Mitä hoidon jälkeen? Sädehoidon myöhäishaitoista

Erikoistuvien päivät
25.1.2013
Kuopio
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LENT (late effect of normal tissues)

- Kliininen havaitseminen
  - oireet
- Aikaikkuna
  - ymmärrys siitä aikajanasta, jolla muutokset ilmaantuvat
- Annos/aika/tilavuus
  - millä tavoin selittävät tapahtuvia muutoksia
- Kemialliset ja biologiset modifikaattorit
  - mikä merkitys haittojen synnyssä
- Kuvantaminen
  - millä tavoin muutokset voidaan nähdä kuvantamalla
- Laboratoriotutkimukset
  - mitä muutoksia voisi tulla
- Erotusdiagnostiikka
  - voiko kysymys ola jostain muusta
- Tarvitaanko patologinen diagnoosi
- Hoito
  - mitä voidaan tehdä
- Seurannan järjestäminen

SOMA

- NCI konsensus myöhäishaittojen klassifiointiin
- subjective
- objectice
- managament
- analytic laboratory and imaging

Table 12.4. Evaluation of Late Injury: Brain

Technical Factor	Patient/Tumor Factors	Clinical Manifestations
Dose >60 Gy (necrosis)	Young age (neurocognitive)	Headache
Dose >18 Gy (neurocognitive, endocrine)	Female sex (neurocognitive)	Somnolence
Large treatment volume	Diabetes	Neurocognitive deficit
Number of prior surgical procedures	Hypertension	Motor/sensory deficit
Chemotherapy (e.g., methotrexate, Ara-C)	Primary tumor volume ≥70 cm^3	Seizures
Decadron	Central or cortical lesion location	
	Prior central nervous system damage (e.g., tumor invasion, mass effect, hydrocephalus)	

hoidon aikana, sen jälkeen ,

6 kk:n kuluttua

nekroosi ja glioosi tarvitsevat aikaa 6-12 kk

Table 12.6 Evaluation Of Late Injury: Spine

Technical Factors	Patient/Tumor Factors	Clinical Manifestations
Length (volume)	Primary spinal cord tumor (e.g., meningioma, astrocytoma)	Motor/sensory deficit
Chemotherapy (especially intrathecal, intraventricular, high dose methotrexate or Ara-C)	Diabetes, hypertension	Incontinence
Large dose or dose per fraction	Prior CNS damage (e.g., tumor invasion, mass effect)	Lhermitte's syndrome
Region treated (cervical spine vs. thoracolumbar spine)		

Table 12.9 evaluation of late injury: skin

Treatment Factors	Patient/Tumor Factors	Clinical Manifestations
High total dose	Age extremes	Scaliness/roughness
Low-energy photons High-energy electrons Obliquity of radiation field use of bolus or beam modifiers	Race (red hair, fair skin)	Hypersensitivity
High dose per fraction (2.5 Gy)	Ataxia-telangiectasia	Edema
Large volume (e.g., >60% to >40 Gy)	Diabetes	Pain
Chemotherapy (e.g., methotrexate)	Microcirculatory impairment	Ulceration
	Infection	

