Olgular
&
SFT

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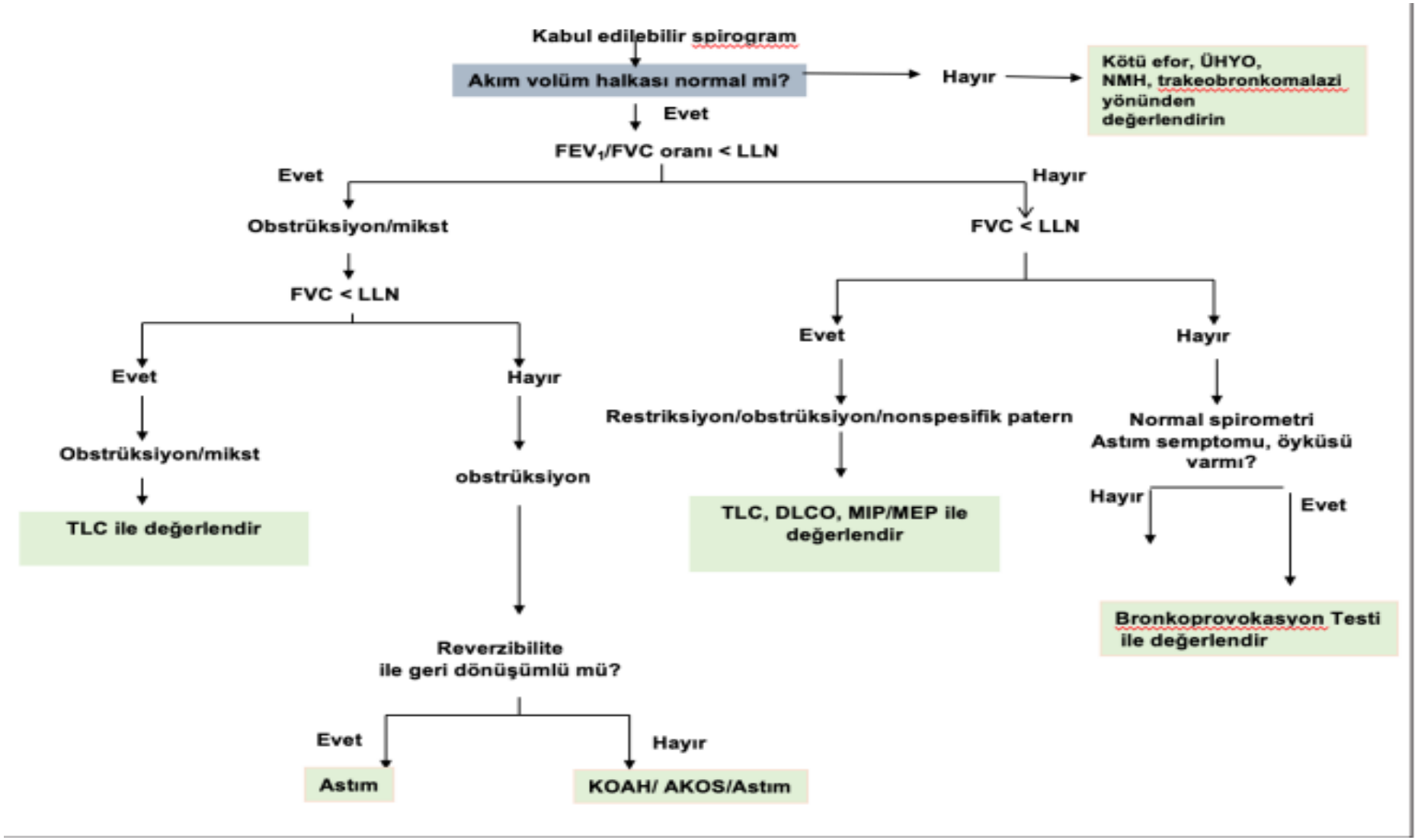
Eğitim ve Araştırma Hastanesi

Sunum Planı

- Değerlendirme algoritmaları
- Spirometri örnekleri
- Rev-SFT
- Bronş Provokasyon testi
- DLCO
- Body pletismografi

