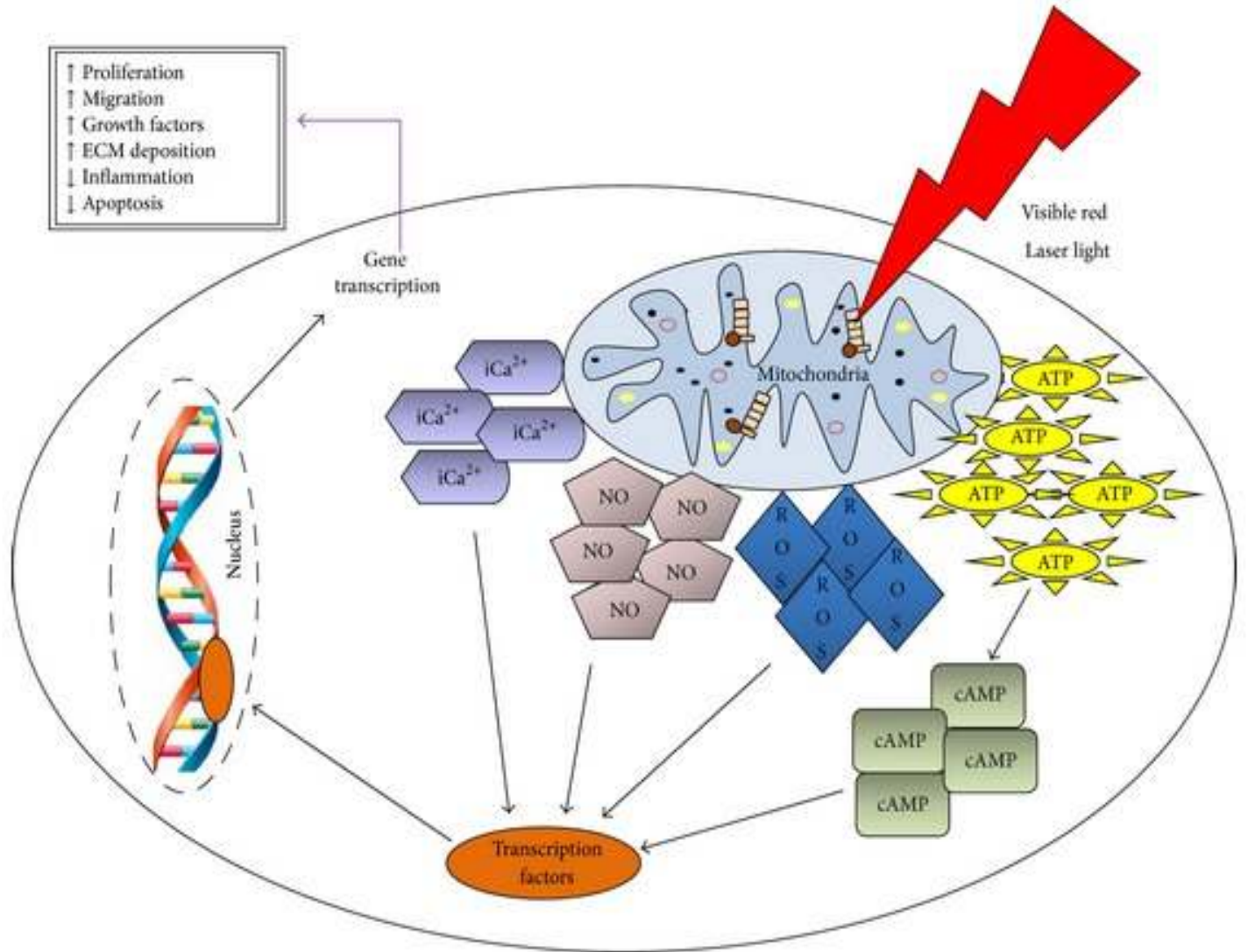


Foto tera pi



Gen ve kök hücre tedavilerinin ön plana çıkacaktır

Yaraya doğrudan ulaşım kolaylığı nedeniyle gen tedavisine uygundur

Gen transferi yöntemleri

Çıplak DNA

Viral transfeksiyon

Yüksek basınçlı enjeksiyon

Lipozomlar

**Kronik
Yarada
Hedef**

ve

Stratejiler

Gen Tra nsfe ri

Hepatosit büyüme faktörünü eksprese eden çıplak DNA parçaları kritik bacak iskemili hastaların bacak veya baldır kaslarına enjekte edilmiş.

Üç ay sonra 9 hastanın 6'sının yarasında iyileşme

Gu Y,. *The journal of gene medicine*. 2011;13(11):602-10.

Fibroblast büyüme faktörü içeren viral vektör aracılığı ile yapılan gen tedavisi sonrası kritik bacak iskemisi olan hastalarda ağrıda azalma ve yürüme mesafesinde artma

Yonemitsu Y,. *The journal of the American Society of Gene Therapy*. 2013;21(3):707-14.

Kas içine non-viral 1 fibroblast büyüme faktörü enjeksiyonun ampütasyonsuz yaşam süresi üzerine **bir etkisi yok**

Belch J. *Lancet*. 2011;377(9781):1929-37.

Kemik iliğinden elde edilen kök hücrelerin anjiyogenezi uyarmasına yönelik çalışmalar

Teng M. Wound repair and regeneration : official publication of the Wound Healing Society [and] the European Tissue Repair Society. 2014;22(2):151-60.

Kök

Hücre

**Tedav
isi**

Yağ dokusu kaynaklı kök hücreleri içeren çok sayı preklinik çalışma yapılmıştır.

Uzun G. Dis Mol Med. 2014;2(4):57-64.

Bacađınız kangren
olmuřtu. Kesip atmamız
gerekliyordu.

Ama biz alternatif
tıpçılar olduđumuz
için, gövdenizi
kesip attık.

Bařka
alternatif
yoktu. Ya
o, ya o...

