



# Onkolojik tedavide sık görülen komplikasyonlar

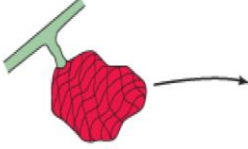


YEDİTEPE ÜNİVERSİTESİ

Dr Mehmet Aliustaoglu

# Kanser Tedavi Modaliteleri

Removal via surgery\*



Cerrahi

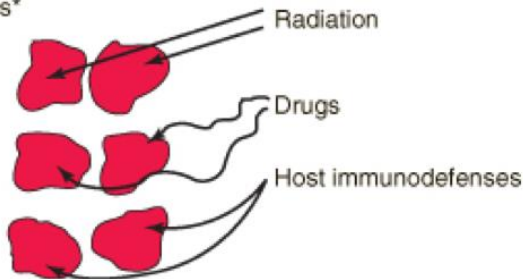
Kemoterapi

Hormon  
tedavisi

Radyoterapi

İmmünoterapi

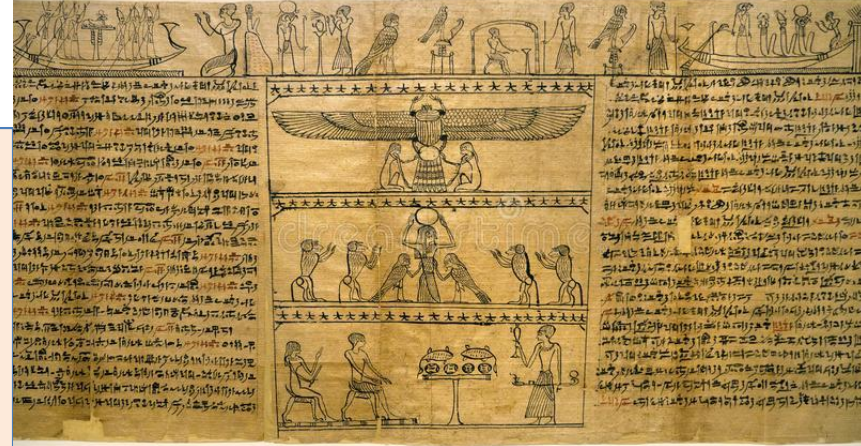
Destroy neoplastic cells\*



Hedefe  
yönelik  
tedaviler

Aşılar ,gen  
tedavileri,vs

# Cerrahi tedavi



- 1809 Over tümörünün eksizyonu McDowell
- 1846 Submaksiller bezin çıkarılması Warren
- 1881 Gastrektomi Billroth
- 1890 Mastektomi Halsted
- 1908 Abdominoperineal rezeksiyon Miles
- 1920s Beyin tümör cerrahileri Cushing
- 1935 Pancreaticoduodenectomy Whipple



# Cerrahi Tedavinin Yan Etkileri

**Dvit eks**  
(gastrektomi)

**Kısa barsak Send**

**Malabsorbsiyon**  
(Pankreas cer)

**Diyare**  
(Postvagotomi)

**Metabolik Asidoz**  
(ureterosigmoidostomi)

**Peritonit**  
(batıniçi cer)

**Folat Eks**  
(Gastric bypass)

**Osteoporoz**  
(Orşiektomi)

**Demir Eks**  
(Billroth II, Y-Roux)

**Vit A Eks**  
(Jejunioileal by pass)

**Alkali Reflü**  
(Mide, özefagus cer)

**Aspirasyon Pn**  
(Geçikmiş mide boşalması)

**DM**  
(pankreas cer)

**Vit B 12 Eks**  
Total/sub total  
gastrektomi, terminal  
ileum rez/by pass)

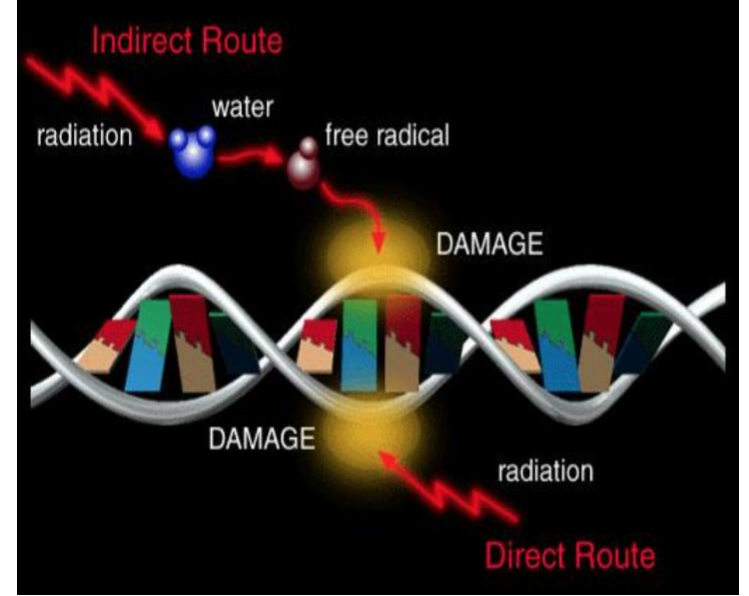
# Radyoterapi



1903

## Kanser tedavisi için radyasyonun ilk kez kullanımı

Marie Curie'nin 1898 yılında radyumu keşfini takiben, doktorlar 1903 yılında radyoaktif elementin kanser tedavisinde ilk kez kullanıldığını bildirmişlerdir. Radyoterapi, günümüzde modern kanser tedavisinin belkemiğini oluşturmaktadır.



1-2 ay içinde  
AKUT YAN ETKİ

Serebral ödem  
Alopesi  
Radyasyon myelopatisi  
Oral komplikasyonlar

Aylar – Yıllar sonrası  
GEÇ YAN ETKİ

Fibrozis –Katarak - işitme kaybı –  
kuru göz – Radyasyon enterit  
İkincil malignansiler  
Pigmentasyon değişimi

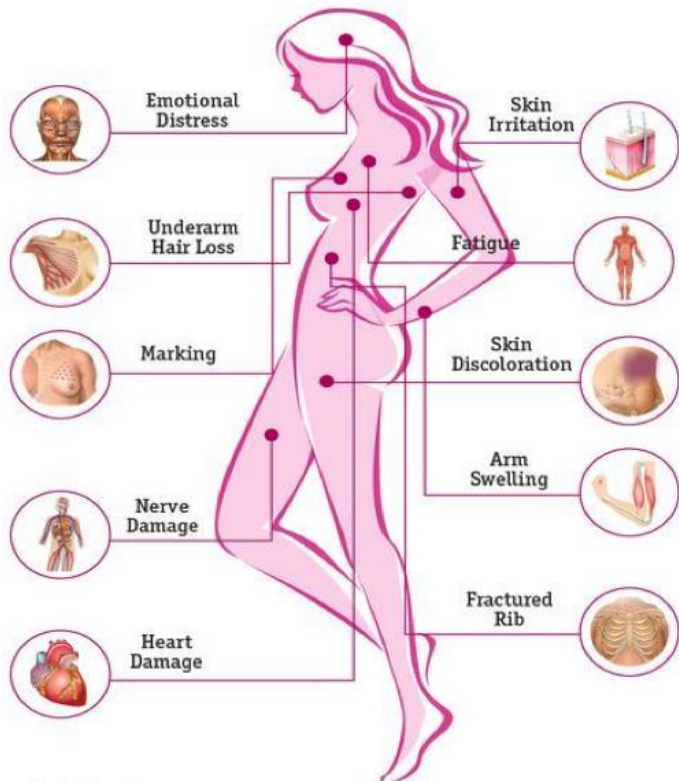
Radyasyon nekrozu  
Serebral atrofi  
Kranial nöropati  
Endokrinopati (hipotroidizm)  
  
Osteoradionekroz

# EFFECTS OF BREAST CANCER RADIATION ON THE BODY

Radiation therapy uses high-powered X-rays to kill cancer cells. It's a type of targeted therapy often used in breast cancer treatment. The radiation may be aimed at the tumor site, the lymph nodes, or the chest wall. It attempts to stop cancer from spreading, or decrease the risk of recurrence.