Akuutti ihoreaktio, kemosädehoito, cetuksimabi

teleangiectasiaa

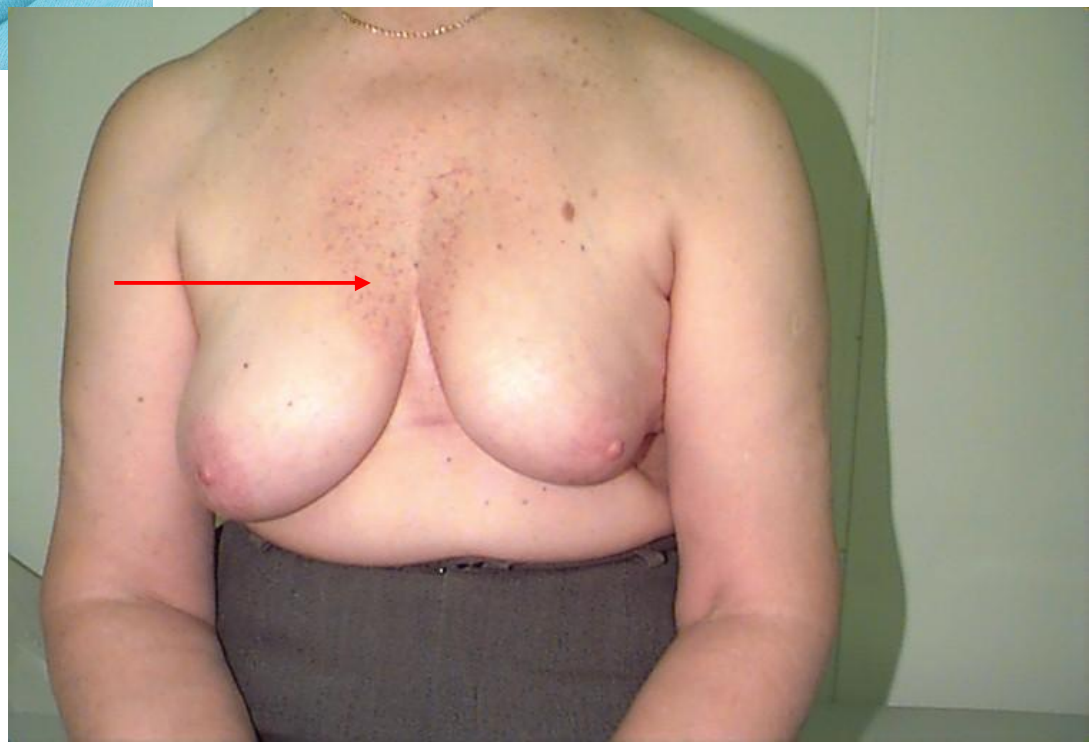
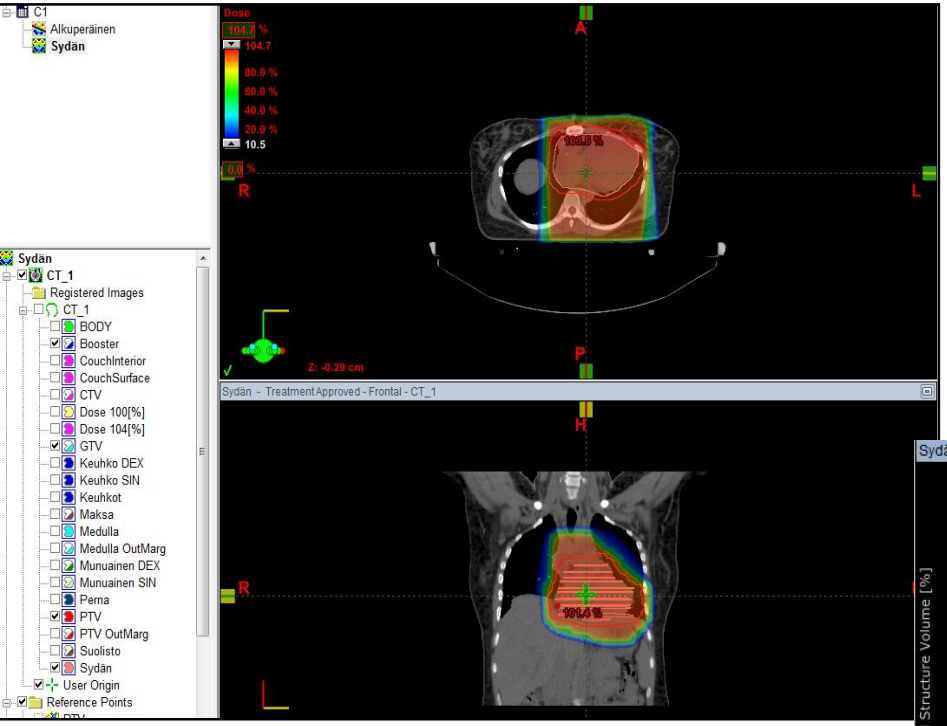