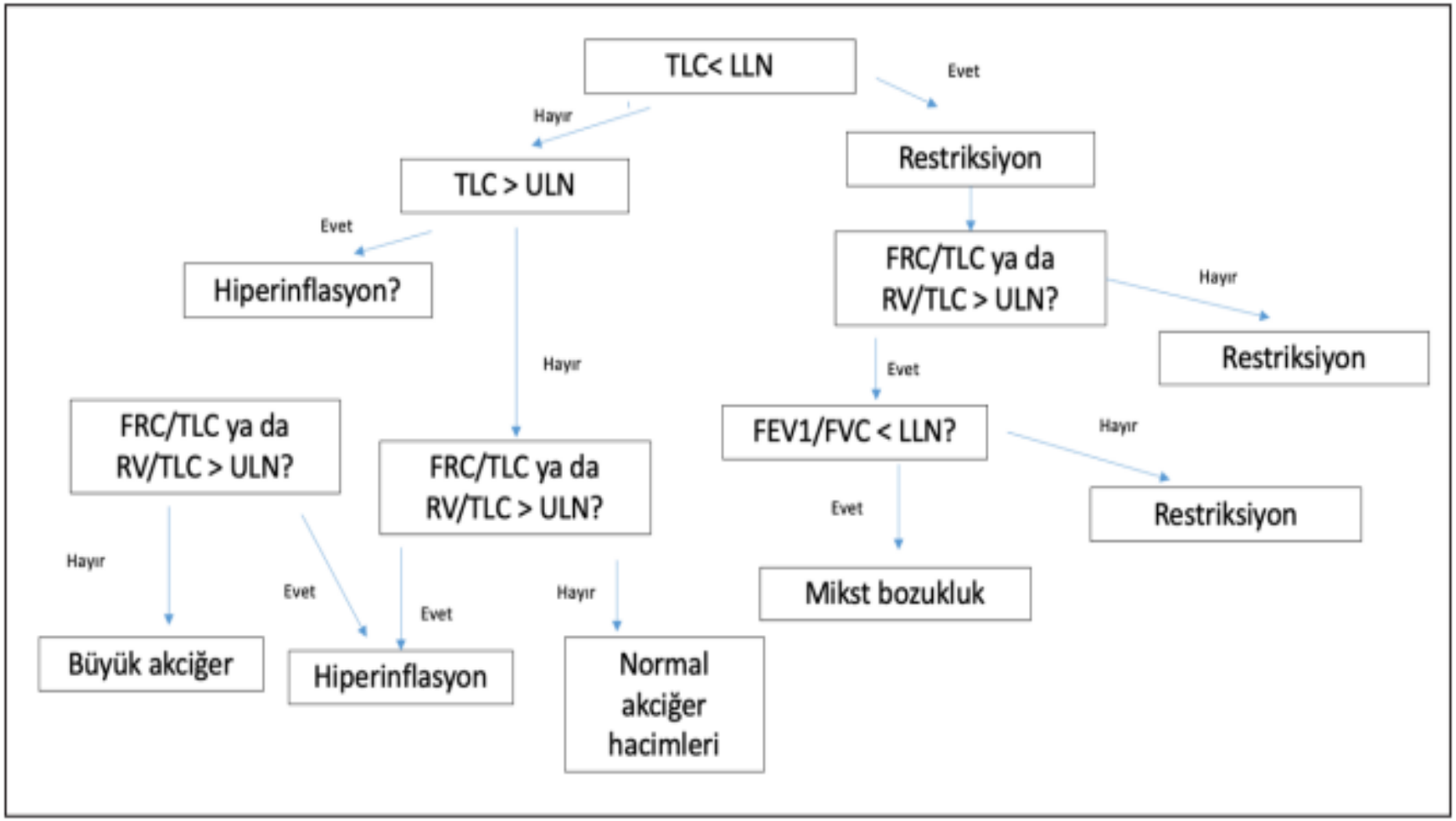
Spirometri değerlendirme algoritması



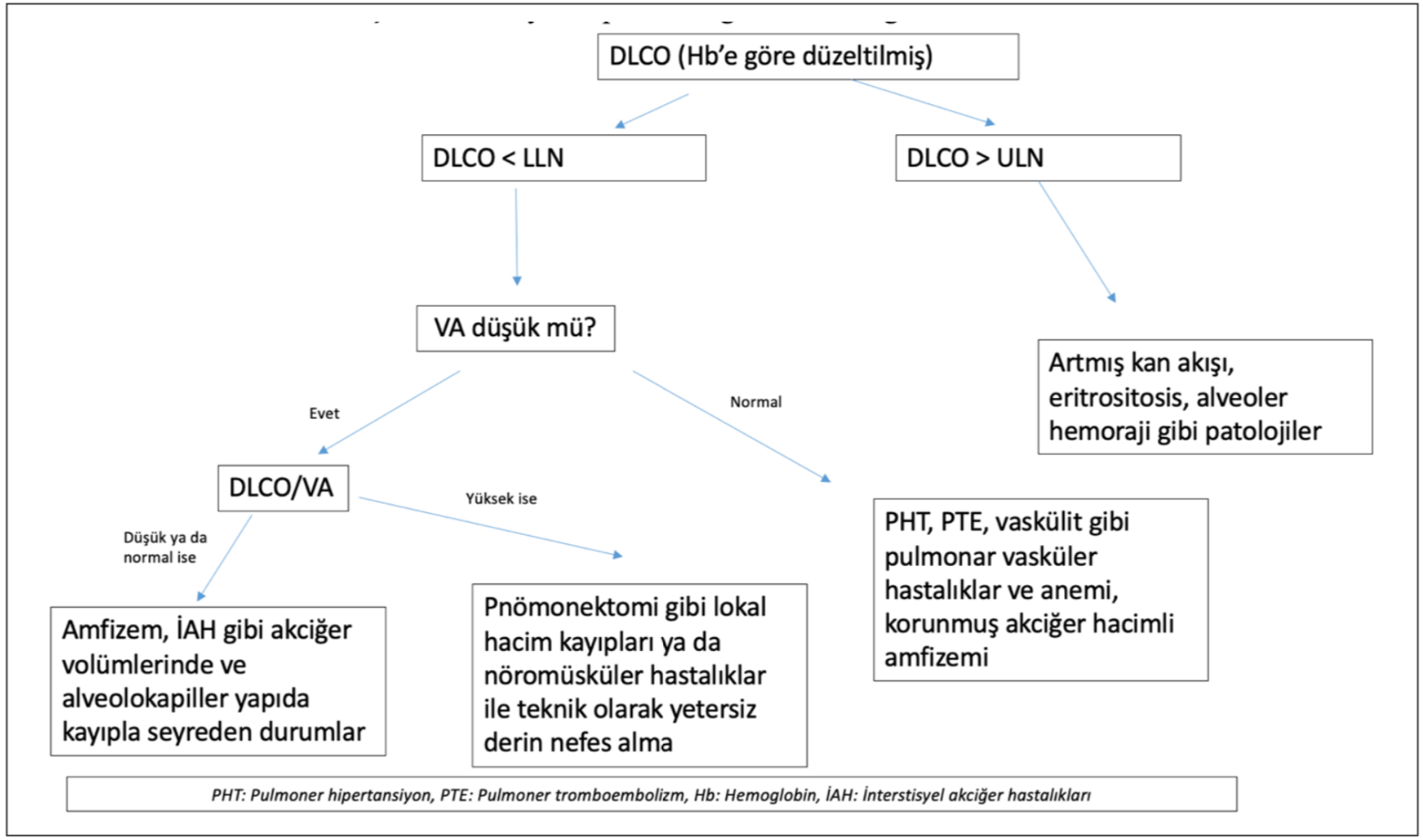
Spirometri değerlendirme algoritması

1. Akım- volüm halkasını kontrol et
2. FEV1/FVC <LLN veya %70
3. FVC < LLN veya %80
4. Rev-SFT / BPT / TLC ?

Akciğer hacimleri değerlendirme algoritması



Difüzyon kapasitesi değerlendirme algoritması



Solunum Fonksiyon Testleri Genel Algoritma

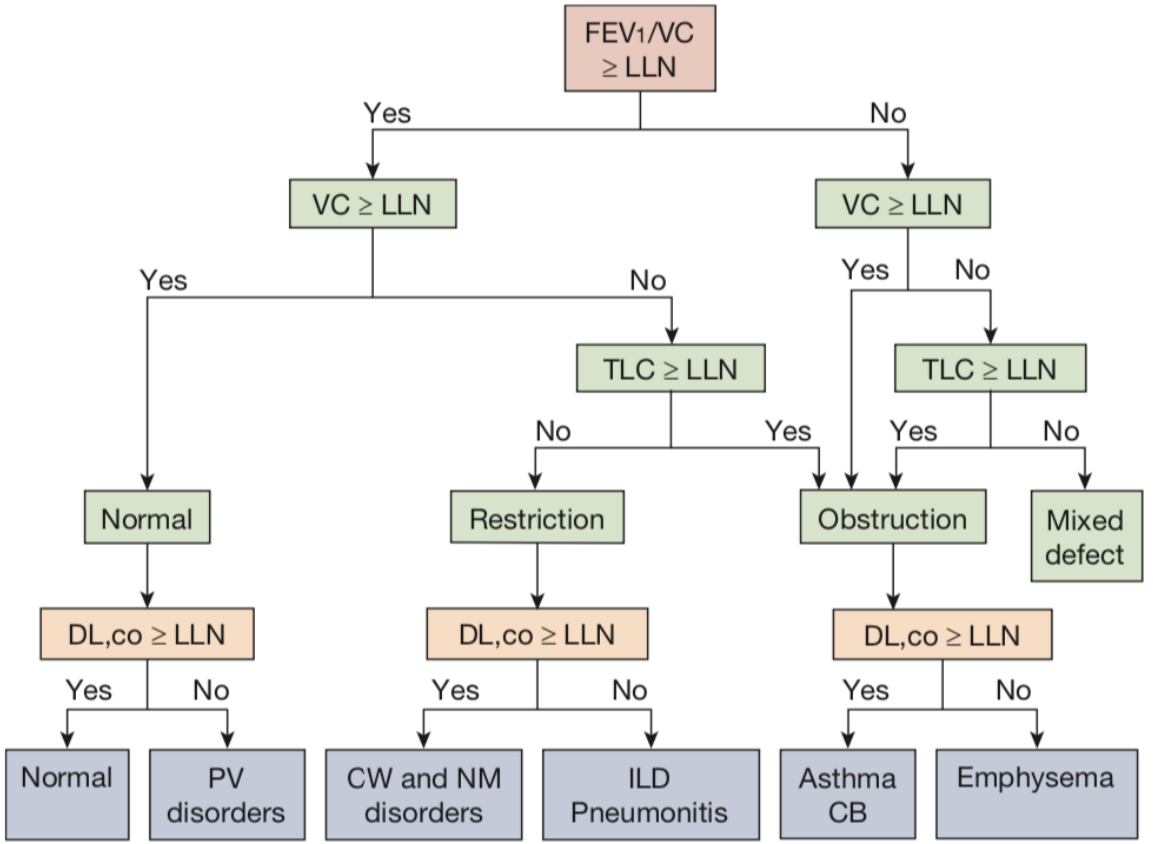


Figure 31-33 Proposed sequence of test review in the interpretation of pulmonary function tests. See text for discussion. CB, chronic bronchitis; CW, chest wall; ILD, interstitial lung disease; LLN, lower limit of normal; NM, neuromuscular; PV, pulmonary vascular. *(Reproduced with permission from Pellegrino R, Viegi G, Brusasco V, et al. Interpretive strategies for lung function tests. Eur Respir J. 2005;26(5):948–968.)*

Obstrüksiyon Derecelendirmesi

Tablo 3. Havayolu obstrüksiyonunun GOLD, ATS/ERS 2005 ve 2022'ye göre sınıflandırılması.

	GOLD 2023 (Postbronkodilatör) $FEV_1/FVC<\%70$	ATS/ERS 2005 FEV_1	ATS/ERS 2022 FEV_1 z-skor
Hafif	$FEV_1 \geq \%80$	>%70	-1.65<z skor< -2.50
Orta	$\%50 \leq FEV_1 < \%80$	%60-69	-2.51≤ z-skor< -4.0
Orta-ileri	$\%30 \leq FEV_1 < \%50$	%50-59	
İleri		%35-49	z-skor ≤ -4.10
Çok ileri	$FEV_1 < \%30$	<%35	

Severity classification of diffusing capacity of the lungs for carbon monoxide (DLCO)[1]

DLCO (preferred scale)*	Diffusion abnormality	DLCO (Z-score not available)
Z-score >1.645	Abnormally high	DLCO >140% predicted
Z-score −1.645 to 1.645	Normal	DLCO 76 to 140% predicted
Z-score −1.65 to −2.5	Mild impairment	DLCO 61 to 75% predicted
Z-score −2.5 to −4.0	Moderate impairment	DLCO 41 to 60% predicted
Z-score <−4.0	Severe impairment	DLCO <40% predicted

