



CARCINOMA DE PULMÓN NO MICROCÍTICO. ESTADIOS INICIALES

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DEFINICIÓN DE ESTADIOS INICIALES Y LOCALMENTE AVANZADO

- Iniciales:

- CPCNP resecables (estadios I, II y IIIA quirúrgicos)
- Estados del arte:
 - Cirugía +/- QT adyuvante (estadios IB > 4 cm, II y IIIA operables) (pT2B pN0-2 M0)
 - RT en pacientes no operables
 - RT adyuvante si N2, bordes quirúrgicos, infiltración, multiestación, afectación extracapsular

- Localmente avanzados:

- CPCNP estadios IIIA voluminosos o IIIB
- Estados del arte:
 - Quimio-radioterapia concomitante + ITP
 - Quimioterapia neoadyuvante → Cirugía +/- QT adyuvante (Tratamiento perioperatorio)
 - Quimio-radioterapia neoadyuvante → Cirugía +/- QT adyuvante (Tto. Perioperatorio)

ACTITUDES TERAPÉUTICAS EN ESTUDIO EN CPCPNP ESTADIOS INICIALES Y LOCALMENTE AVANZADOS

- Neoadyuvancia en estadios operables
 - Quimioterapia
 - Inmunoterapia
 - Quimio +/- inmunoterapia
 - IO + IO
 - Fármacos dirigidos en tumores con genes drivers
 - Adyuvancia
 - Agentes dirigidos en tumores con genes drivers
 - Inmunoterapia
 - Confirmación del beneficio de la RT en estadios resecables N2
 - Posible beneficio de combinaciones de agentes dirigidos y RT en estadios irresecables con genes drivers
 - Optimización de la inmunoterapia en estadios localmente avanzado
 - Etc, etc
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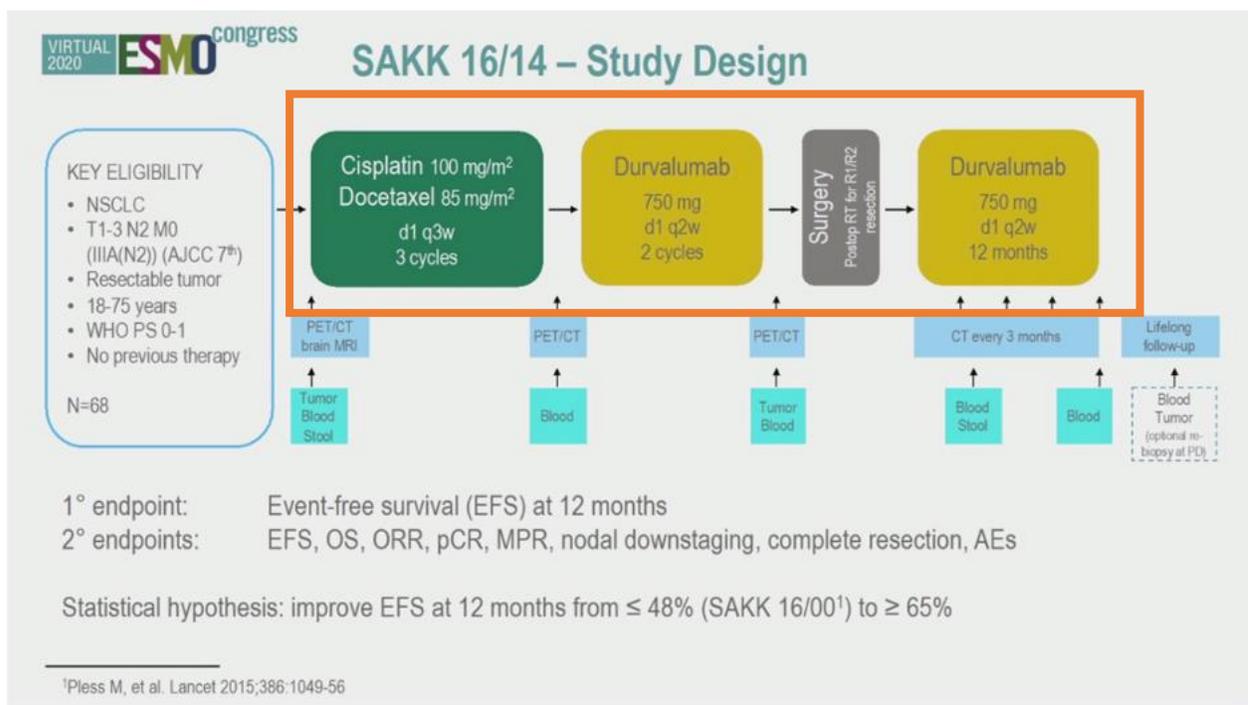
PRESENTACIONES RELEVANTES EN ESMO DE CPCNP, ESTADIOS INICIALES

- SAKK 16/14: QT + Durvalumab neoadyuvante en estadios resecables
 - IONESCO: Durvalumab neoadyuvante en estadios resecables
 - PRINCEPS: Atezolizumab neoadyuvante en estadios resecables

 - ADAURA – SNC: Osimertinib adyuvante en CPCNP resecable con mutaciones de EGFR (SNC)

 - LUNG-ART: PORT vs No PORT en CPCNP resecables con afectación N2
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SAKK 16/14: Anti PD-L1 Antibody Durvalumab in Addition to Neoadjuvant Chemotherapy in Patients with Stage III (N2) Non-Small Cell Lung Cancer (NSCLC) – A Multicenter Single-Arm. Phase II Trial. S. I. Rothschild. 1237MO



SAKK 16/14 – Patient Demographics and Treatment

N=67

	N	%
Age, median (range)	61 (41-74)	
Gender		
- Male	35	52.2%
- Female	32	47.8%
WHO PS		
- 0	52	77.6%
- 1	15	22.4%
Histology		
- Adenocarcinoma	37	55.2%
- Squamous cell carcinoma	22	32.8%
- Large cell carcinoma	1	1.5%
- NOS	7	10.4%
T stage		
- T1	15	22.4%
- T2	33	49.3%
- T3	19	28.4%

	N	%
Neoadjuvant Chemotherapy	67	
- Completed	60	89.6%
- Not completed	7	10.4%
Neoadjuvant Immunotherapy	62	
- Completed	58	86.6%
- Not completed	4	13.4%
Surgery	55	
- Pneumonectomy	5	9.1%
- Bilobectomy	7	12.7%
- Lobectomy	43	78.2%
- R0/R1/R2	50/3/2	90.9%/5.5%/3.6%
Postoperative Radiotherapy	6	10.9%
Adjuvant Immunotherapy	50	
- Completed	25	50.0%
- Still on treatment	5	10.0%
- Not completed	20	40.0%

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SAKK 16/14 – Radiographic and Pathologic Response