External radiation treatment is typically given five times per week, for five to seven weeks. A newer approach gives larger doses of radiation over three weeks (accelerated breast irradiation). Most people tolerate radiation therapy well.

Your doctor may recommend internal radiation (brachytherapy). This is a procedure in which tiny pieces of radioactive material are placed around the tumor site. Total treatment time can range from hours to about a week. There are fewer short-term side effects with targeted therapy, and it spares healthy tissue. According to BreastCancer.org, the long-term side effects of this method are not yet known.



## Emotional Distress

The hectic daily schedule of radiation treatment can cause emotional upset, stress, or anxiety.



## Skin Irritation

Your skin may be sensitive or look and feel like sunburn, with itching, peeling, or blistering.



## Underarm Hair Loss

You might lose underarm hair if radiation is targeted to your underarm area.



## Fatigue

Fatigue is common, but it almost always clears up a few weeks after the last treatment.



## Marking

The radiation team typically tattoos small dots on your skin as a guide for future treatment.



## Skin Discoloration

Skin can darken at the site of radiation and take months to return to normal. Some discoloration is permanent.



## Nerve Damage

Radiation can cause some nerve damage that results in numbness and pain.



## Arm Damage

If lymph nodes were removed before treatment, the lymph system can get blocked and cause swelling.



## Heart Damage

If radiation is given on the left side of the chest, you're at risk for heart damage.



## Fractured Rib

If radiation is given on the left side of the chest, you're at risk for heart damage.