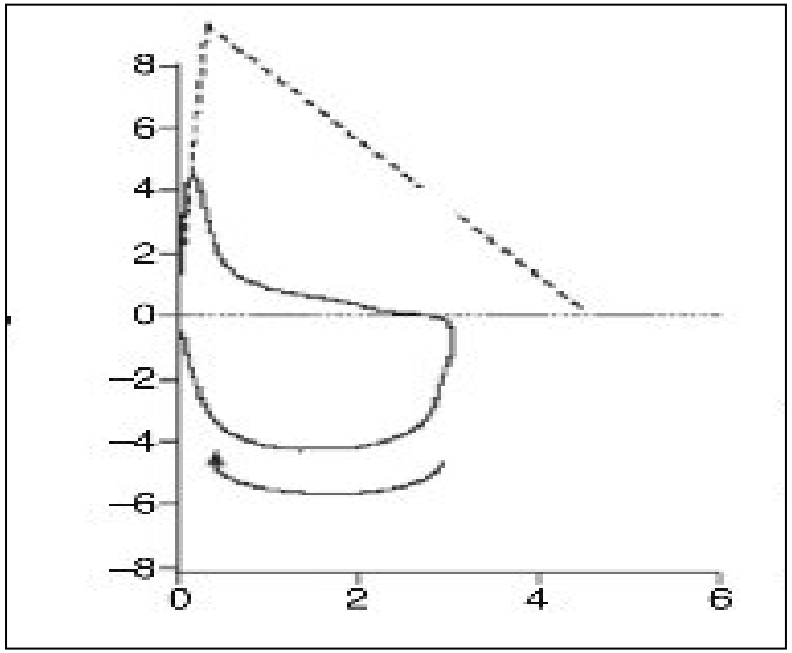
* The Z-score represents the normal distribution in healthy individuals taking into account reference equation parameters (eg, age, sex, height). A Z-score of 1.645 represents the upper limit of normal (95th percentile) and a Z-score of -1.645 represents the lower limit of normal (5th percentile). Z-score is recommended for severity grading to standardize measurement and reduce bias due to age, sex, and other factors. Some pulmonary function laboratories may still report using percent of predicted value; one grading scale for this measure is included.

Reference:

1. *Stanojevic S, Kaminsky D, Miller M, et al. ERS/ATS technical standard on interpretive strategies for routine lung function tests. Eur Respir J 2022; 60:2101499.*

SFT Örneği-1

Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	3.30	83
FEV1	Litre(L)	3.06	1.66	54
FEV1/FVC	%	75	50	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16



Akım-volüm halkasında artefakt, öksürük vb. yok

Test değerlendirilebilinir

Öncelikle FEV1/FVC oranına bakılır

Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	3.30	83
FEV1	Litre(L)	3.06	1.66	54
FEV1/FVC	%	75	50	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16

FEV1/FVC oranı %70'in altında olduğu için obstrüksiyon vardır

Obstrüksiyonun derecesini belirlemek için FEV1 değerine bakılır

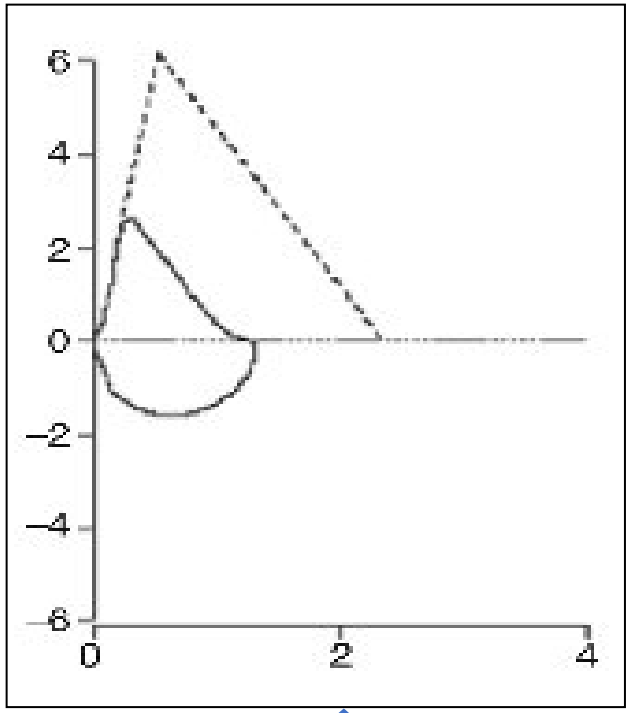
Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	3.30	83
FEV1	Litre(L)	3.06	1.66	54
FEV1/FVC	%	75	50	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16

FEV1 %54 saptandığı için hastada orta derecede obstrüksiyon vardır (**FEV1 %50-80** arasında ise **orta derecede obstrüksiyon** vardır)

Olası Tanılar:
KOAH, Astım, Bronşiektazi vb.

