

Oncology in Lung Cancer and Mesothelioma

by
Dr. Subhra Chowdhury
Consultant Clinical Oncologist

Biography

- Trained in King's College London
- Oncology Specialist training London rotation
- Consultant Clinical Oncologist at PAH end 2014
- Specialising in breast and lung oncology but now focusing on Lung cancer

Introduction

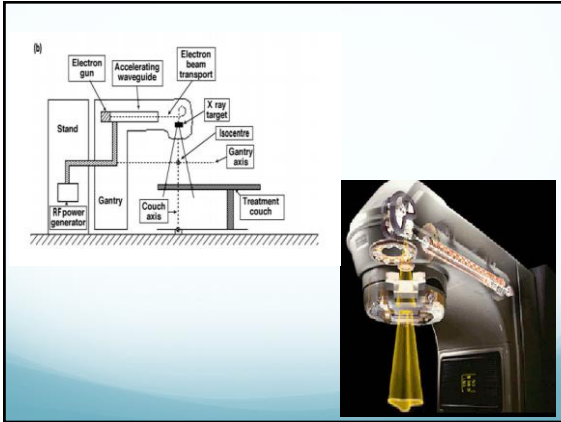
- Time travel- past, present, future
- Radiotherapy
- SACT
- Personalised medicine



Development of therapeutic Radiotherapy

- 1896 "Concerning a New Kind of Ray"
- 1898 Radium
- 1950 s ⁶⁰Cobalt
- 1960 s High energy Linacs
 - Open field
 - Lead blocks
 - MLCs
- Planning
 - 2D planning
 - 3D conformal planning
 - 4D planning
- 1980s IMRT
- 2000s VMAT





Variety of Radiotherapy

- Electrons
- Photons(x-rays)
- Protons

The technical bit – radiotherapy dose

- Clear dose response relationship
- Higher dose per fraction greater cell kill (DNA damaging)
- Lower dose per fraction better normal tissue recovery
- Conventional RT – 2Gy per fraction
- GRAY = absorbed dose
- 1Gy = 1Joule/Kg

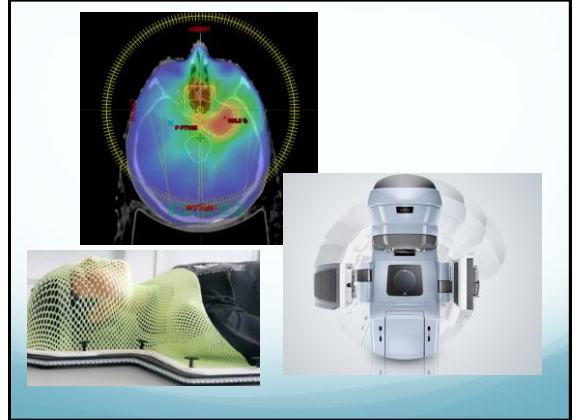


Improving radiotherapy

- Effectiveness
 - Therapeutic Ratio- Maximum tumour kill; minimal normal tissue toxicity
 - Target tumour more accurately (IGRT; OBI)
 - Deliver higher doses to tumour
 - Higher total dose; increase dose/fraction
 - Avoid normal tissue
 - Conformality
- Patient experience
 - Toxicity
 - Set up and time

4 letter acronyms

- IMRT
- VMAT
- SABR
- SBRT



Increasing conformality, improving therapeutic index

Imrt and vmat

- Improving accuracy, reducing margins

4D Radiotherapy planning

SABR/SBRT

- High dose per fraction
- Ablative
- 1 year control rates approx 90%
- Evidence for oligometastatic disease limited



SACT

- Chemotherapy
- Immunotherapy
- Targeted agents
- Combinations
- Adjuvant
- Neo-adjuvant
- Clinical Trials
- Supportive agents

Chemotherapy

- WWII
- Nitrogen mustard was active against lymphoma
- Alkylating agents-active against rapidly dividing cells by attacking DNA
- Soon methotrexate discovered and 1956 first cure of metastatic cancer (choriocarcinoma)
- Cisplatin first used 1978
- Now more than 100 chemotherapy drugs



Molecular Markers

- EGFR- nibs
- ALK- more nibs
- ROS-1- crizotinib
- PD L1-mabs-pembroluzimab, nivolumab, atezoluzimab and durvalumab
- CTLA4- ipilumimab

Chemoradiotherapy

- Stage III NSCLC
- Limited stage SCLC
- PACIFIC trial- adjuvant durvalumab

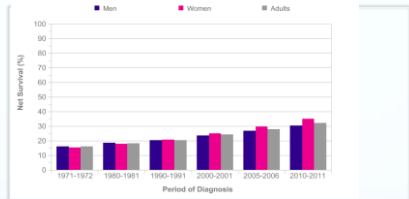
PACIFIC Trial

- [November 16, 2017](#)
N Engl J Med 2017; 377:1919-1929

Overall survival data

	12 months	24 months	36 months		Median OS
Durvalumab	83.1%	66.3%	57%		Not reached
Placebo	74.6%	55.3%	43%		29.1months

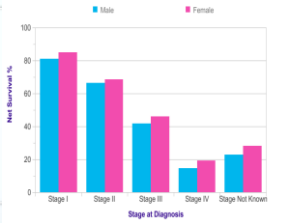
Lung Cancer (C33-C34): 1971-2011
Age-Standardised One-Year Net Survival, England and Wales