# Antikanser medikal tedaviler

Kemoterapi

Hormon  
tedavisi

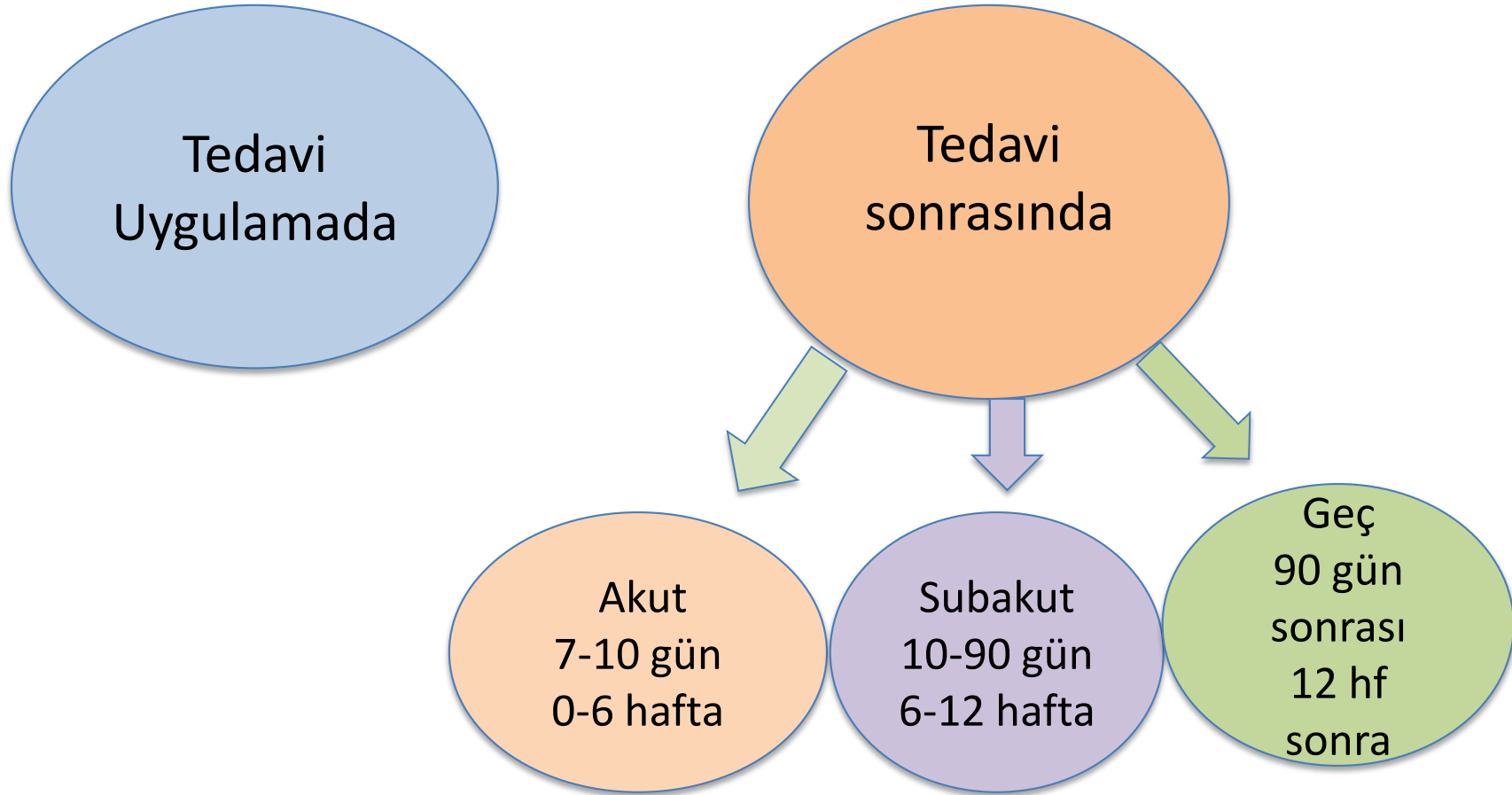
İmmünoterapi

Hedefe  
yönelik  
tedaviler

Aşılar ,gen  
tedavileri,vs



# İlaçlara bağlı komplikasyonlar

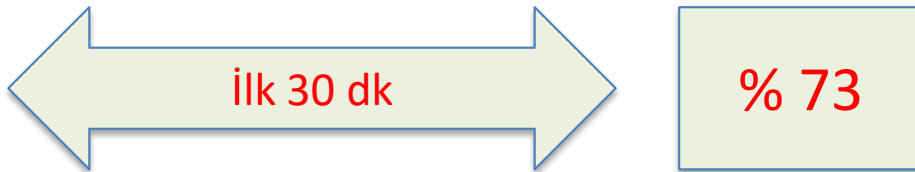
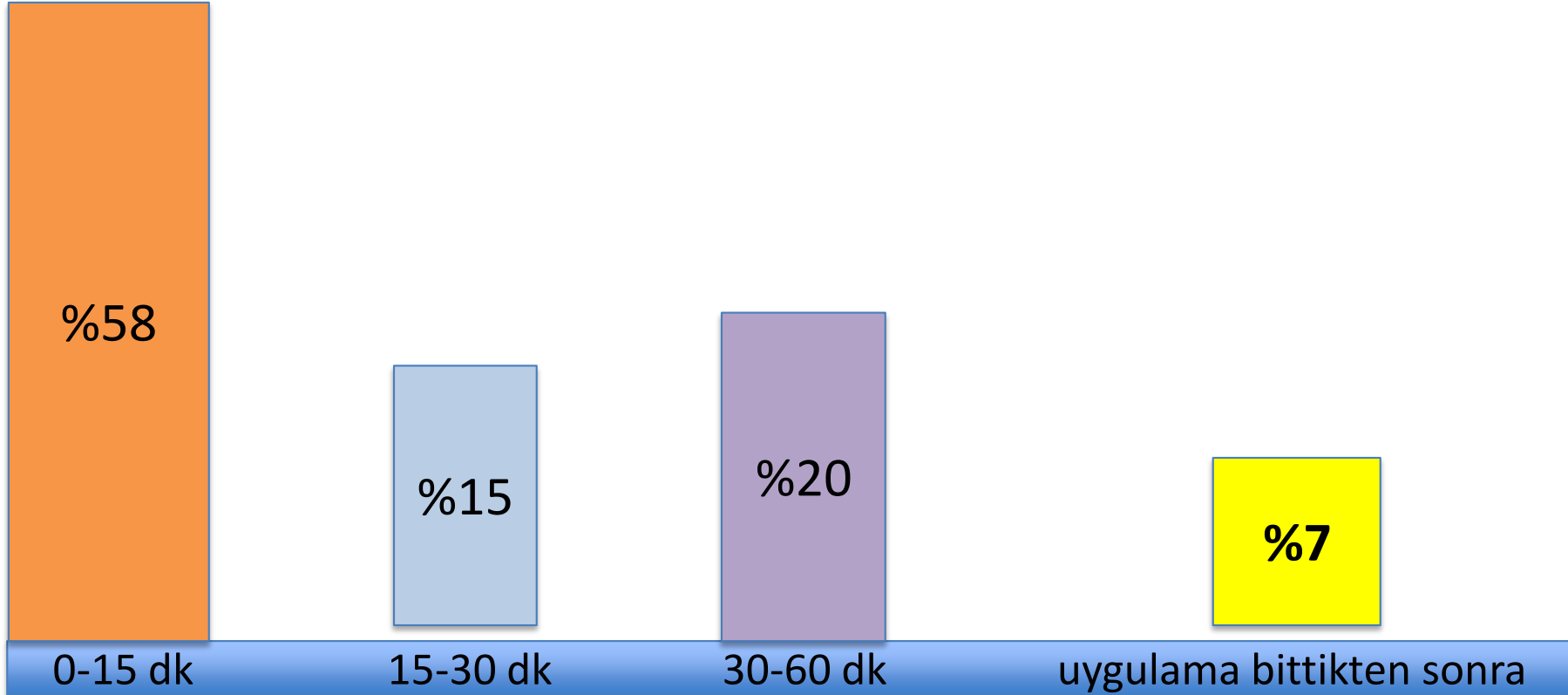


# Tedavi alırken

Allerji  
Ektravazasyon  
Kaşıntı  
Kardiyak Aritmi  
Aşırı Kusmalar  
Ateş  
Titreme  
Yorgunluk  
Emosyonel bozukluk  
Enjeksiyon Yerinde  
Ağrı ve Kızarıklık



# Uygulamada reaksiyonu zamanı



# Tedavi Uygulamada

Göğüs  
ağrısı

Titreme

Bulantı-  
kusma

Ateş

Kızarıklık

# Hipersensitivite Reaksiyonu

L-asparaginaz,  
Mitomisin-C,  
Bleomisin  
Paklitaksel  
Ritüksimab  
Setuksimab  
Trastuzumab  
Prokarbazin



Ürtiker,  
Kaşıntı,  
Anjiyoödem  
Anafilaksi

# İlaç Ekstravazasyonu

İrritan ajanlar

% 0.1-6  
Enjeksiyon alanı  
Ven boyunca

Vezikan ajanlar

Gergin, ağrılı ya da yangılı bir inflamatuvar reaksiyon

İrritan ajanlar

Klinik bulgu ve semptomlar

Ekstravaze olan bölgede

Yanma,

Sıcaklık

Eritem

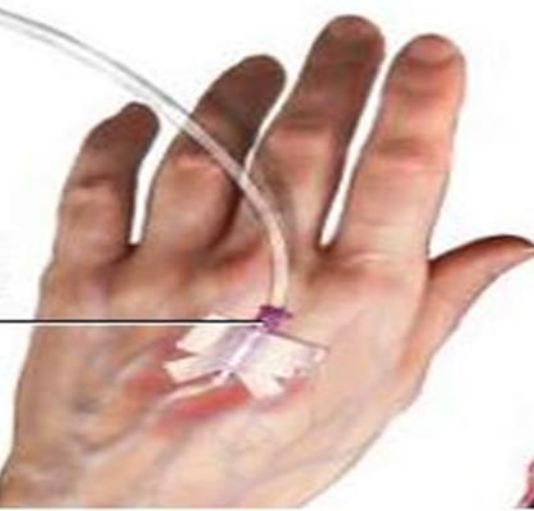
Hassasiyet

Ven trasesi boyunca skleroz ve hiperpigmentasyon

Klinikte çoğunlukla

Kimyasal selülit

Flebit



# İlaç Ekstravazasyonu

Vezikan  
ajanlar

Etkilenen bölgede nekroz gibi  
daha şiddetli direkt doku hasarı  
oluşturma potansiyeli

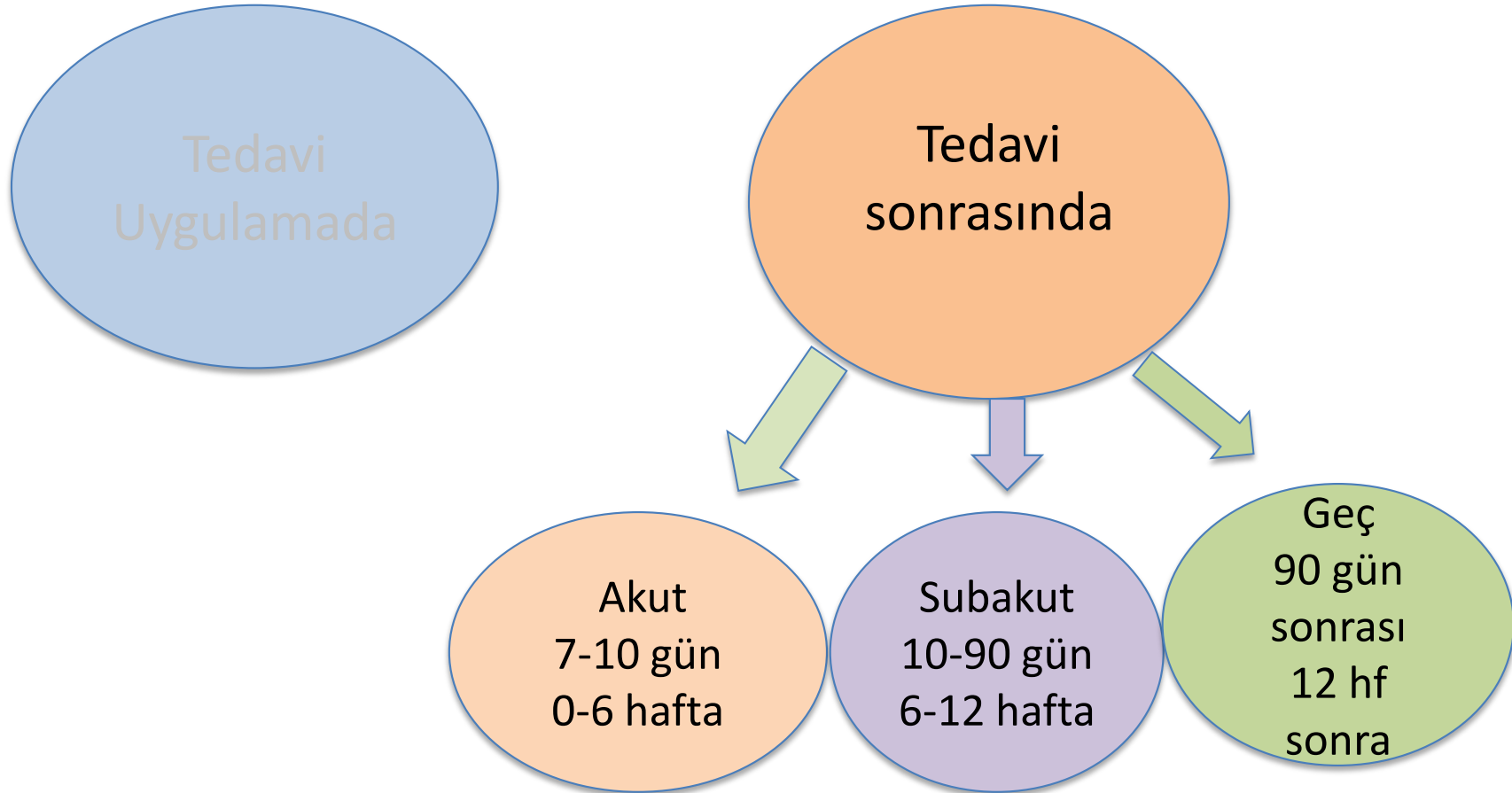
Genellikle birkaç gün / birkaç hafta sonra  
Erken lokal semptomlar,  
lokal ağrı, eritem,  
yanma, kaşıntı ve ödem