Radiographic response

Response	Total (N=62) N (%)
CR	4 (6.5%)
PR	32 (51.6%)
SD	16 (25.8%)
PD	4 (6.5%)
NE	4 (6.5%)
Missing ¹	2 (3.2%)

¹ Tumor assessment not done (N=2)

Pathologic response

Response	Total (N=55) N (%)
Pathological complete response (pCR)	10 (18.2%)
Major pathological response (MPR) ¹	33 (60.0%)
Nodal downstaging	37 (67.3%)
- ypN0	26 (47.3%)
- ypN1	11 (20.0%)

¹ Defined as ≤10% viable tumor cells
MPR significantly associated with PD-L1 positivity (> 1%), p=0.038

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SAKK 16/14 – EFS and OS

EFS at 12 months: 73.4% (90% CI: 62.7 – 81.5)

Median EFS: not reached (95% CI: 27.6 – NR)

Median follow-up: 28.6 months. Time point of analysis: July 10, 2020

Median OS: not reached (NR) (95% CI: NR – NR)

SAKK 16/14: Anti PD-L1 Antibody Durvalumab in Addition to Neoadjuvant Chemotherapy in Patients with Stage III (N2) Non-Small Cell Lung Cancer (NSCLC) – A Multicenter Single-Arm. Phase II Trial. S. I. Rothschild. 1237MO



SAKK 16/14 – Conclusion

- This is to our knowledge the largest cohort of patients with resectable stage IIIA(N2) NSCLC receiving perioperative immune checkpoint inhibitor therapy
- The addition of perioperative durvalumab to standard of care cisplatin/docetaxel
 - is safe
 - results in a very encouraging 1-year EFS rate that exceeds historical data of chemotherapy alone
 - leads to high major pathological response rate and rate of nodal downstaging
- Exploratory analyses of tissue and blood biomarkers are ongoing
- Perioperative PD-L1 inhibition in addition to standard neoadjuvant chemotherapy forms the backbone of our next study investigating the additional benefit of neoadjuvant immunomodulatory radiotherapy (SAKK 16/18; NCT04245514)

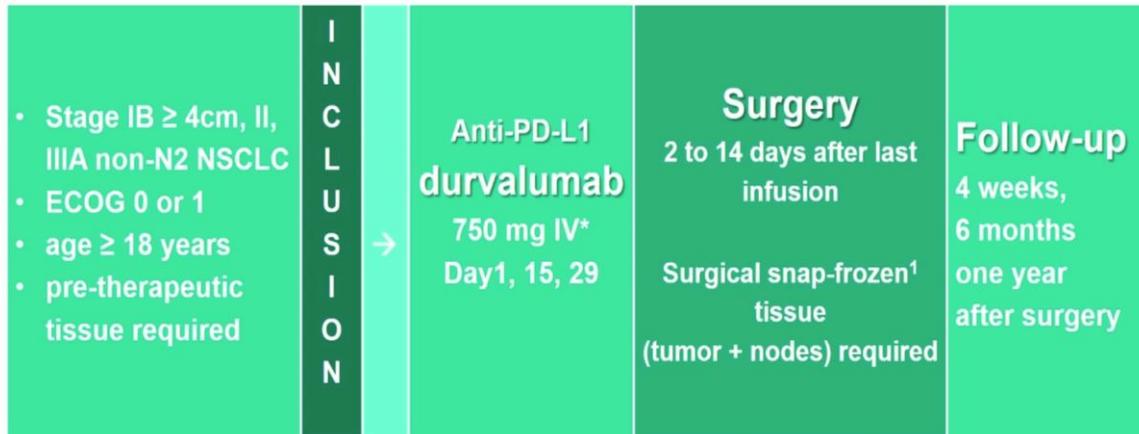
Neoadjuvant Durvalumab in resectable non-small cell lung cancer (NSCLC): Preliminary results from a multicenter study (IFCT-1601 IONESCO). M. Wislez. 1240



IONESCO IFCT-1601 Study design



Immune Neoadjuvant therapy in Early Stage Non Small Cell Carcinoma



IONESCO IFCT-1601 Statistics



Primary Endpoint

% of complete surgical resection (R0)

Secondary Endpoints

90-day postoperative mortality, safety, OS, DFS, RR (RECIST 1.1), MPR, time between 1st infusion and surgery

Hypotheses

A complete resection rate (theoretical feasibility) ≤ 85% was considered unacceptable

Two-step Fleming procedure
H0 = 85%, H1 = 95% (power 90%, α=5%)
Planned Sample Size: 81 patients

Neoadjuvant Durvalumab in resectable non-small cell lung cancer (NSCLC): Preliminary results from a multicenter study (IFCT-1601 IONESCO). M. Wislez. 1240

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Patient demographics & treatment

IFCT

	N=50 (ITT)
Age (median, range)	61.0 [46 -80]
Male / female	35 (70%) / 15 (30%)
Smokers / never smokers	47 (94%) / 3 (6%)
ECOG 0 / 1	40 (80%) / 10 (20%)
Histology	
adenocarcinoma	25 (50%)
squamous	21 (42%)
other	4 (8%)
Stage	
IB / IIA / IIB / IIIA	5 (10%) / 14 (28%) / 29 (58%) / 2 (4%)
Surgical procedures	
lobectomy	32 (72.7%)
bilobectomy	3 (6.8%)
pneumonectomy	9 (20.5%)
Number of pts receiving 3 durvalumab doses	41 (82%)

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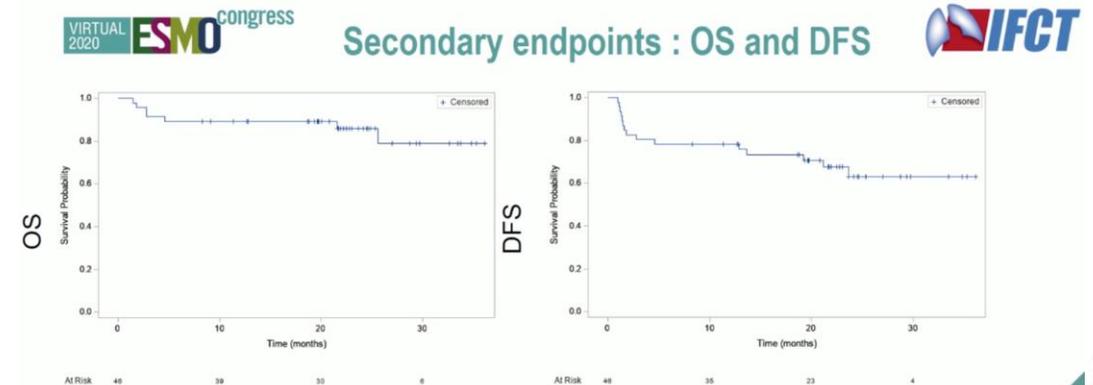
Primary endpoint:
% of complete surgical resection (R0)