Please include the citation provided in our Frequently Asked Questions when reproducing this chart: <http://info.cancerresearchuk.org/cancerstatsapp/how>
Prepared by Cancer Research UK
Original data sources:
Survival statistics were provided on request by the Cancer Research UK Cancer Survival Group at the London School of Hygiene and Tropical Medicine.
<http://www.lshtm.ac.uk/hp/htdc/cancersurvival/>



Lung Cancer (C33-C34): 2014
One-Year Net Survival (%) by Stage, Adults Aged 15-99, England 2014

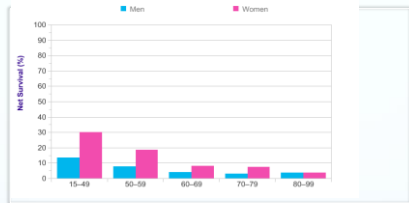


Source: cr.uk.org/cancerstats

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Mesothelioma Cancer (C45): 2009-2013
Five-Year Net Survival by Age, England



Source: cr.uk.org/cancerstats

Cancer Research UK, Accessed June 2019



Mesothelioma

- www.hse.gov.uk/statistics/causdis/mesothelioma/
- 2,595 mesothelioma deaths in GB 2016
- Associated with asbestos exposure
- Epithelioid, biphasic, sarcomatoid
- Incidence has peaked and is declining but mainly in men
- Prognosis poor
- Cisplatin/pemetrexate chemotherapy
- trials

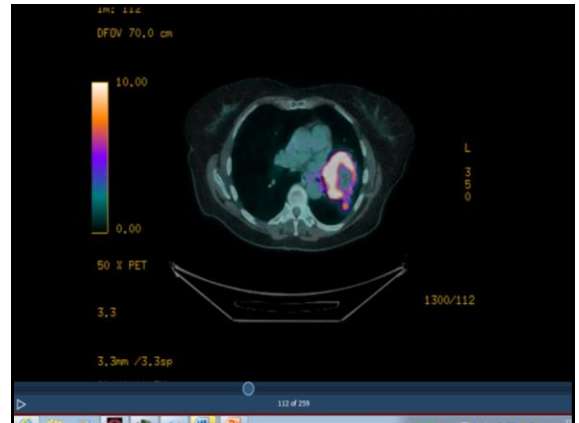


Future

- Early detection
- SUMMIT trial
- Personalised treatment
- Oligometastatic disease

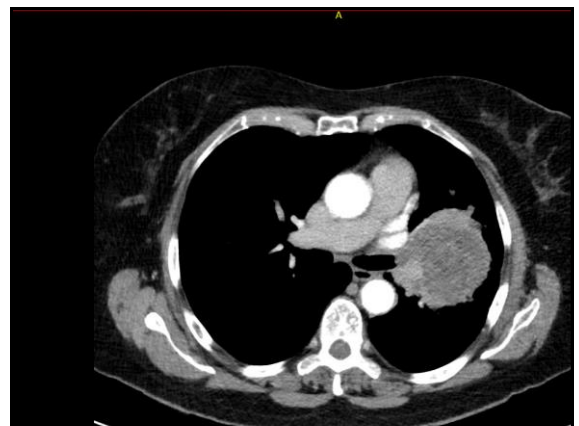
Case

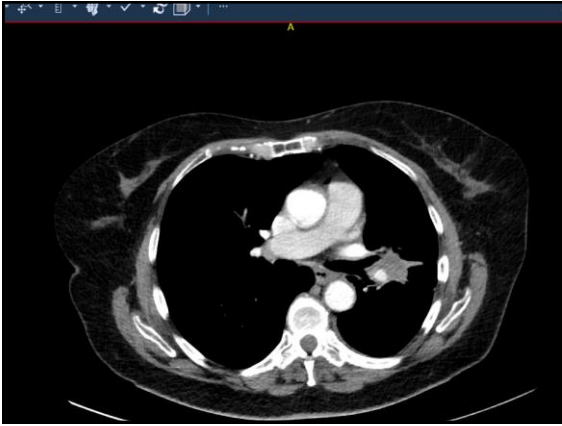
- 73yr old female
- PS0
- Exsmoker
- hypothyroid



Sept 2016

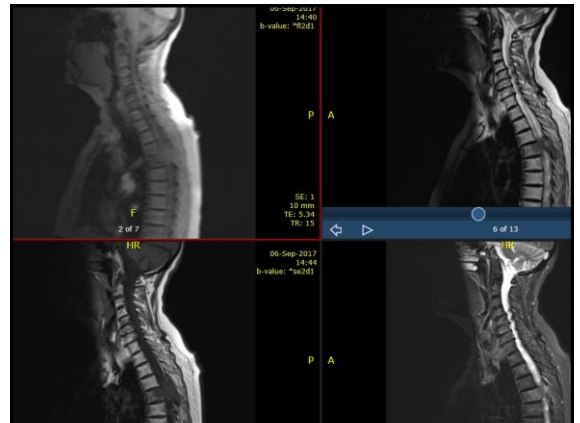
- T4N2M0 Squamous cell cancer but mixed with Small cell cancer
- Radical chemoradiotherapy
- Cisplatin and Etoposide
- Completed but struggled
- Fatigue and breathlessness Gd1





Oct 2017

- Back pain
- Radiating but no neurology but described weakness in her legs
- Seen GP- analgesia
- Went to A&E



Oct2017

- T5 decompression and fixation
- Squamous cell cancer
- No other disease
- 30Gy/10 to spine
- PDL1- 0%
- PS1
- Second line Nivolumab



- Progressed
- Bedbound
- Not coping well
- Treatment stopped
- BSC