İki-üç gün içerisinde eritem giderek artar  
kahverengi renk değişimi,  
indurasyon,  
deskuamasyon / bül formasyonu

Doksorubisin  
ekstravazasyonundan 10 yıl  
sonra reaksiyon bölgesinde  
skuamöz hücreli karsinom



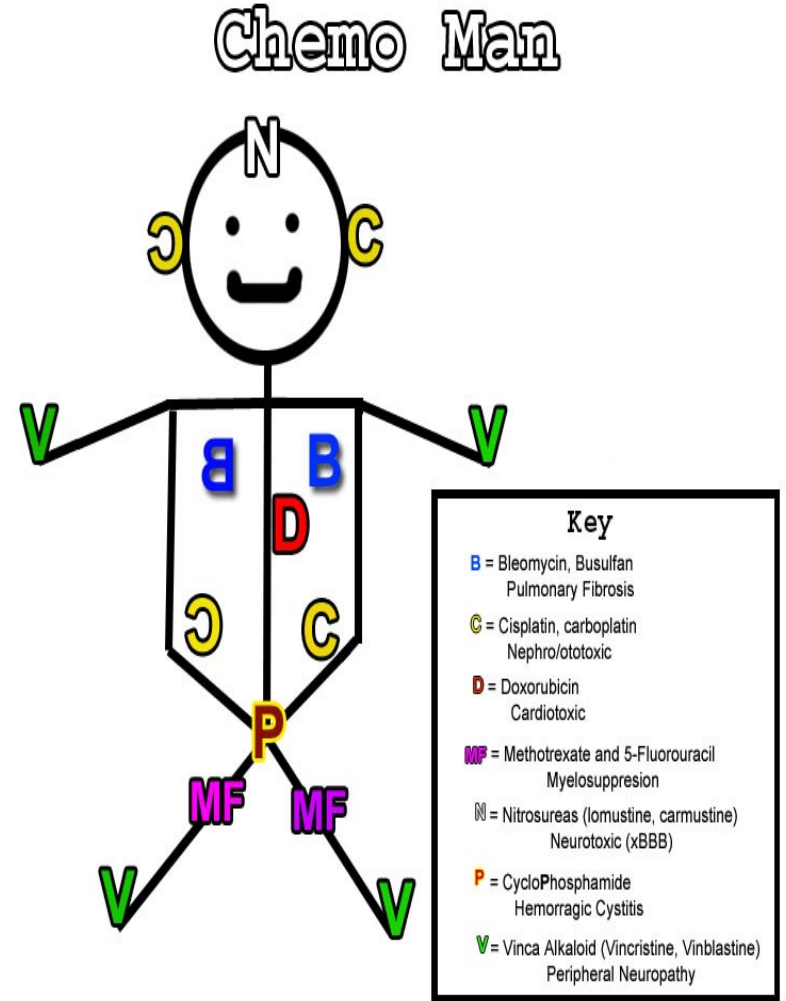
# İlaçlara bağılı komplikasyonlar





# Erken dönem yan etkiler

Kardiyak Aritmi  
Bulantı  
Aşırı Kusmalar  
İdrarın Kırmızı  
Renkte Gelmesi  
Fotosensitivite  
Ateş  
Stomatit  
Yorgunluk  
Halsizlik  
Kaşıntı  
Emosyonel Değişiklikler



# Subakut yan etkiler

## Kemik iliđi Depresyonu

- Bulantı
- Kusma
- İřtahsızlık
- Diyare
- Konstipasyon
- Stomatit

Yorgunluk

-Halsizlik:

- Alopesi

- Kařıntı

- Emosyonel Deđiřiklikler



# Geç dönem yan etkiler

Gonodal Etki  
Nörolojik Etki  
Pulmoner Etki  
Renal Etki

Erken menapoz  
İnfertilite  
Kardiak bozukluklar

Osteoporoz  
Akciğer hastalığı  
Karaciğer hastalığı

Katarakt  
İkinci primer kanser riskinde

# İkincil Kanserler

15 y kümülatif  
ikincil malignite  
% **11.2**

**NHL**  
ikincil malignite gelişme  
rölatif risk 1.3

**Hodgkin Lenfoma**  
kümülatif ikincil  
malignite insidansı

20 y % 10.6  
30 y % 26.3

- **En sık görülen ikincil maligniteler**
- Akciğer kanseri %2.8
- Lösemi %1.5
- Kolorektal kanser %1.5
- Meme kanseri %1.2

# Kemoterapi ilişkili sekonder kanserler

- Siklofosfamid,
- Mekloretamin
- Klorambusil,
- Melfalan,
- İfosfamid
- Streptozosin,
- Karmustin,
- Lomustin
- Semustin
- Dakarbazin,
- Prokarbazin
- Aziridin
- Altretamin
- Busulfanlar

En sık  
**hematopoitik sekonder  
maligniteler**  
3- 10 yıl

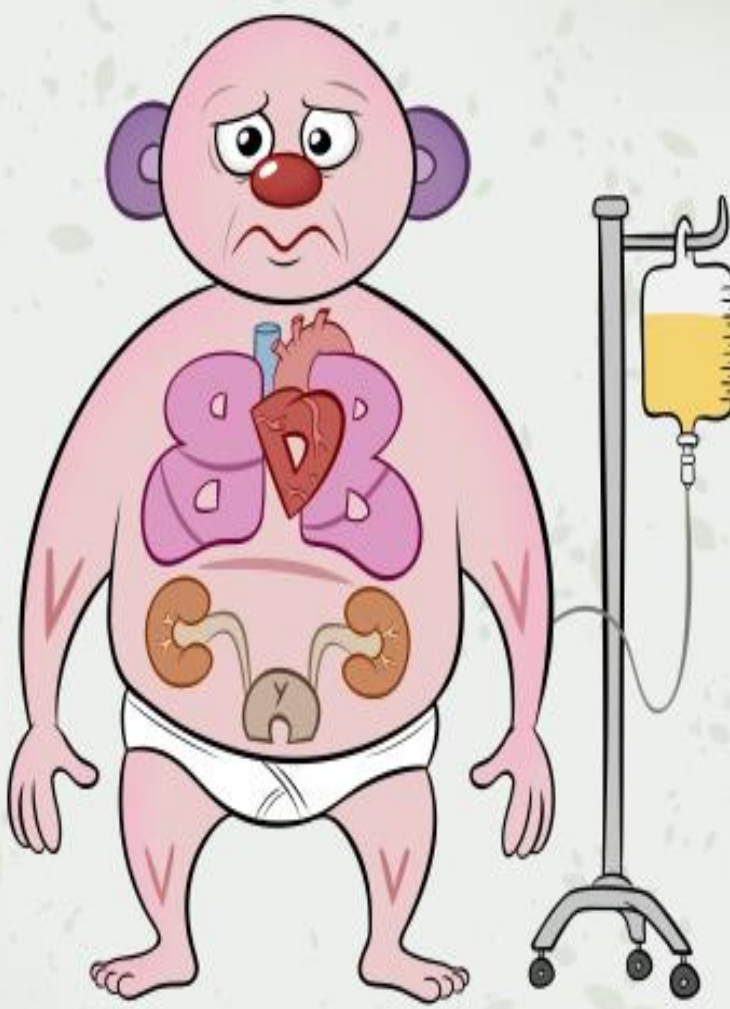
Latent dönem: 5-7 yıl olup doza  
bağımlıdır. (Sıklıkla MDS' yi izler