SFT Örneği-2

Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	2.22	55
FEV1	Litre(L)	3.06	1.85	60
FEV1/FVC	%	75	83	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16



Akım-volüm halkasında artefakt, öksürük vb. yok

Test değerlendirilebilinir

Öncelikle FEV1/FVC oranına bakılır

Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	2.22	55
FEV1	Litre(L)	3.06	1.85	60
FEV1/FVC	%	75	83	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16

FEV1/FVC oranı %70'in üzerinde olduğu için obstrüksiyon yoktur.

FEV1/FVC oranı normal olduğu için restriksiyon olup olmadığını değerlendirmek için FVC değerlerine bakılır

Parametre	Birim	Beklenen değer	Ölçülen değer	Yüzde (%)
FVC	Litre(L)	3.97	2.22	55
FEV1	Litre(L)	3.06	1.85	60
FEV1/FVC	%	75	83	
PEF	L/saniye	7.97	6.47	81
FEF 25-75	L/saniye	3.17	0.52	16

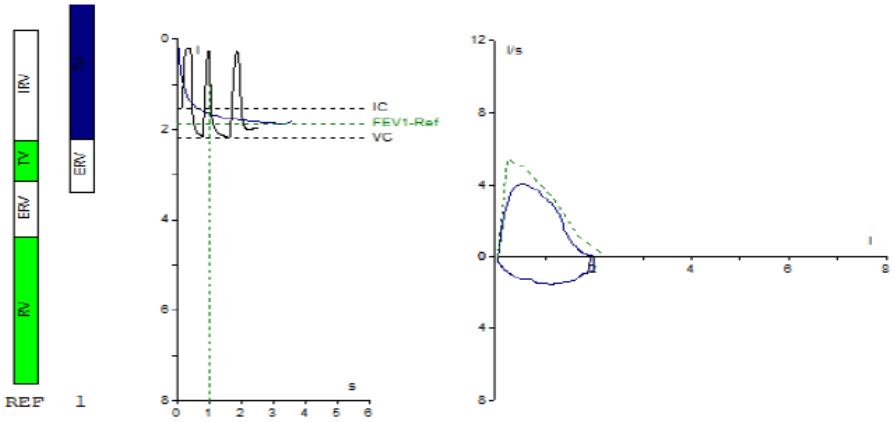
FVC değeri %55 olduğu için hastada **orta derecede restriksiyon** vardır. (FVC **%51-65** arasında ise orta derecede restriksiyon vardır.)

Olası Tanılar:
İnterstisyel AC Hst.
Nöromusküler Hst.
Plevra Hst. vb

Solunum Fonksiyon Testi

Comment: Test:

Spirometry + Flow-Volume



Static Values:

parameter	unit	pred	act.	%pred
VC	l	2.23	1.98	89
ERV	l	0.70	0.65	93
IRV	l		-0.48	
TV	l		1.81	
IC	l	1.89	1.33	70

Dynamic Values:

FVCex	l	2.27	1.98	87
FEV1	l	1.88	1.77	94
FEV1/FVC	%	77	89	116
FEV1/IVC	%	77	89	116
PEF	l/s	5.44	4.03	74
MEF75	l/s	4.96	4.03	81
MEF50	l/s	3.33	3.31	99
MEF25	l/s	1.13	1.08	95
MEF25-75	l/s	2.67	2.73	102
PIF	l/s	3.78	1.54	41
MIF50	l/s	3.31	1.46	44
BMI	kg/m²	30		
tex	s		4.0	
Aex	l*l/s		4.64	

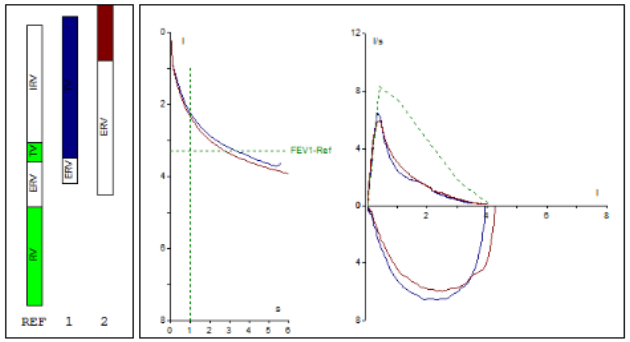
Comment:

 Test: 13.12.2023 / 15:32

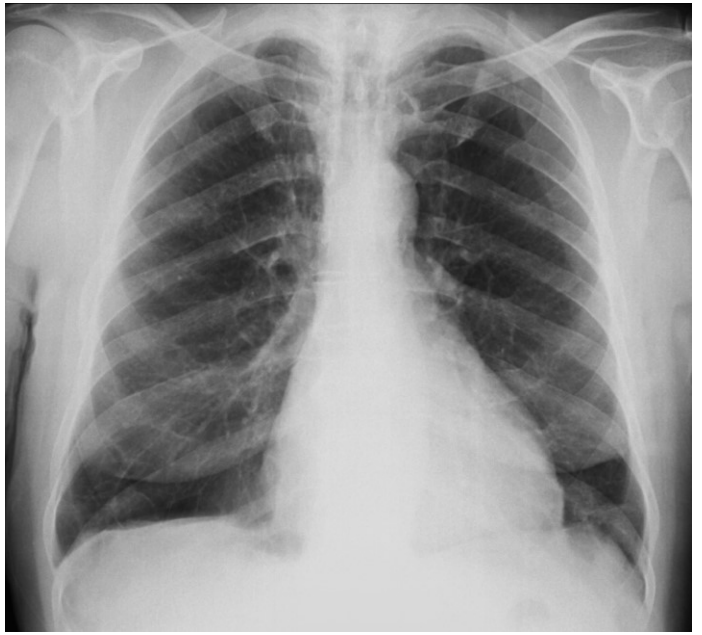
FEV1/FVC: N
FVC:N => SFT:N (Astım? => BPT)

Rev. Solunum Fonksiyon Testi (Post-BD SFT)