IFCT

	N=46 (Eligible Population)
Complete resection (R0)	41 (89.1%)
Microscopically incomplete resection (R1)	2 (4.3%)
Not evaluable	3* (6.5%)

Time between 1st infusion and surgery (mean ± SD): 37 ± 4 days

* 1 not operated (progression before surgery) 2 exploratory thoracotomies (pleural/bronchial invasion)



	Population (N=46)
Event : N (%)	7 (15.2)
Median OS: months [95% CI]	NR
12-m OS: % [95% CI]	89.1 [75.8-95.3]

	Population (N=46)
Event : N (%)	15 (32.6)
Median DFS: months [95% CI]	NR [23.7-NR]
12-m DFS: % [95% CI]	78.2 [63.3-87.6]

Median follow-up (IC95%): 22 months

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RECIST 1.1

Major Pathologic Response (MPR) defined as less than 10% of RVT

Association between pathological and radiographic response

	N	%
CR	0	0
PR	4	8.7
SD	36	78.3
PD	6*	13
	46	100

*One patient had pseudoprogression

PR: 8.7%

	N=43*
RVT (Mean±SD)	34.7% ± 22
RVT	
0%	3 (7)
0-10%	5 (11.6)
>10%	35 (81.4)

*Ongoing analysis n=1 and n=2 not operated

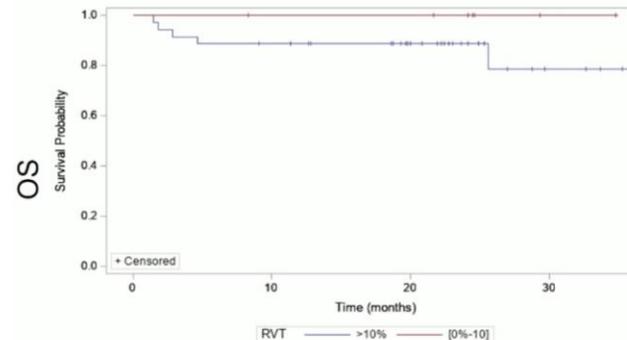
MPR: 8 (18.6%)

	RVT		P value
	0-10%	>10%	
PR	3 (37.5%)	1 (2.9%)	0.028
SD	4 (50%)	29 (82.9%)	
PD	1 (12.5%)*	5 (14.3%)	

*This patient had pseudoprogression with mediastinal nodal flare-up (granulomas)

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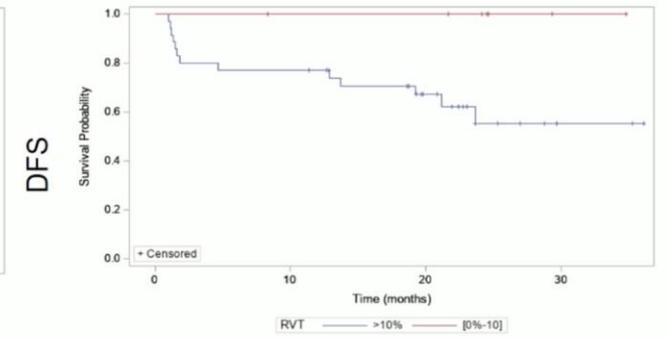
MPR and outcome : OS and DFS



Survival Probability vs Time (months)

RVT	0%-10%, N=8	> 10%, N=35
Event : N (%)	0 (0)	5 (14.3%)
Median OS: mo [95% CI]	NR	NR
12-m OS: % [95% CI]	100%	88.6 [72.4-95.5]

p=0.2777



Survival Probability vs Time (months)

RVT	0%-10%, N=8	> 10%, N=35
Event: N (%)	0 (0)	13 (37.1%)
Median DFS: mo [95% CI]	NR	NR
12-m DFS: % [95% CI]	100%	77.1 [59.5-87.9]

p=0.0450

Neoadjuvant Durvalumab in resectable non-small cell lung cancer (NSCLC): Preliminary results from a multicenter study (IFCT-1601 IONESCO). M. Wislez. 1240



Reason for premature termination of trial: 

90-day postoperative mortality

Study was stopped because of an excess in 90-day postoperative mortality (4 deaths, 9%)

age	gender	smoking	stage	comorbidities	surgical procedure	surgical resection / histology	RVT	cause of death* (time from surgery)
63	F	Yes	IIB	Arterial hypertension Severe COPD	Lobectomy	R0 adeno	>10%	Sudden death at home (40 days)
49	F	Yes	IIB	No	Lobectomy	R0 squamous	>10%	Surgical procedure complication (45 days)
76	M	Yes	IIA	Arterial hypertension Diabetes	Pneumonectomy	R0 squamous	>10%	Tracheal Fistula (8 days)
78	M	Yes	IIB	Arterial hypertension, Ischemic Heart disease Peripheral arterial disease	Lobectomy	R0 squamous	>10%	Respiratory Distress (21 days)

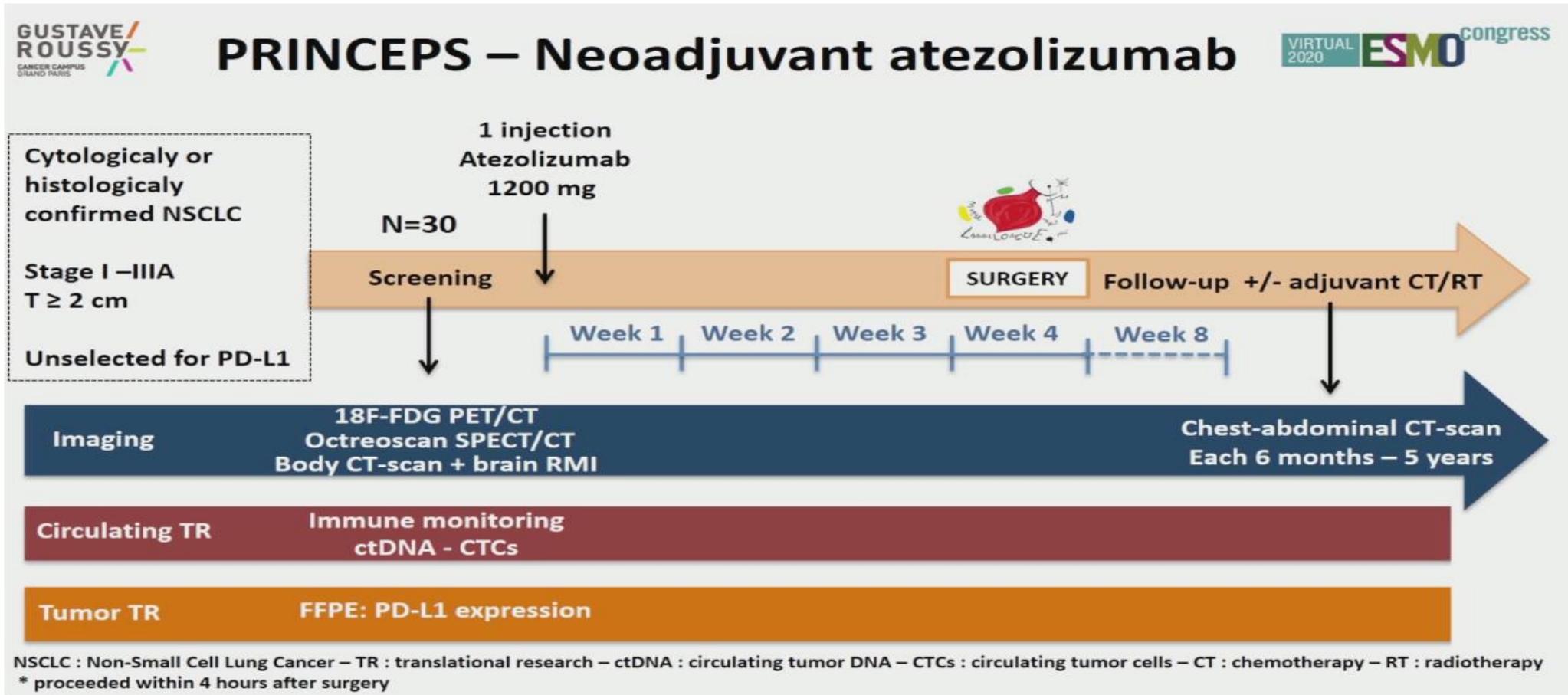
These deaths are not related to durvalumab