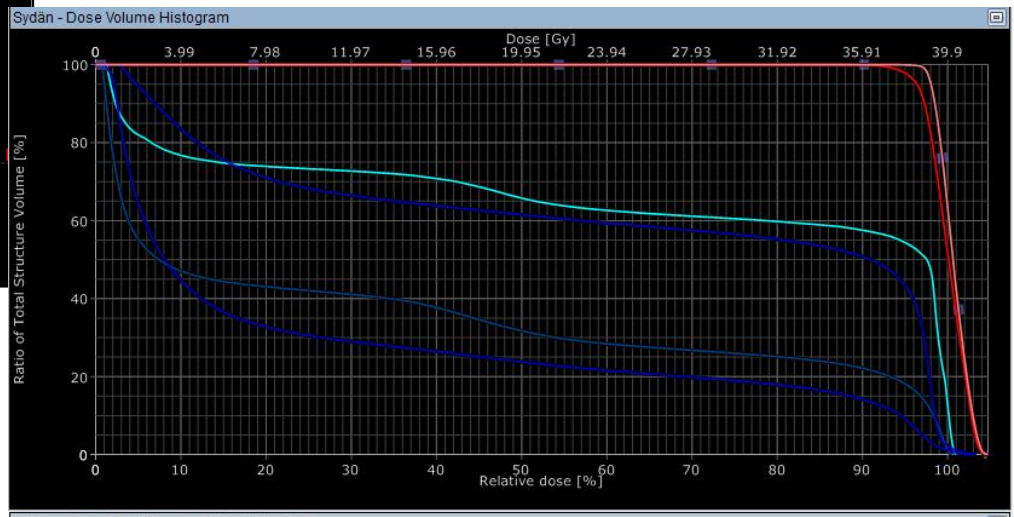
Table 12.11 Evaluation Of Late Injury: Heart

Treatment Factors	Patient Tumor Factors	Clinical Manifestations
High total dose	Preexisting cardiopulmonary disease (e.g., pericarditis, myocardiopathy)	Angina pectoris
High dose per fraction	Age extremes	Pericardial pain
Large volume (e.g., >40 Gy to >60%)	Hypercholesterolemia	Dyspnea
Chemotherapy (e.g., doxorubicin)	Family history	Pedal edema
Left ventricle in treatment field	Diabetes	
Single vs. multiple fields treated per day	Hypertension Obesity	