Epipodofilotoksinler:

Doz bağımlıdır ve latent dönem kısadır (1-3 yıl).  
Etoposid (>3 gr/m<sup>2</sup>)

# Özel durumlar

**CHEMOTHERAPY TOXICITIES**



**METHOTREXATE:**  
STOMATITIS

**BLEOMYCIN:**  
PULMONARY FIBROSIS

**DOXORUBICIN:**  
CARDIAC TOXICITY

**CISPLASTIN:**  
OTOTOXICITY & NEPHROTOXICITY

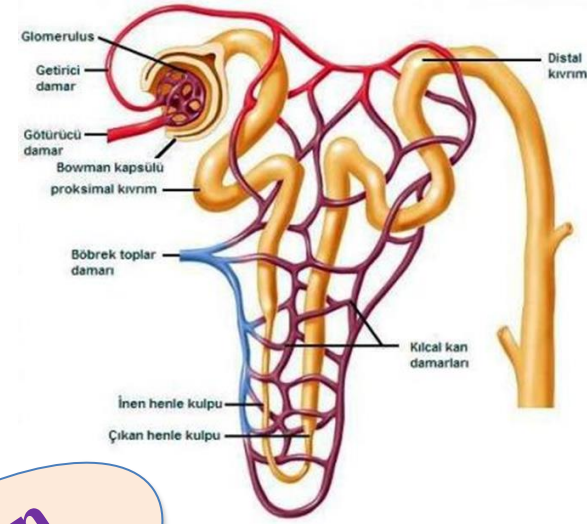
**CYCLOPHOSPHAMIDE:**  
HEMMORRHAGIC CYSTITIS

**VINCRIStINE/VINBLASTINE:**  
PERIPHERAL NEUROPATHY

[www.medconic.com](http://www.medconic.com)

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# Nefrotoksisite



Kanser tedavisinde kullanılan ilaçlar ;  
Proksimal tübül  
Distal tübül  
Glomerül