Summary

- The Ionesco Study was stopped because of an excess in 90-day post-operative mortality (4 deaths, 9%)
- Mortality was due to postoperative complications most likely related to comorbidities, and not to direct durvalumab toxicity
- Durvalumab was well tolerated with no grade 3 to 5 AE
- % of complete surgical resection (R0) was 89% that is considered as a pre-specified trial efficacy boundary
- Partial response (8.7%) and Major Pathological Response (18.6%) rates are in the range of those observed in the largest neoadjuvant trial using anti-PD-L1 monotherapy (7 and 18%, respectively)
- A significant association between radiographic and pathological response was observed
- Major Pathological Response was significantly associated with best DFS
- Ancillary studies are ongoing to determine whether PD-L1 expression is predictive or not and to better analyze immune cell infiltration response

Neoadjuvant atezolizumab for resectable non-small cell lung cancer: results from the phase II PRINCEPS TRIAL. B. BESSE. 1250



Neoadjuvant atezolizumab for resectable non-small cell lung cancer: results from the phase II PRINCEPS TRIAL. B. BESSE. 1250

Primary endpoint

- **Primary endpoint : 2-month tolerance rate**

Rate of patients without major toxicities or morbidities during the period defined as the start of treatment and 1 month after the surgery.

- Major toxicities or morbidities include:

- a) treatment toxicity leading to a delay of at least 15 days of the surgery,
- b) grade ≥ 3 toxicity occurring within 2 months after atezolizumab infusion,
- c) major postoperative morbidities,
- d) any death related to the experimental treatment and occurring in the period from the day of injection of atezolizumab to the 30 postoperative days,
- e) patients that did not have surgery because of early progression.

Characteristics

Patients and tumors	N=30	
	N (%)	
Age (Years)		
	Median	64
Sex		
	Male	15 (50)
	Female	15 (50)
ECOG performance status		
	0	23 (77)
	1	7 (23)
Smoking status		
	Never	2 (7)
	Ever	28 (93)
Pathological stage		
	I	15 (50)
	II	6 (20)
	III	9 (30)

Mutations	N=24	
	N (%)	
BRAF	2	
EGFR	3	
KRAS	8	
TP53	13	
PI3KCA	1	
STK11	1	
ESR1	1	
WT	1	

Baseline PD-L1 (clone SP142)	N=29	
	N (%)	
<1%	18 (62)	
$\geq 1\%$	6 (21)	
$\geq 50\%$	5 (17)	

Neoadjuvant atezolizumab for resectable non-small cell lung cancer: results from the phase II PRINCEPS TRIAL. B. BESSE. 1250

Treatment

Treatments	N=30 N (%)	Dindo Classification	N=30 Grade
Time between atezolizumab and surgery (days)		Respiratory Distress*	Grade III
Median	24	Septic Shock*	Grade III - a
Resection delayed > 15 days	0 (0)	Paresthesia	Grade I
Type of resection		Heart Block Atrioventricular	Grade III
Pneumonectomy	2 (7)	Atrial Fibrillation	Grade II
Lobectomy	28 (93)	Bronchial Congestion	Grade II
Quality of resection		Atrial Fibrillation*	Grade I
RO	29 (97)	Air leak*	Grade I
R1	1 (3)	Cardiac Decomponation secondary to Atrial Fibrillation	Grade I
Adjuvant radiotherapy	19 (29.7)		

Dindo D et al. Ann Surg. 2004

- There were no grade 4-5 complications
- 7/30 patients (23%) had complication within 1 month after surgery

Response according to RECIST 1.1

Objective response	N=29 N (%)
Complete response	0 (0)
Partial response	2 (7)
Stable disease	27 (93)
Progression	0 (0)

- 29 patients evaluable
- 1 additional SD, central review pending

Pathological response

- irPRC criteria, centrally reviewed
Cotterell et al. Ann Oncol 2018

Pathological response	N=29 N (%)
Complete response	0 (0)
Major pathological response	4 (14)
Pathological response ≥ 50%	12 (41)