Table 12.10 Risk Factors Associated with Cardiac Late Radiation Injury

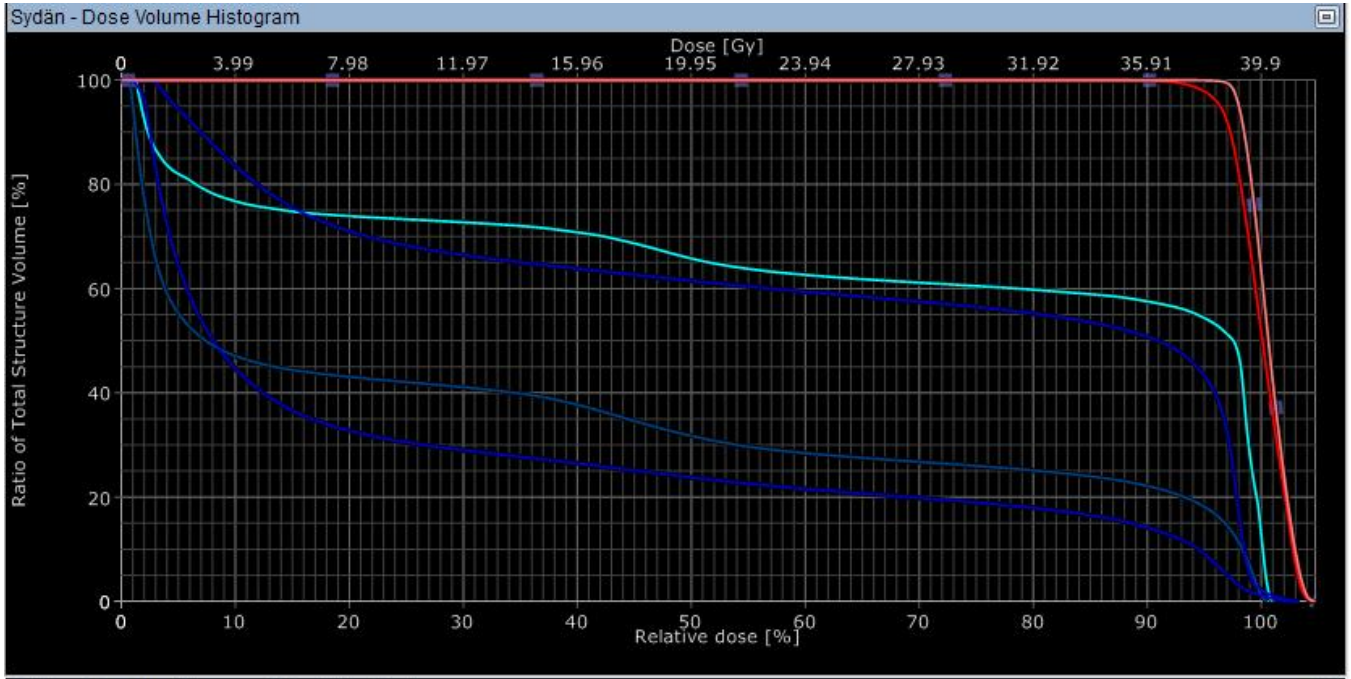
Injury	Time Postradiation Therapy	Dose (Gy)/ Volume (%)	Tumor Location	Age	Chemotherapy	Other
Coronary artery disease	10-15 y	>40 Gy/>25%; >30 Gy/>50%; Increased dose per fraction	—	<20 y	Yes	Weighted portals (anterior > posterior); lack of subcarinal shields
Pericarditis	6 mo-1 y	>40 Gy/>25%	Proximity to pericardium	? <20 y	Yes	Lack of subcarinal shields
Cardiomyopathy	Any	>40 Gy/>25%	—	? <20 y	Yes	
Valvular damage	>10 y	>35 Gy	—	? <20 y	Yes	
Arrhythmias	>10 y	>40 Gy	—	? <20 y	Yes	QTC prolongation





Sydämen angiosarkoma

Potilas on syntynyt v. 1981


Sydän - Dose Volume Histogram
Dose [Gy]
0
3.99
7.98
11.97
15.96
19.95
23.94
27.93
31.92
35.91
39.9
Ratio of Total Structure Volume [%]
100
80
60
40
20
0
0
10
20
30
40
50
60
70
80
90
100
Relative dose [%]

Sydän - Treatment Approved - Sagittal - CT_1
H
P
A
103.8 %

Sädefibroosi 9 / 2011
FVC 77 %
FEV 66 / 81%
Potilas on oireeton, toistaiseksi ei uusimaa