Tedavinin  
4 – 18. ayı

Akut Böbrek  
Yetmezliği

Proteinüri

Elektrolit  
Bozukluğu

Proteinüri  
2 gr/gün üzerinde  
tedavi kesilmelidir

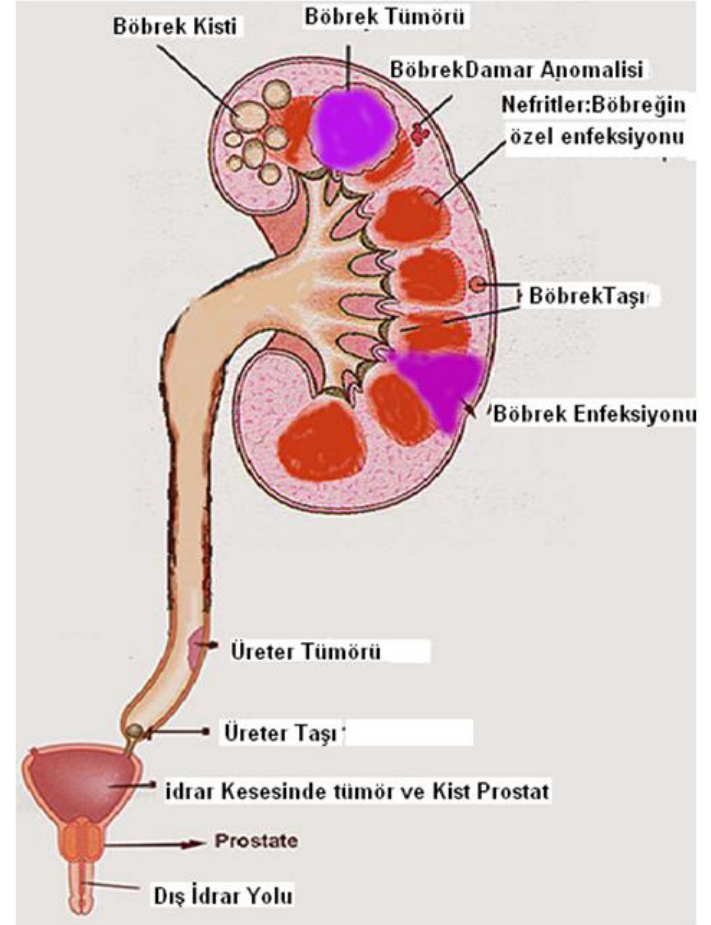
Sunitinib, interferon

Hipomagnezemi,  
Hipokalsemi  
Hipokalemi

Cisplatin: Non-oligürik ARY

# Hemorajik sistit

- Siklofosfamid
- İfosfamid





# Kanser Tedavisinin Kardiyovasküler Yan Etkileri



Arrhythmia  
QT-Prolongation



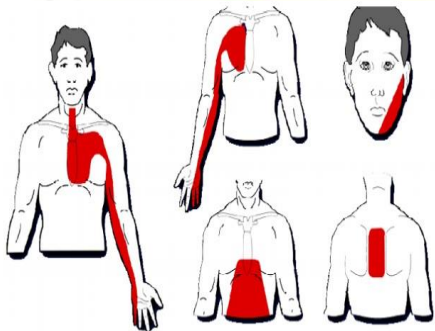
LVEF Decline/  
Heart Failure



Hypertension



Thrombo-  
embolism

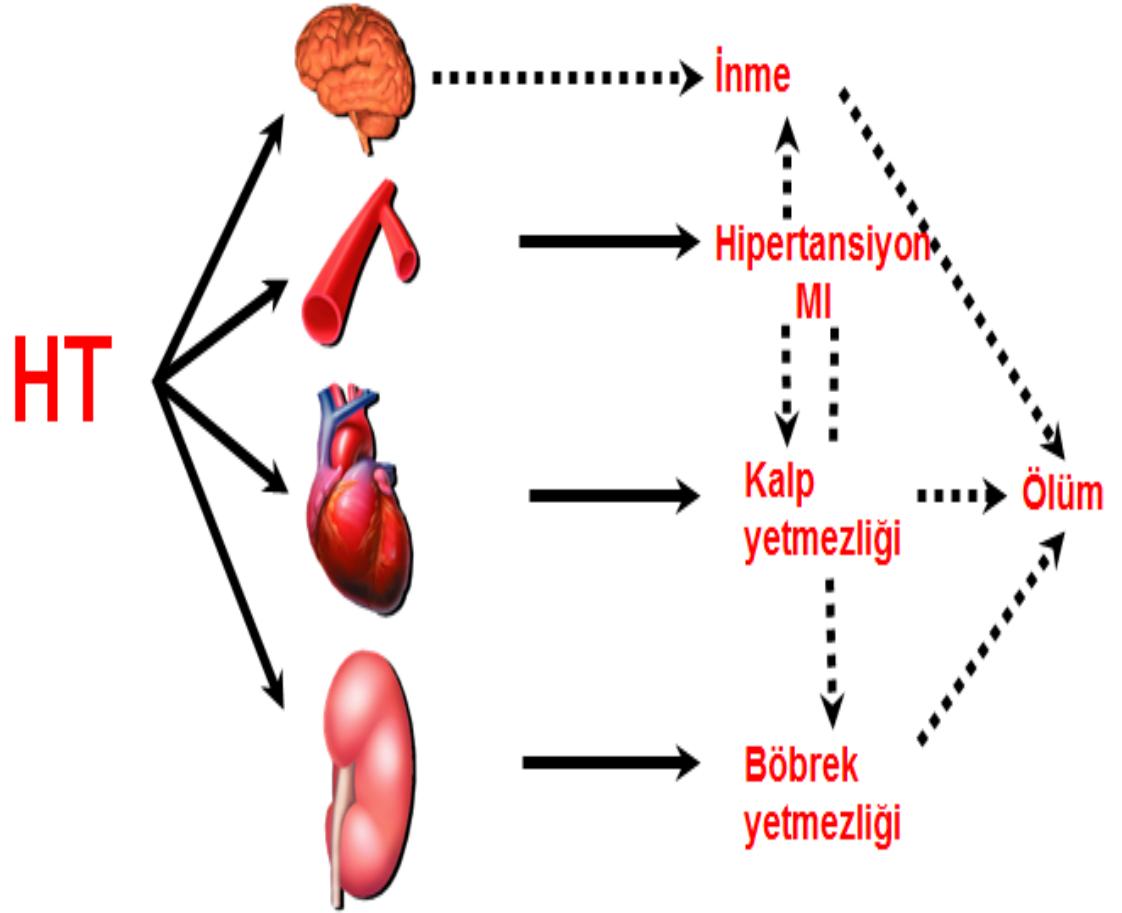


Akut koroner sendromda ağrı olusan bölgeler

AP/Mi  
Siklofosamid  
Antrasiklinler  
Vinkristin  
Trastuzumab

# Hipertansiyon

- Sorafenib % 17-43
- Sunitinib % 5-24
- Bevasizumab %4-35



# Ödem

- İmatinib ile tedavi edilen hastaların >%50'sinde hafif ödem, %1-3'ünde ciddi ödem gelişir
- Genellikle periorbital, sabahları en kötü
- Bacakta ödem de sıktır; pulmoner ödem GİST hastalarında çok nadirdir
- PDGFR inhibisyonu ile ilişkili olabilir



# Cilt komplikasyonları

## Akneiform Döküntü

Setuksimab  
Panitumumab,  
Gefitinib  
Erlotinib

Lapatinib  
Kapesitabin



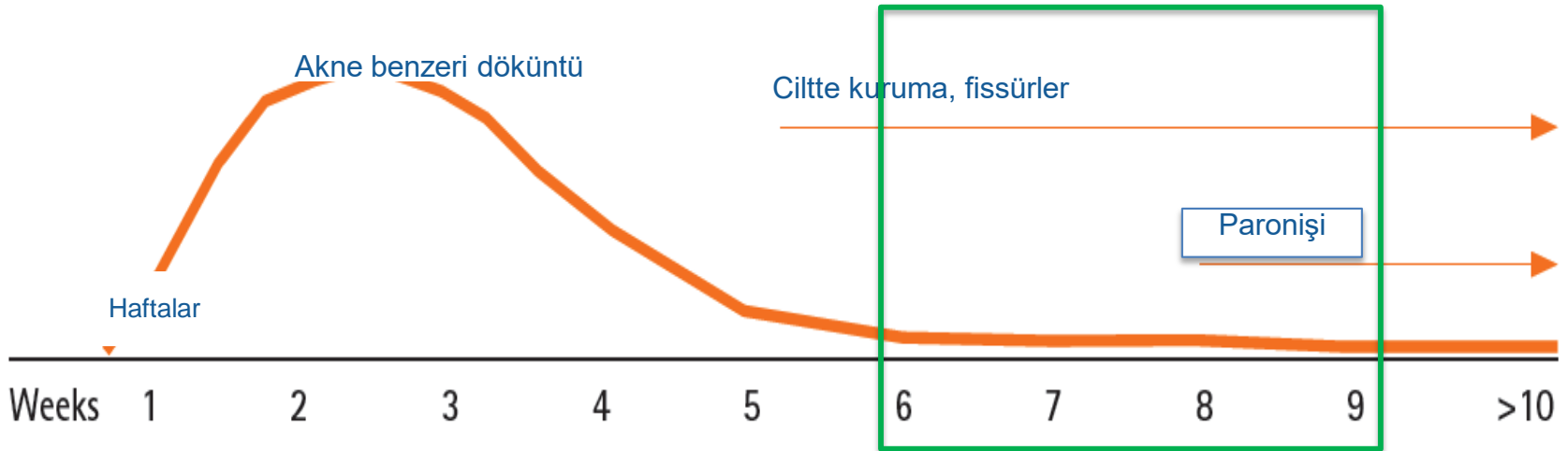
## El Ayak Sendromu<sup>1</sup>



5 June 2013

# EGFR İnhibisyonu ile ciltte gözlenen değişiklikler

Muhtemel cilt reaksiyonlarının zamana göre gelişim süreci



## Tırnak Deęişiklikleri



Siklofosfamid, Hidroksiüre,  
5-florourasil (5-FU)  
Doksorubisin Daunorubisin  
Antraksilinlerin

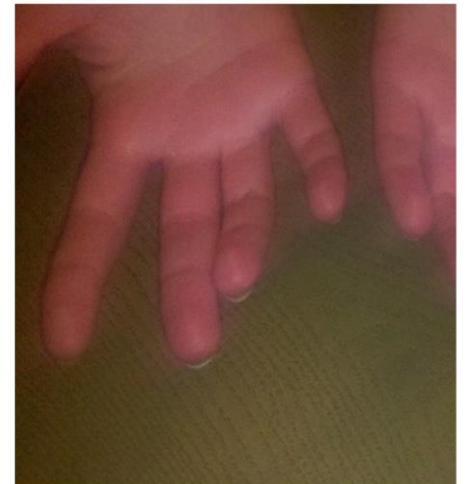
## Hiperpigmentasyon



Bleomisine  
Busulfan  
Siklofosfamid  
5-FU  
Doksetaksel

# Vazomotor deęişiklikler

- Bleomisin
- Asparaginaz
- Taksanlar
- Doksorubisin
- Gefitinib
- 5-FU
- Karboplatin
- Etoposid
- Dakarbazin
- İrinotekan
- Siklofosfamid
- Karmustin
- Metotreksat
- Sisplatin,
- Antiöstrojenler
- Antiandrojenler
- Lüteinizan hormonlar



# Pulmoner Toksikite

- İnterstisiyel pnömonitis
- Pulmoner fibrozis
- Erlotinib

Everilomus % 14

Alkilleyici Ajanlar,Siklofosfamid,Bleomisin

5 gün - 9 aydan daha uzun





Somatostatin

# Hiperglisemi

mTOR inh

Drug	Types of cancer	n	Hyperglycemia (%)	
			All grades	Grades 3–4
<b>Everolimus</b>				
Everolimus	Renal cell carcinoma	269	50	12
Placebo (3)		135	23	1
Everolimus	Pancreatic NETs	204	13	5
Placebo (2)		203	4	2
Everolimus + Oct	Gastrointestinal NETs	215	12	5
Placebo + Oct (64)		211	2	0.5
Everolimus	Breast	482	13	4
Placebo (4)		238	2	<1
Everolimus	Subdymal giant cell astrocytoma with TBS	78	ND	ND
Placebo (5)		39		
<b>Temsirolimus</b>				
Temsirolimus	Renal cell carcinoma	208	26	11
Interferon		200	11	2
Temsi + interferon (6)		208	17	6
Temsirolimus + letrozole	Breast cancer	550	13	4
Placebo + letrozole (53)		553	5	1
Temsirolimus	Mantle cell lymphoma	108	ND	ND
Investigator's choice (7)		53	ND	ND