Spirometry + Flow-Volume Pre/Post



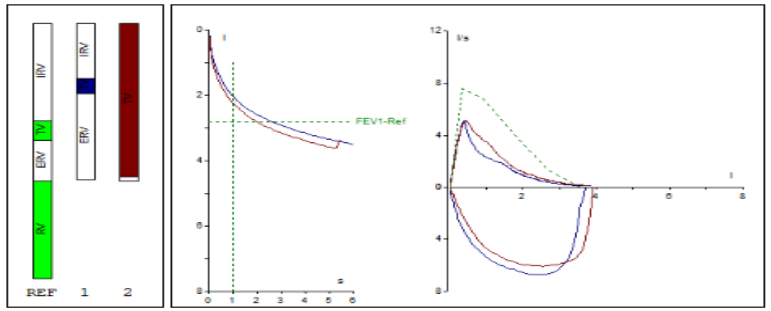
time			14:18		14:42		
medicament							
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	4.38	3.96	90	4.27	98	8
ERV	l	1.14	0.65	57	3.38	295	422
IRV	l		-0.23		-2.93		1186
TV	l		3.54		3.82		8
IC	l	3.43	3.31	96	0.90	26	-73
FVCex	l	4.22	3.86	92	4.04	96	5
FEV1	l	3.30	2.30	70	2.35	71	2
FEV1/FVC	%	76	59	78	58	77	-2
FEV1/IVC	%	76	58	76	55	72	-5
PEF	l/s	8.31	6.51	78	5.93	71	-9
MEF75	l/s	7.37	2.68	36	3.11	42	16
MEF50	l/s	4.41	1.48	34	1.39	32	-6
MEF25	l/s	1.64	0.56	34	0.51	31	-9
MEF25-75	l/s	3.42	1.16	34	1.18	34	2
PIF	l/s	3.70	6.56	177	5.93	160	-10
MIF50	l/s	4.64	6.50	140	5.82	125	-10
Aex	l*l/s		6.99		7.51		7



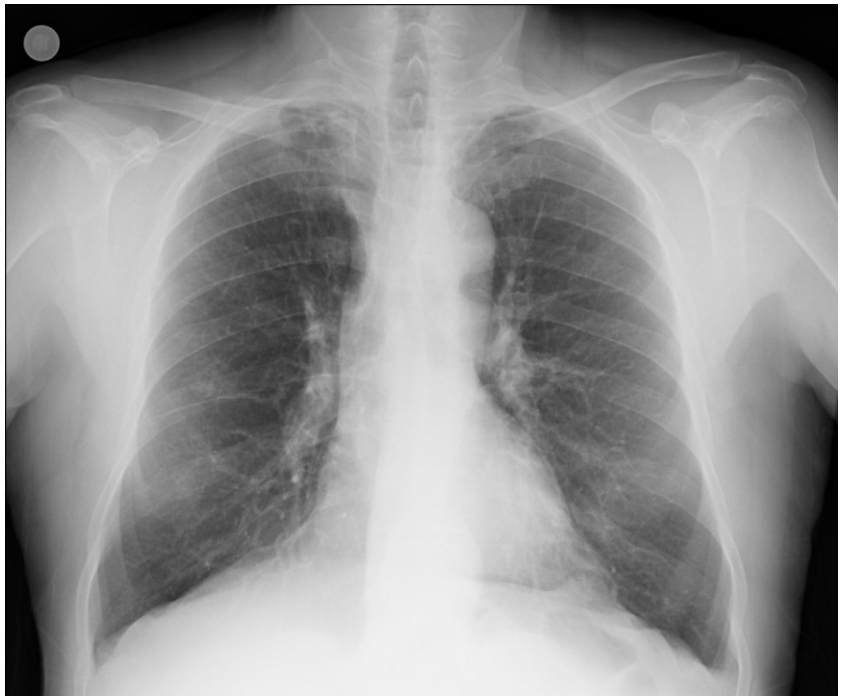
Post-bd SFT:
FEV1/FVC: %58
FVC:%96 FEV1:%71 => KOAH (orta derece obst)

Rev. Solunum Fonksiyon Testi (Post-BD SFT)

Spirometry + Flow-Volume Pre/Post



time			11:23		11:56		
medicament							
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	3.75	3.86	103	3.91	104	1
ERV	l	1.01	2.12	210	0.13	13	-94
IRV	l		1.36		-0.01		-101
TV	l		0.38		3.79		891
IC	l	2.90	1.74	60	3.78	130	117
FVCex	l	3.62	3.86	107	3.78	104	-2
FEV1	l	2.82	2.09	74	2.31	82	10
FEV1/FVC	%	75	54	72	61	81	13
FEV1/IVC	%	75	54	72	59	78	9
PEF	l/s	7.63	5.14	67	5.12	67	-0
MEF75	l/s	6.79	2.41	36	3.59	53	49
MEF50	l/s	3.97	1.04	26	1.35	34	29
MEF25	l/s	1.33	0.34	26	0.52	39	50
MEF25-75	l/s	3.12	0.85	27	1.17	38	39
PIF	l/s	3.55	6.71	189	6.06	171	-10
MIF50	l/s	4.56	6.45	141	5.90	129	-9
BMI	kg/m²	28					
Aex	l*l/s		5.60		6.91		23
tex	s		8.1		5.5		-32

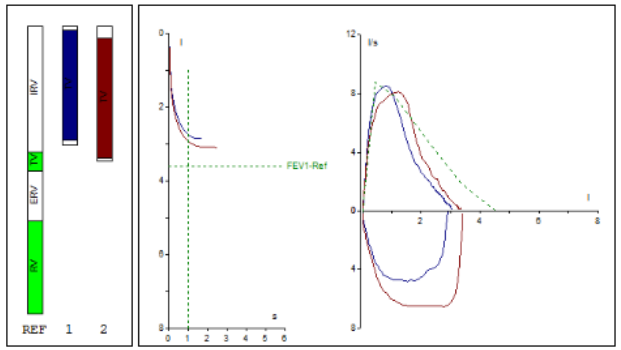


Post-bd SFT:
FEV1/FVC: %61
FVC:%104 FEV1:%82 => KOAH (hafif derece obst)