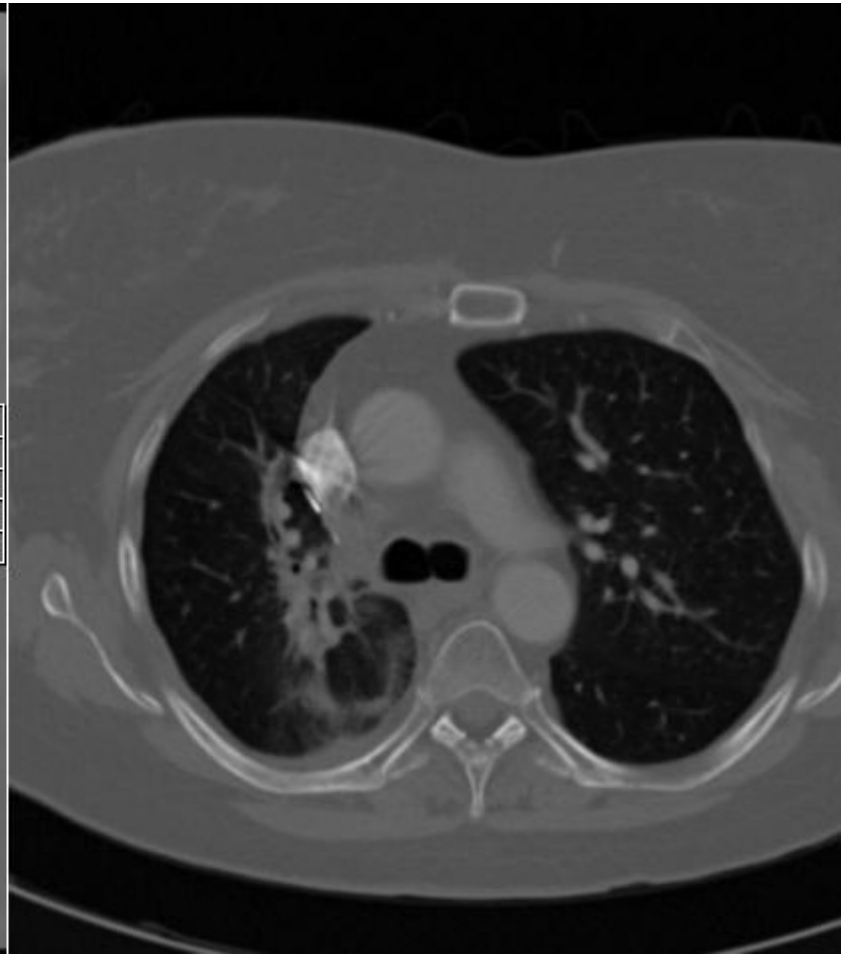


Table 12.14 Evaluation of Late Injury: Kidney

Treatment Factors	Patient/Tumor Factors	Clinical Manifestations
Large volume	Decreased functional reserve	High blood pressure
High dose	Nephrectomy	Hematuria
Chemotherapy (e.g., cisplatin, ifosfamide)	Chronic renal failure or insufficiency	Oliguria
Region irradiated:	Tumor-related damage or obstruction	Edema
Hilum vs. parenchymal	Infancy	Obtundation
Bilateral vs. unilateral	Hypertension	

Table 12.15 Decrease in Mean Creatinine Clearance after Unilateral Radiation Therapy to >26 Gy

Time	*N*	Mean Creatinine	Mean Creatinine Clearance	% Change Mean Creatinine Clearance
Before radiation therapy	86	1.0	79	
Years 1-5	86	1.1	65	-15
Years 6-10	27	1.2	64	-22
Years >10	17	1.3	51	-37

N, number of observations.

From Morris MM, Willett CG. Late renal function after upper abdominal irradiation. *Int J Radiat Oncol Biol Phys* 1997;39[Suppl 2]:284(abstr); and Willett CG, Tepper JE, Orlow EL, et al. Renal complications secondary to radiation treatment of upper abdominal malignancies. *Int J Radiat Oncol Biol Phys* 1986;12:1601-1604, with permission.

Muista myös

- sekudaarimaligniteetit
  - aikajana 10-20 vuotta
  - harvinaisia
  - yhtäaikaiset lääkehoidot lisäävät riskiä

Tärkeää huomioida

- Omia potilaitaan olisi syytä seurata tavalla tai toisella
  - kokemus haittojen ilmaantumisesta
  - kokemus haittojen hoidosta
  - omat hoitotulokset