# Hiperlipidemi

- Kolesterol, LDL ve trigliserid yükselmesi
- Hastaların **%70** inde hiperkolesterolemi-hipertrigliseridemi  
Genellikle hafif ve orta düzeydedir

mTOR inh

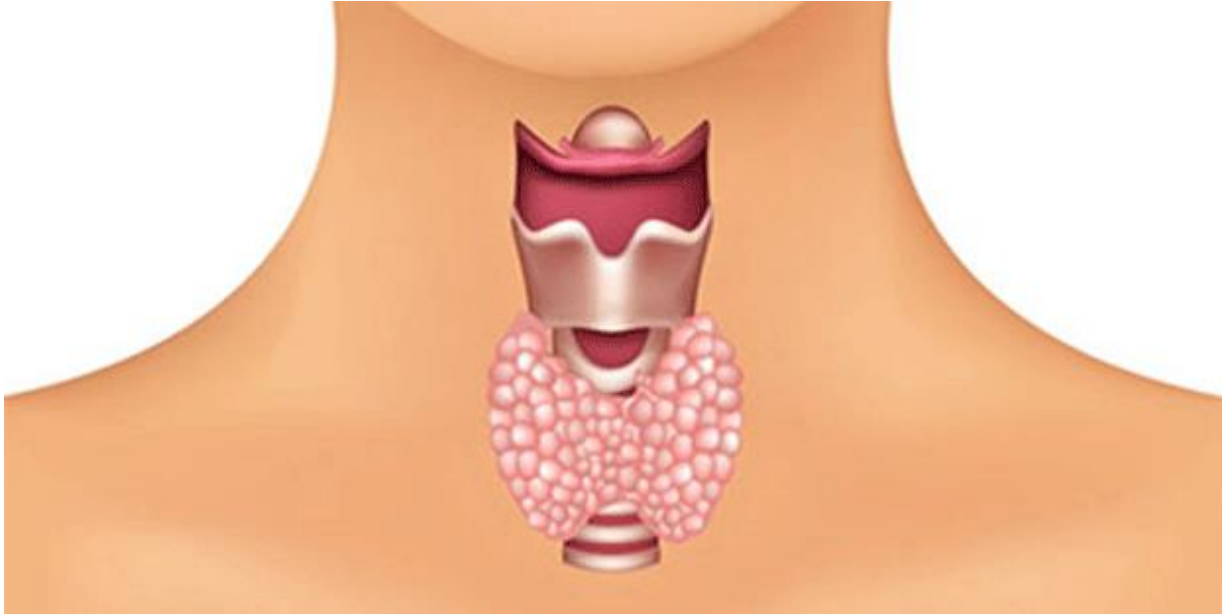
mTOR inh

Sirolimus  
Everolimus  
Temsirolimus

- Trigliserid seviyesinin 500 mg/dl üzerine çıkması durumunda tedaviye fibratlar eklenmelidir

# Hipotiroidi

Sık	Orta		Bildirilmemiş	
Sorafenib	Axitinib	Erlotinib	Bosutinib	Lapatinib
Sunitinib	Cabozatinib	Nilotinib	Crizotinib	Ruxolitinib
İmatinib	Dasatinib	Pazopanib	Gefitinib	Vemurafenib



# Osteoporoz ve Osteonekroz

Osteopeni ;

kombinasyon kemoterapi  
aromataz inhibitörleri

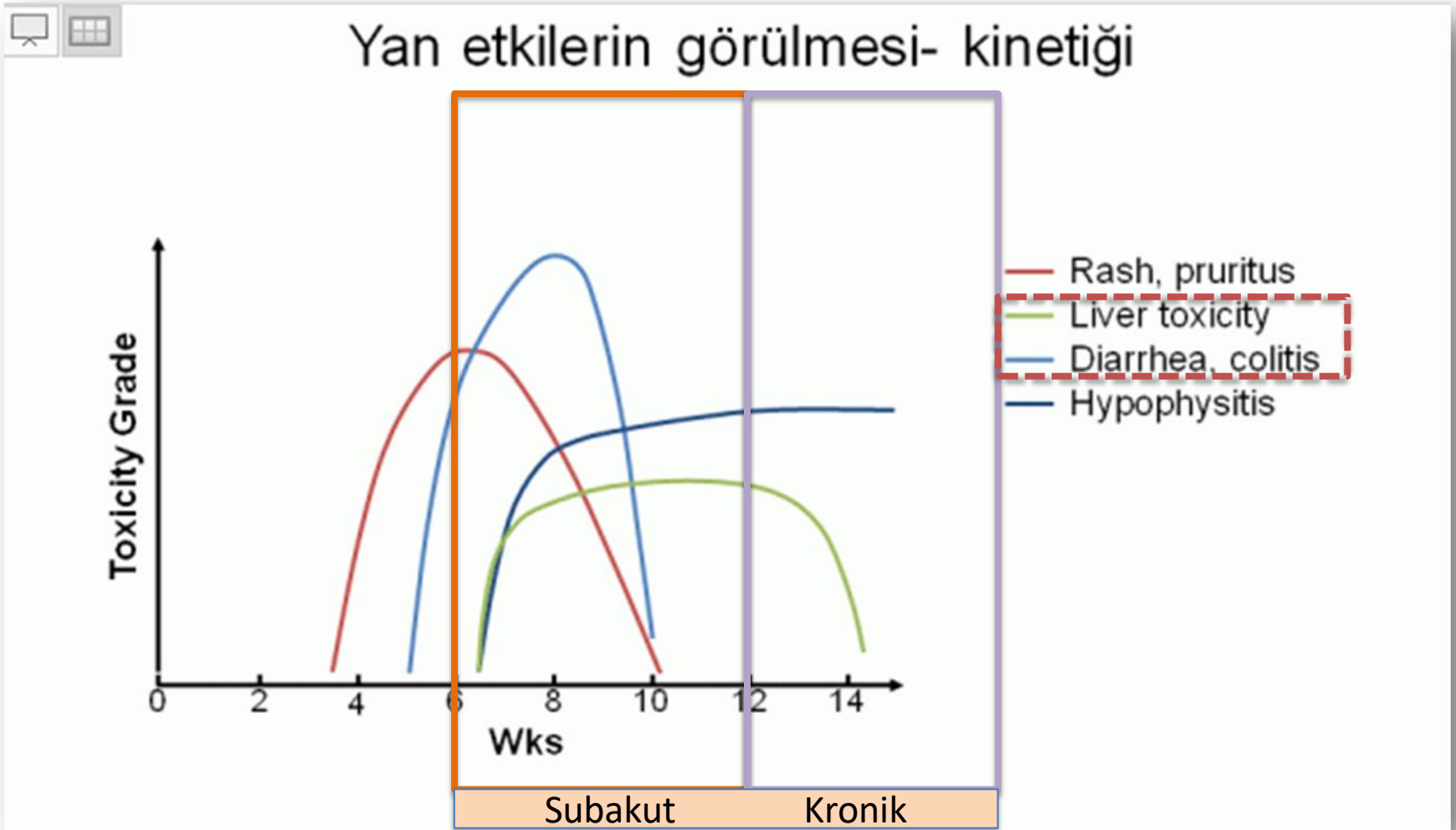
**Osteonekroz**

- lenfoma,
  - lösemi
- kemik iliği  
transplantasyon

**Zolandronik asit**



# İmmünoterapiler



# Pnomonit

İmm aracılı öz alt  
loblarda buzlu cam  
görünümü,  
dissemine infiltrasyon

Yeni başlayan öksürük  
ve nefes darlığında  
şüphelenmeli  
Radyoloji istenmeli

25 gün – 9,7 ay içinde

İpi+nivo %6  
10 ay  
Pembrolizumab  
2 gün – 19,3 ay

# Kolit

İshal  
İleus  
Ateş  
Karın ağrısı  
Peritoneal bulgu  
Toksik megakolon  
Mukuslu/kanlı dışkılama