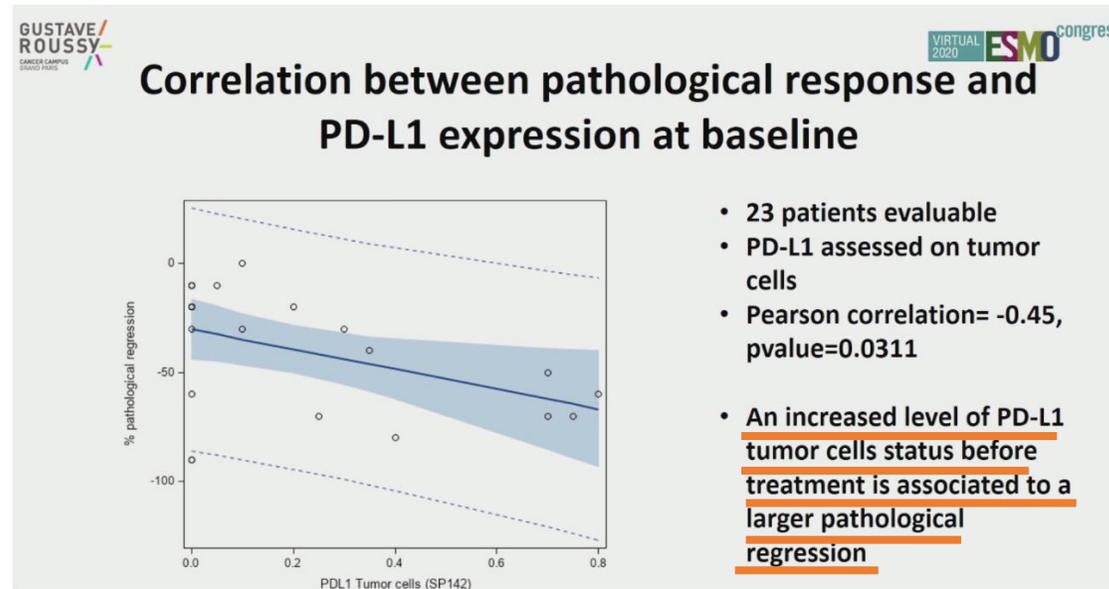
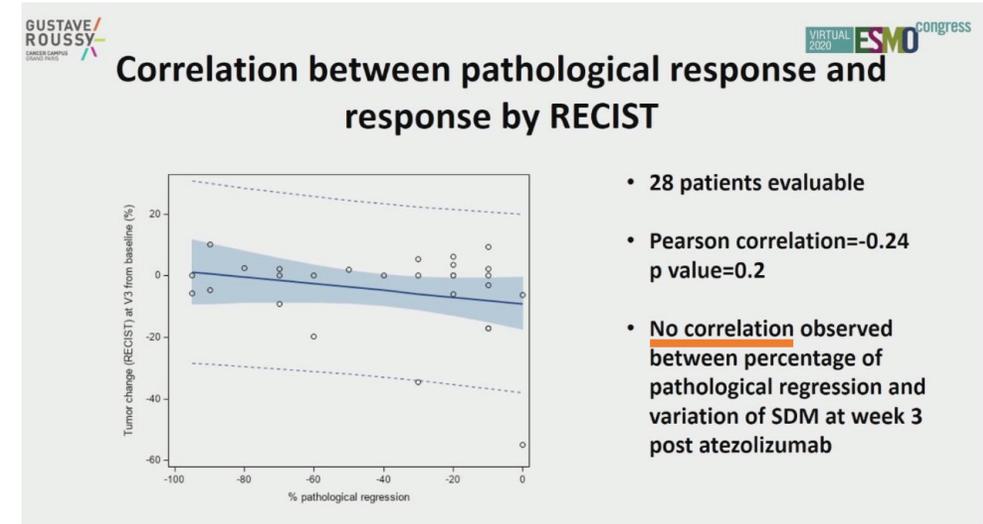
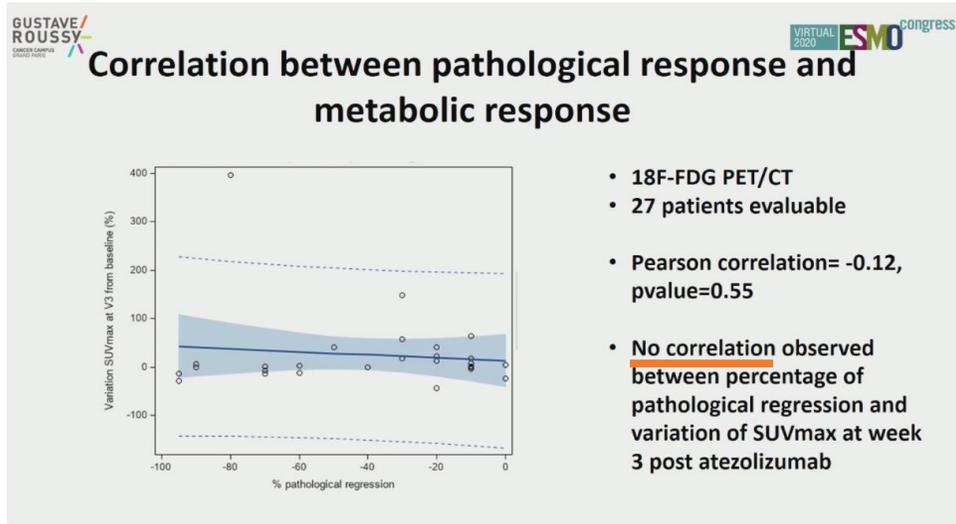
*Major pathological response: less than 10% residual tumor cells
Pathological response ≥ 50%: less than 50% residual tumor cells*

Metabolic response

- 18F-FDG PET/CT
- Variation between baseline and week 3 post atezolizumab

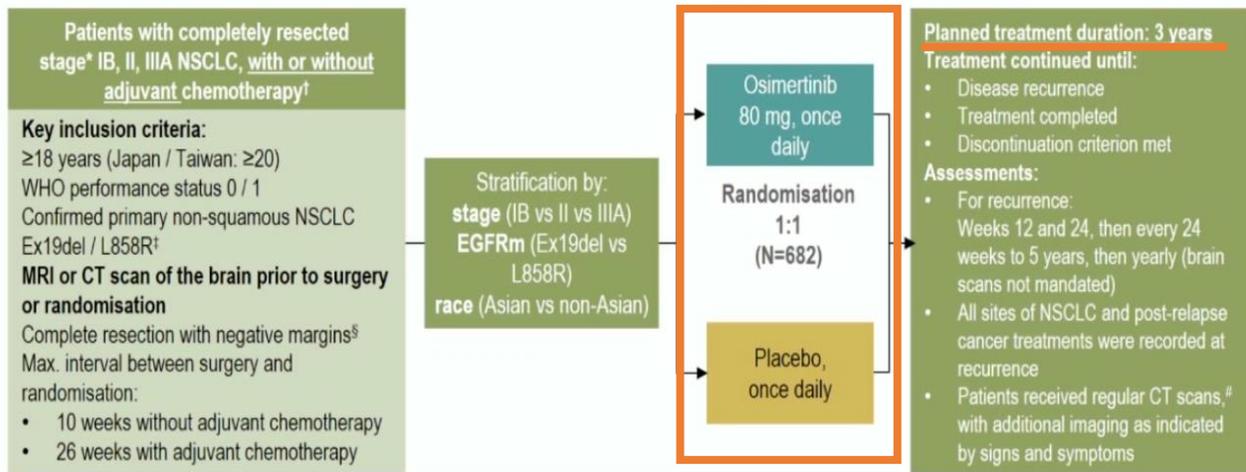
Variation of SUVmax	N=28 N (%)
+20% or more	7 (25)
Stable (between +20% and -20%)	18 (64)
-20% or more	3 (11)

Neoadjuvant atezolizumab for resectable non-small cell lung cancer: results from the phase II PRINCEPS TRIAL. B. BESSE. 1250