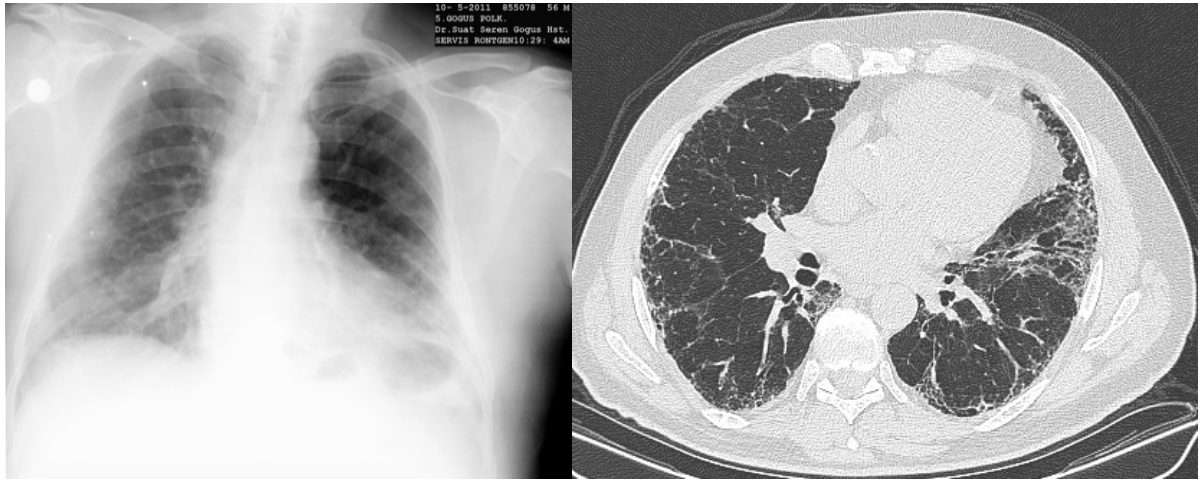
Rev.-SFT

180 cm, 93 kg, male
Test: 13.05.2011 / 14:25 h

Spirometry + Flow-Volume Pre/Post

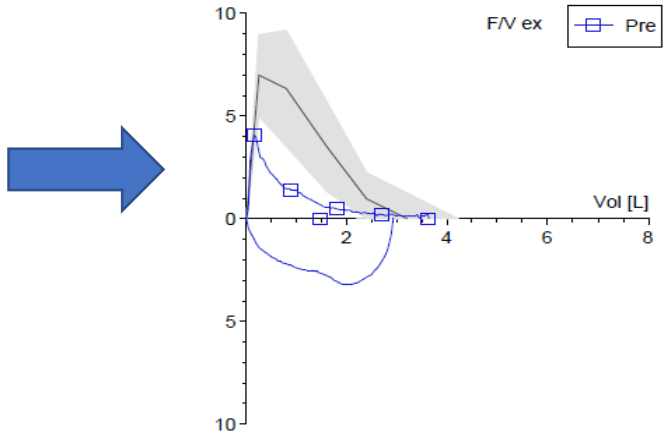


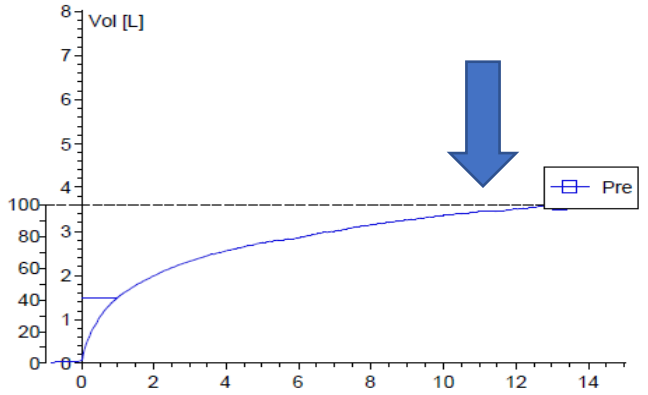
time			14:01		14:25		
medicament							
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	4.76	3.04	64	3.43	72	13
ERV	l	1.27	0.13	11	0.09	7	-34
IRV	l		0.12		0.31		151
TV	l		2.78		3.03		9
IC	l	3.67	2.91	79	3.34	91	15
FVCex	l	4.57	3.04	67	3.34	73	10
FEV1	l	3.63	2.89	80	3.13	86	8
FEV1/IVC	%	77	95	123	91	118	-4
FEV1/FVC	%	77	95	123	94	122	-2
PEF	l/s	8.79	8.52	97	8.13	92	-5
MEF75	l/s	7.73	8.50	110	7.71	100	-9
MEF50	l/s	4.74	4.84	102	6.26	132	29
MEF25	l/s	1.90	2.04	107	2.21	116	9
MEF25-75	l/s	3.78	4.19	111	4.72	125	13
PIF	l/s	3.88	4.82	124	6.53	168	35
MIF50	l/s	4.82	4.76	99	6.48	134	36
Aex	l*l/s		13.33		15.15		14



Rev SFT:
FEV1/FVC: %94
FVC:%73 => Restriktif bzk (İAH) (Hafif derece res.bzk)

Örnek -1



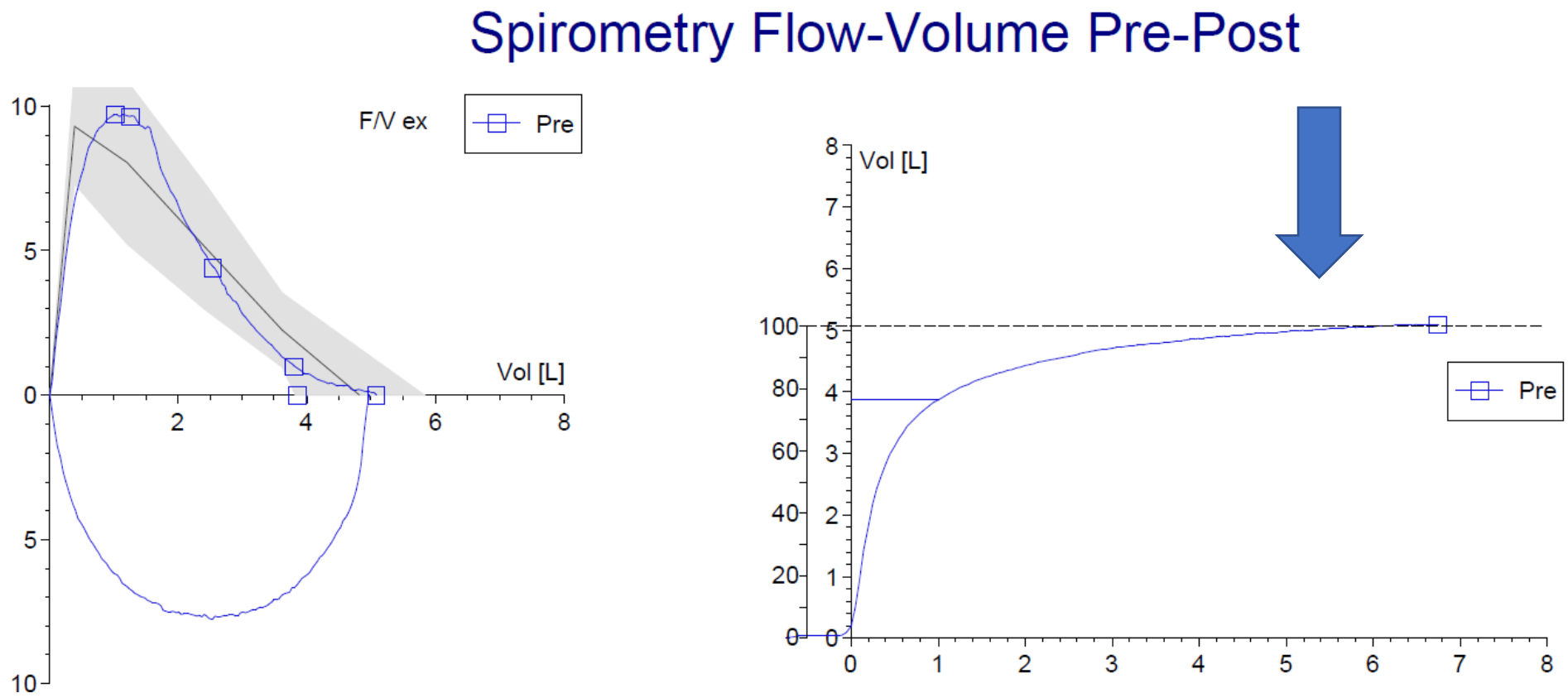


	Pred	Pre	%...	Z-Score	Pred LL
VC MAX	3.30	3.62	110		2.38
FVC	3.20	3.62	113		2.20
FEV1	2.37	1.49	63		1.53
FEV1%F	72.81	41.05	56		61.02
PEF	6.96	4.09	59		4.97
FEV3		2.31			
FEV6		2.83			
MEF25	0.94	0.19	20		
MEF50	3.50	0.46	13		1.33
MEF 75	6.33	1.39	22		3.52
MMEF 75/25	2.50	0.40	16		0.79
FE%FIF		17.33			
FETPEF		0.04			
FET		13.20			