Kolonoskopi: inen kolonda ülserasyon  
Fokal aktif kolit  
Kript epitel değ  
Rektum tutulmaz  
İntestinal perforasyon

2 gün 4,3 ay  
Nivo : 3 gün – 13 ay içinde  
Kombinasyon 15 ay



# Hepatit

AST ALT 5 kat  
bil 3 kat artar

Nivo: 6 gün 9 ay  
Kombinas: 11 ay  
Pembrolizumab 21,5 ay





# Endokrinopati

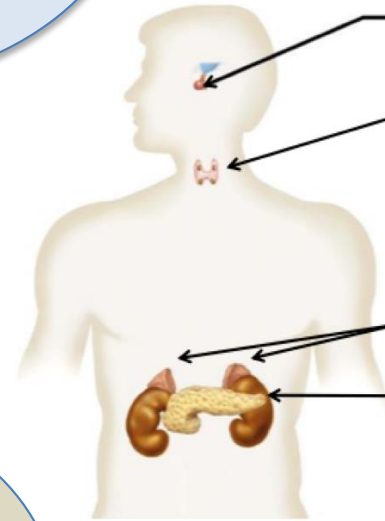
Tiroid boz  
% 4 hipertiroid  
1 gün – 13,5 ay

Pembro  
hipertrod %3  
1gün- 22 ay  
hipotroid %8  
5 gün -19 ay

Hipofizit  
1,5 ay- 11 ay  
nivo

Tiroid boz  
Nivo %9  
hipotiroid  
15 gün – 14 ay

Adrenal ytmz  
15 gün – 5 ay  
komb %5



- Pituitary gland**
- Hypophysitis
  - Corticotropin (ACTH) decrease
  - Secondary adrenal insufficiency<sup>a</sup>
- Thyroid gland**
- Hyperthyroidism
  - Hypothyroidism
  - TSH increase or decrease
  - Thyroiditis
  - Free thyroxine increase or decrease
  - Autoimmune thyroiditis
- Adrenal glands**
- Primary adrenal insufficiency<sup>b</sup>
- Pancreas**
- Diabetes mellitus

# Hormonoterapiler

Sıcak Basması  
Kemik Ağrısı,  
Bel Ağrısı  
Bulantı  
Yorgunluk  
Öksürük  
Konstüpsiyon  
Vajinal Kuruluk ve  
Vajinal Kanama  
Depresyon  
Dispne  
Anksiyete  
Ödem

Tamoksifen

Anastrazol

Letrazol

Eksemestan

Fulvestran

*“Doktorlar; az bildikleri ilaçları,  
daha az bildikleri vücudumuza  
vererek, hiç bilmedikleri  
hastalıkları tedavi ederler”*



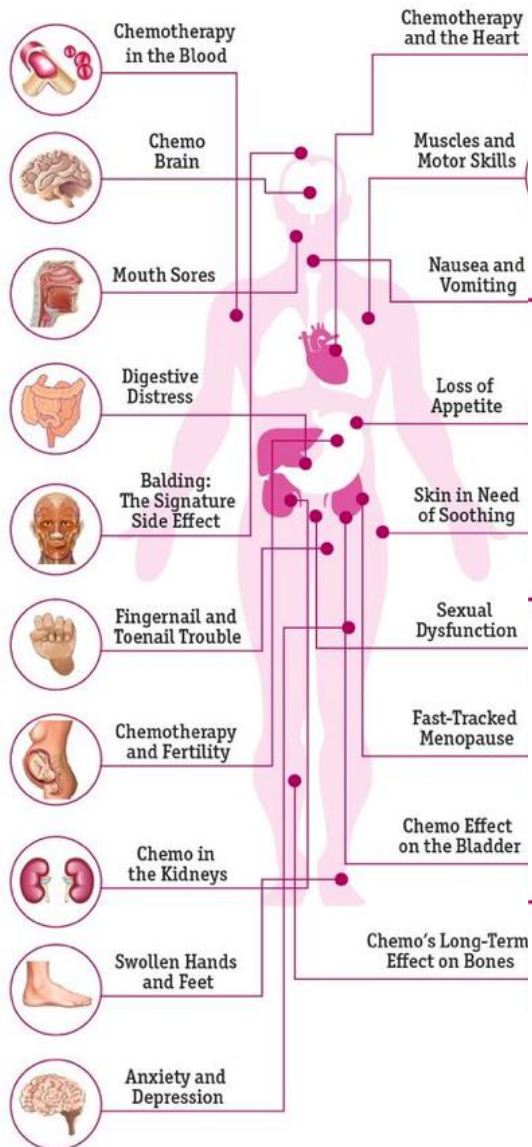
**Dinlediğiniz için  
teşekkürler**

• Voltaire 1694-1778



# THE SIDE EFFECTS OF CHEMOTHERAPY ON THE

Cancer cells divide more quickly than healthy cells, and chemotherapy drugs target those cells. Unfortunately, fast-growing cells that are healthy can be affected, too. There are many different chemotherapy drugs with the potential for many different side effects. These effects vary from person to person and from treatment to treatment.



## Chemotherapy in the Blood

Chemotherapy can interfere with the body's ability to produce healthy blood platelets, red blood cells, and white blood cells. Low blood counts can lead to a variety of serious side effects.

## Chemotherapy and the Heart

Chemotherapy can weaken the heart muscle, especially in someone who has a preexisting heart condition.



## Chemo Brain

Foggy thinking and memory problems plague some chemotherapy patients. This unsettling side effect can further anxiety and stress.



## Muscles and Motor Skills

Tired, achy muscles can interfere with balance, coordination, and motor skills.



## Mouth Sores

The gums, insides of the cheeks, tongue, and throat are prone to sores. Great care must be taken to avoid infection.



## Nausea and Vomiting

Nausea is one of the most common symptoms of chemotherapy. Powerful anti-nausea medications given during treatment can ease or eliminate vomiting.



## Digestive Distress

Some patients suffer from constipation, and others from diarrhea. Weight loss and weakness are common.



## Loss of Appetite

Beginning with the mouth, chemotherapy can disturb the entire digestive system, causing a wide variety of unpleasant symptoms that can eliminate the appetite.



## Balding: The Signature Side Effect

It's not cancer that causes baldheadedness in cancer patients. It's the chemotherapy. Some forms of chemo damage the hair follicles, so you might lose all your body hair, but remember: it's only temporary.

## Skin in Need of Soothing

Some people suffer dry, irritated skin. Others develop sensitivity to sunlight and must take special precautions to avoid sunburn when outdoors.



## Fingernail and Toenail Trouble

Some chemotherapy patients develop brown, cracked fingernails and toenails.

## Sexual Dysfunction

If symptoms of chemotherapy are severe, it might be hard to "get in the mood," but it's usually a temporary problem.

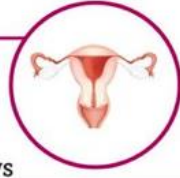


## Chemotherapy and Fertility

Chemotherapy can harm sperm and cause hormonal fluctuations. Infertility may be temporary or permanent.

## Fast-Tracked Menopause

Chemotherapy can affect the menstrual cycle, cause hot flashes, and trigger early menopause.



## Chemo in the Kidneys

Decreased urination may be a sign that chemotherapy is harming the kidneys.

## Chemo Effect on the Bladder

Red urine isn't necessarily a problem—it may just be certain chemotherapy drugs working their way out of your system.

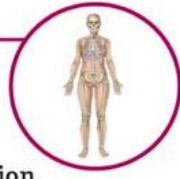


## Swollen Hands and Feet

Swollen hands and feet may be a sign that your kidneys are working overtime.

## Chemo's Long-Term Effect on Bones

A long-term side effect of chemotherapy is cancer-related osteoporosis.



## Anxiety and Depression

Chemotherapy and its side effects add to the stresses of everyday life and can become overwhelming. Complementary therapies and support groups can lighten the load.