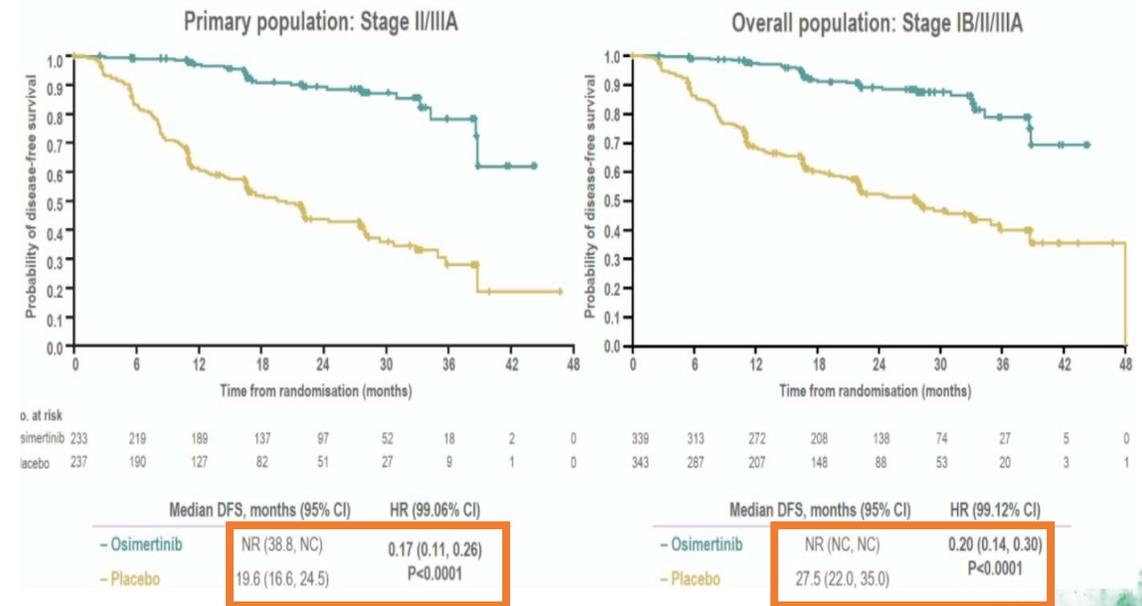
Osimertinib adjuvant therapy in patients with resected EGFR mutated (EGFRm) NSCLC (ADAURA): central nervous system (CNS) disease recurrence. M. Tsuboi. LBA1

ADAURA: Phase III double-blind study design



- The primary and key secondary endpoints of DFS[¶] in stage II/IIIA patients and the overall population, respectively, have been reported previously¹
- Here we report results from a pre-specified exploratory analysis of disease recurrence patterns in ADAURA, including CNS

ADAURA: Osimertinib improves DFS versus placebo in resected EGFRm NSCLC



Osimertinib adjuvant therapy in patients with resected EGFR mutated (EGFRm) NSCLC (ADAURA): central nervous system (CNS) disease recurrence. M. Tsuboi.

IRΔ1

Baseline patient characteristics

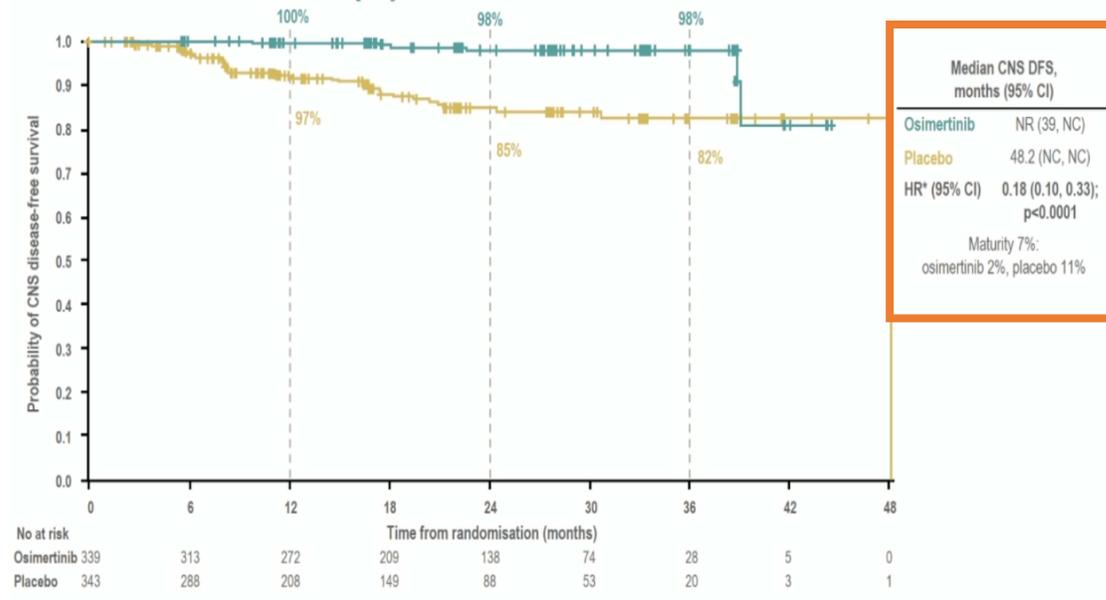
Characteristic	Osimertinib n=339	Placebo n=343
Sex: male / female, %	32 / 68	28 / 72
Age, median (range), years	64 (30–86)	62 (31–82)
Race*: Asian / non-Asian, %	64 / 36	64 / 36
Smoking status: never / current or former, %	68 / 32	75 / 25
WHO performance status: 0 / 1, %	64 / 36	64 / 36
Histology: adenocarcinoma / other, %	96 / 4	97 / 3
EGFR mutation at randomisation: Ex19del / L858R, %	55 / 45	55 / 45
Adjuvant chemotherapy: yes / no, %	60 / 40	60 / 40

CNS DFS events

- Overall, 45 patients (osimertinib n=6, placebo n=39) had CNS DFS events*

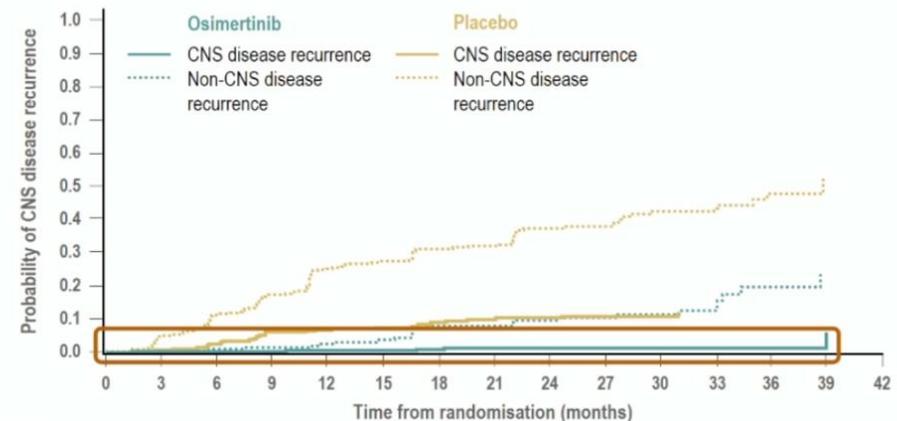
Patients, n (%)	Overall population	
	Osimertinib n=339	Placebo n=343
CNS DFS events:	6 (2%)	39 (11%)
CNS recurrence	4 (1%)	33 (10%)
Death†	2 (1%)	6 (2%)