Test Qualitiy Categories Grade A (✓) B ( ) C ( ) D ( ) E ( ) F ( )

Orta derece obstrüksiyon

Örnek-2


Spirometry Flow-Volume Pre-Post
F/V ex
Pre
Vol [L]
10
5
0
5
10
2
4
6
8
Vol [L]
100
80
60
40
20
0
8
7
6
5
4
3
2
1
0
0
1
2
3
4
5
6
7
8
Pre

Örnek -2

Normal

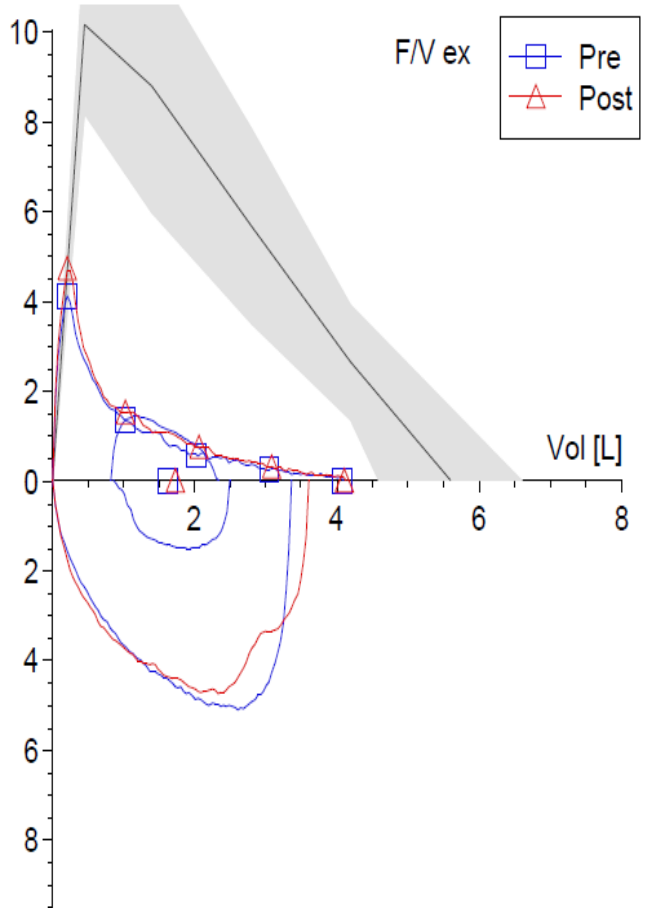
Flow-Volume Pre-Post

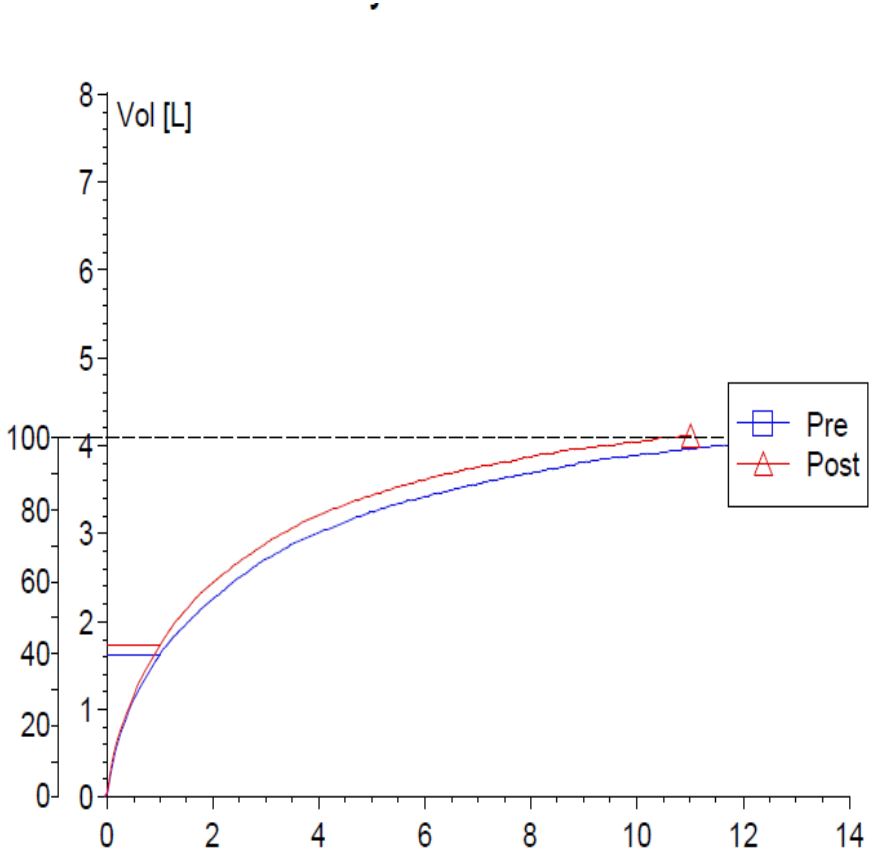
	Pred	Pre	%(Pre/Pred)	Z-Score −3 −2 −1 0 1 2 3
FVC	4.82	5.08	105	
FEV1	3.96	3.86	97	
FEV1%F	80.01	76.00	95	
PEF	9.30	9.73	105	
FEV3		4.70		
FEV6		5.05		
MEF25	2.24	0.98	44	
MEF50	5.12	4.40	86	
MEF75	8.03	9.64	120	
MMEF 75/25	4.41	3.13	71	
FEF 50 %...		56.58		
Level date		12.03.18		
Level time		10:46		
Pressure		760		
Temperature		27		
Humidity		21		

Workstation	*CFN90004935*						
Channel	*Flow (MS-PFT)*						
Property	*Type*	*Gain in*	*Gain ex*	*CV in%*	*CVex%*	*syringe..*	*Cal. grade*
Date of calibration							
12.03.2018	Cal	0.956	0.928	0.210	0.204	3.000	1.000

Örnek -3

Reversibilite testi





Örnek -3

Ağır obstrüksiyon ± hafif restriksiyon? (TLC↓ =>Mix)