CNS DFS in the overall population



Conditional probability of CNS* and non-CNS recurrence

- The estimated probability of observing CNS recurrence (in the absence of non-CNS recurrence or death) at 18 months was <1% (95% CI: 0.2%, 2.5%) with osimertinib versus 9% (95% CI: 5.9%, 12.5%) with placebo
- The cumulative incidence† of CNS recurrence was consistently lower in the osimertinib arm than in the placebo arm



An international randomized trial, comparing post-operative conformal radiotherapy (PORT) to no PORT, in patients with completely resected NSCLC and mediastinal N2 involvement. Primary end-point analysis of Lung Art. C. Le Pechoux. LBA3_PR



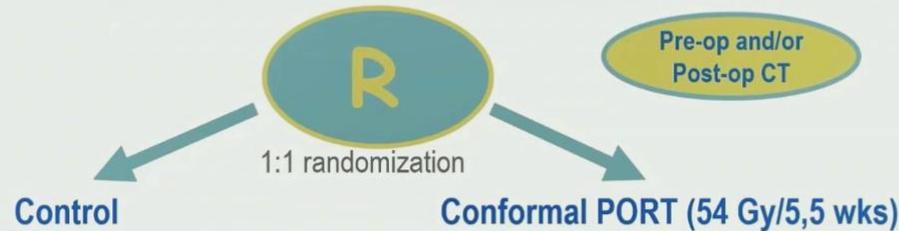
LUNG ART phase III Trial

(IFCT-0503, UK NCRI, SAKK)

Trial registry: NCT00410683

Study design

Completely resected NSCLC with N2 histo/
cytologically proven nodal involvement



Stratification factors : Center, Administration of CT (no CT vs Post-op CT vs pre-op CT alone),
Histology (SCC vs other), Extent of mediastinal lymph node involvement (0 vs 1 vs 2+), use of pre-treatment PET-scan (yes/no)

Primary end-point: Disease-free survival

Secondary end-points: Overall survival, patterns of relapse, local failure, second cancers, and treatment-related toxicity

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Study design

Sample size justification

- Initial target accrual of 700 patients to show a 10% improvement of 3-yr DFS.
- 2017: New target of 500 patients/292 events to show a 12% difference in 3-year DFS (bilateral test, power = 80 %, alpha=5 %, analysis with a median FU of 4 years)
- Hypothesis: 42% 3-year DFS rate in PORT arm vs 30% in control arm (HR = 0.72).
- **Analysis**
Cox model adjusted on the stratification factors on ITT population

ITT = Intent To Treat

An international randomized trial, comparing post-operative conformal radiotherapy (PORT) to no PORT, in patients with completely resected NSCLC and mediastinal N2 involvement.
 Primary en-point analysis of Lung Art. C. Le Pechoux. LBA3_PR

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Baseline Characteristics (ITT)

	Control arm (n = 249)	PORT arm (n = 252)
Gender male (%)	66%	66%
Age (median [min;max])	61 [38;85]	61 [36;79]
Smoking status: Current-former/ Never	90% / 10%	92% / 8,0%
cTNM Unforeseen N2/Single St N2 / Multiple N2	41% / 34% / 25%	42% / 35% / 23%
Histology: AdenoC / SCC	76% / 20%	70% / 23%
Adjuvant chemoT: Pre or postop/Preop	96% / 2%	96% / 14%
Pre-treatment PET scan	90%	92%
pTNM or ypTNM Number of N2 stations involved: 0/1/ ≥ 2	2% / 45% / 52%	4% / 45% / 52%

Stratification factors

Percents calculated on non missing data

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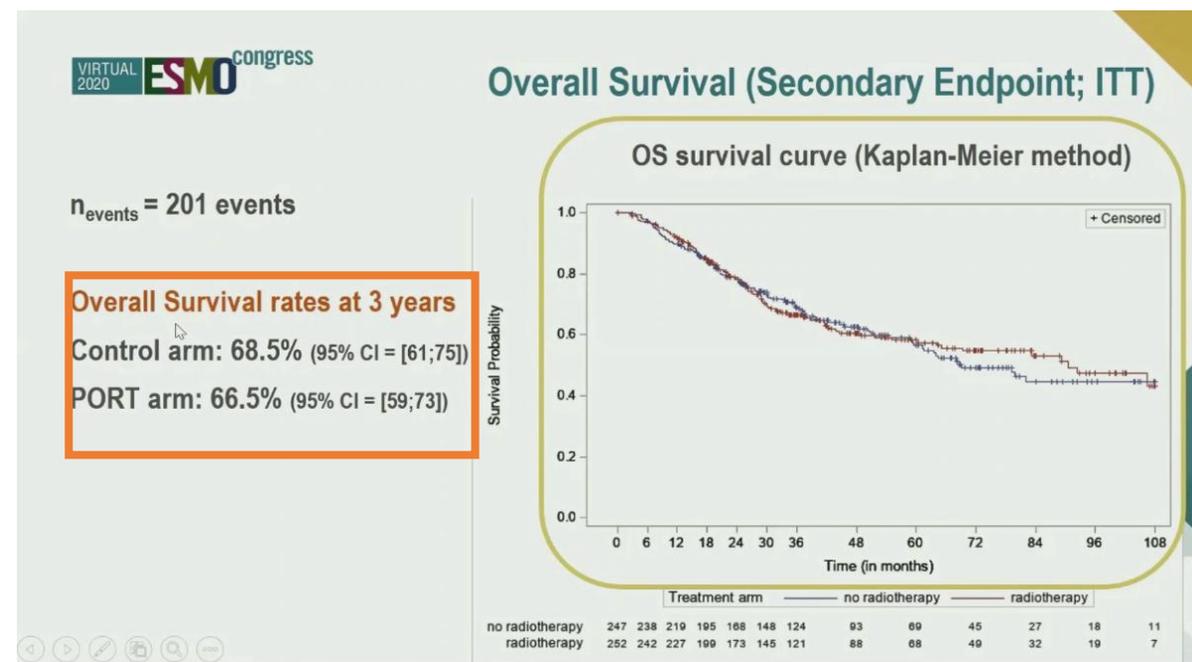
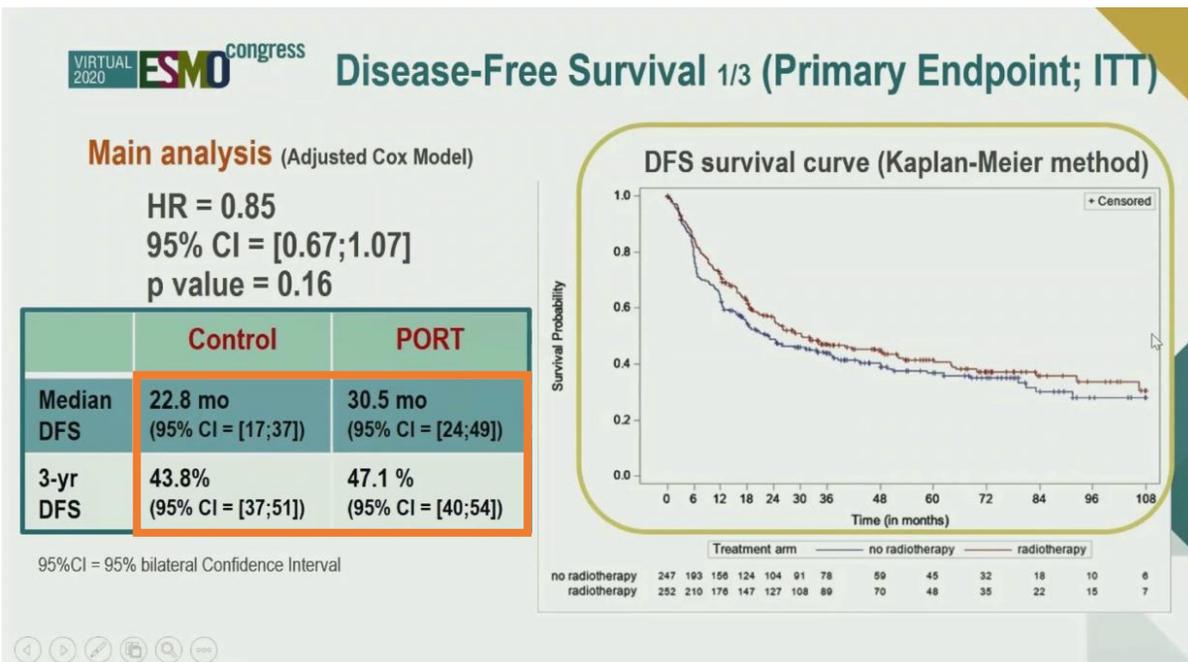
Baseline Characteristics : Surgery

	Control arm (n = 249)	PORT arm (n = 252)
Type of surgery (n(%))		
- Lobectomy	81%	78%
- Bilobectomy	7%	8%
- Pneumonectomy	10%	12%
- Sublobar resection	2%	2%
Largest T size (Median [min;max],mm)	34 [0;110]	33 [5;150]
pTNM pN0/pN1 (down staging after preop CT) pN2	pN0: 1% pN1: 2% pN2: 98%	pN0: 2% pN1: 1% pN2: 96%
In pN2 patients N2 stations most frequently involved on Surgical pathological exam	St4 R: 66% / St 5 L: 43% St7 R Tum: 66% / L Tum: 34%	St 4R: 55% / St 5 L: 31% St7 R Tum: 65% / L Tum: 35%



IASLC Nodal Map (Rusch et al, JTO 2009 TNM 7)

An international randomized trial, comparing post-operative conformal radiotherapy (PORT) to no PORT, in patients with completely resected NSCLC and mediastinal N2 involvement. Primary en-point analysis of Lung Art. C. Le Pechoux. LBA3_PR



An international randomized trial, comparing post-operative conformal radiotherapy (PORT) to no PORT, in patients with completely resected NSCLC and mediastinal N2 involvement. Primary en-point analysis of Lung Art. C. Le Pechoux. LBA3_PR

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Disease-Free Survival 2/3 (Primary Endpoint; ITT)

DFS components (First Event)

	Control	PORT
All DFS events*	152	144
Mediastinal relapse	70 (46.1%)	36 (25.0%)
Brain metastasis	27 (17.8%)	34 (23.6%)
Other metastasis	71 (46.7%)	71 (49.3%)
Death	8 (5.3%)	21 (14.6%)

* Patients can have more than one event at the same time
 Causes of death:
 Control arm: 2 2nd Primary, 1 vascular, 4 unknown, 1 non cancer related
 PORT arm: 11 cardio-pulmonary; 2 PORT toxicity; 4 2nd Primary; 1 progression, 3 unknown.

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Results

Causes of death

	Control arm (n = 249)	PORT arm (n = 252)
Deaths	102 (41.5%)	99 (39.6%)
Cause of death		
- Progression or recurrence	87 (86.1%)	68 (69.4%)
- Cardio-pulmonary	2 (2.0%)	16 (16.2%)
- Second primary	1 (1.0%)	5 (5.1%)
- RT or CT related toxicity	0 (0%)	3 (3.0%)
- Other	11 (10.9%)	6 (6.1%)
- Unreported	1	1

Percents calculated on non missing data

An international randomized trial, comparing post-operative conformal radiotherapy (PORT) to no PORT, in patients with completely resected NSCLC and mediastinal N2 involvement. Primary en-point analysis of Lung Art. C. Le Pechoux. LBA3_PR

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Safety Summary

n(%)	Control arm (n = 246)	PORT arm (n = 241)
At least one toxicity*	200 (81.3%)	222 (92.1%)
At least one toxicity gr 3-4	37 (15.0%) 62 events	57 (23.7%) 112 events
At least one EARLY** TOXICITY gr 3-4	19 (7.7%)	28 (11.6%)
At least one LATE TOXICITY gr 3-4	22 (8.9%)	36 (14.6%)
EARLY** TOXICITY gr 5	0 (0%)	3 (1.2%)
LATE TOXICITY gr 5	2 (0.8%)	3 (1.2%)

Toxicities are censored at DFS date if any
 * Many grade (gr) 1-2 Adverse Events (AEs), heterogeneity in reporting
 ** reported at first visit = in the first 3 months after randomization

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Results

Second cancers and possible late cardio-pulmonary toxicities

	Control arm (n = 249)	PORT arm (n = 252)
At least one LATE CARDIAC /PULMONARY TOXICITY gr 3-4	12 (4.9%)	26 (10.8%)
Second cancers (n(%)) - Second Lung cancers (n(%) among 2 nd cancers))	18 (7.2%) - 4/18 (22.2%)	28 (11.1%) - 11/28 (39.3%)

Gr 3-4 Late Toxicity	CA	PORT
Cardiac rhythm disorders	1	4
Cardiac ischemia/infarction	2	3
HTA	2	2
Pericarditis	0	3
Cardiac failure	1	1
Pneumonitis	3	12
Cough	2	2
Dyspnea/Resp failure	5	8
Pulmonary embolism	1	1
Pleural Effusion	1	2
Thoracic Pain	1	1
Sleep apnea syndrome		1

These issues clearly need further analysis:

- Side of second tumour?
- Location of tumour and involved N2 stations
- Radiotherapy Plan
- Patterns of failure with competing events
- etc...

Percents calculated on non missing data