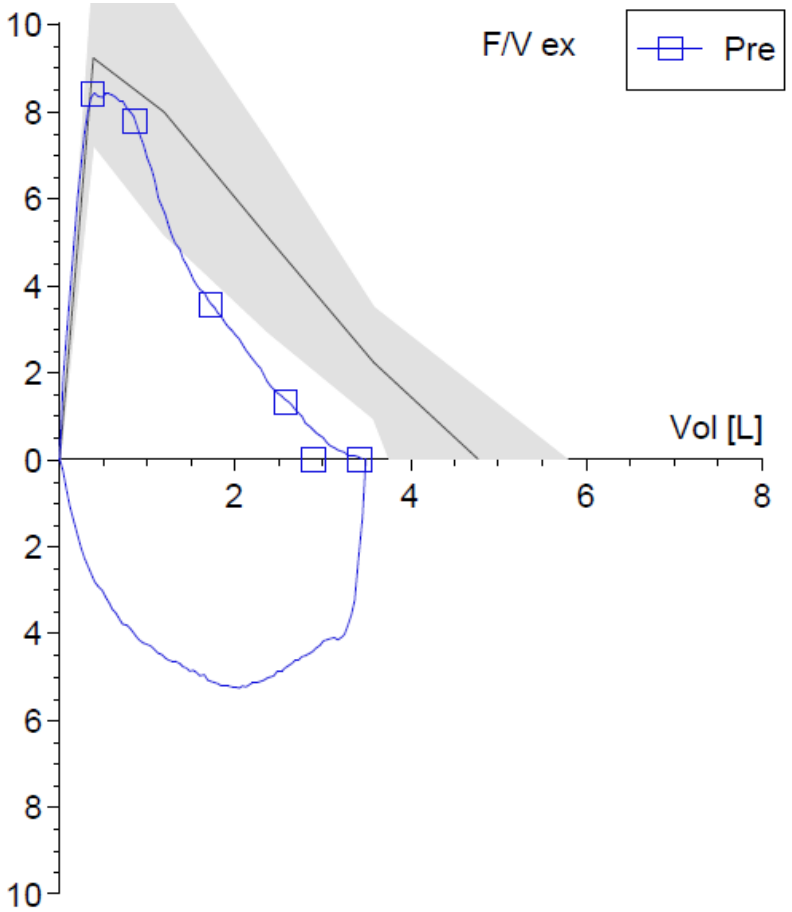
Flow-Volume Pre-Post

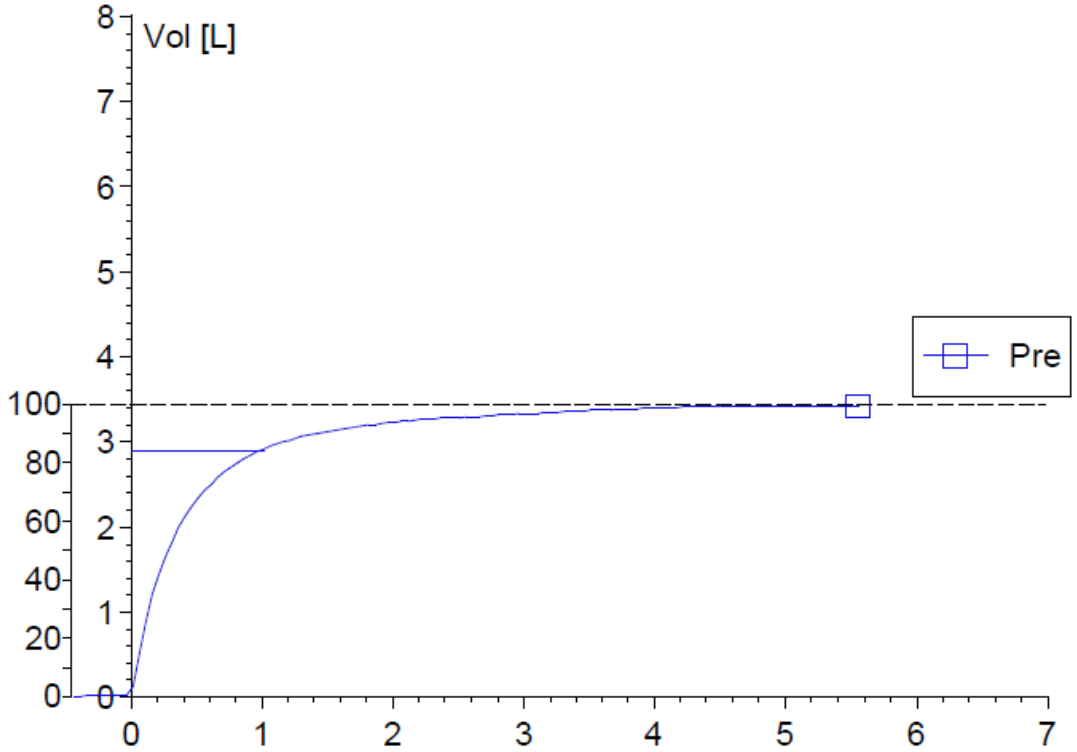
	Pred	Pre	%...	Post	%...	%Chg...	Z-Score (-3 -2 -1 1 2 3)	Pred LL
VC MAX	5.84	4.07	70	4.10	70	1		4.92
FVC	5.58	4.07	73	4.10	73	1		4.58
FEV1	4.56	1.62	35	1.72	38	7		3.73
FEV1%F	80.55	39.75	49	42.09	52	6		68.76
PEF	10.16	4.11	40	4.73	47	15		8.17
FEV3		2.69		2.87		7		
FEV6		3.40		3.60		6		
MEF25	2.63	0.26	10	0.32	12	20		1.35
MEF50	5.67	0.56	10	0.74	13	33		3.49
MEF 75	8.78	1.36	16	1.53	17	13		5.96
MMEF 75/25	4.78	0.54	11	0.65	14	21		3.06
FE%FIF		12.29		16.62		35		
FETPEF		0.05		0.04		-15		
FET		13.25		10.96		-17		
Level date		18.10.17		18.10.17				
Level time		13:55		14:51				
Pressure		764		763				
Temperature		28		29				
Humidity		22		22				
Substance				Salbuta...				
Dose				4 Puff				

Workstation	CFN90004935					
Channel	Flow (MS-PFT)					
Property	Type	Gain in	Gain ex	CV in%	CVex%	syringe..	Cal. grade
Date of calibration						
29.06.2018	Cal	0.947	0.929	0.059	0.096	3.000	1.000

Test Qualitiy Categories Grade A ( ) B ( ) C ( ) D ( ) E ( ) F ( )

Örnek -4


F/V ex
Pre
Vol [L]
10
8
6
4
2
0
2
4
6
8
10
2
4
6
8


Vol [L]
Pre
8
7
6
5
4
3
2
1
0
100
80
60
40
20
0
0
1
2
3
4
5
6
7

Örnek -4

Hafif restriksiyon

Flow-Volume Pre-Post

	Pred	Pre	%...	Z-Score	Pred LL
VC MAX	4.97	3.44	69		4.04
FVC	4.76	3.42	72		3.75
FEV1	3.92	2.90	74		3.08
FEV1%F	80.01	84.80	106		68.22
PEF	9.24	8.43	91		7.25
FEV3		3.32			
MEF25	2.21	1.31	59		0.93
MEF50	5.08	3.57	70		2.91
MEF 75	7.98	7.78	97		5.17
MMEF 75/25	4.39	3.08	70		2.68
FE%FIF		69.43			
FETPEF		0.05			
FET		5.56			
Level date		17.12.15			
Level time		13:45			
Pressure		768			
Temperature		26			
Humidity		24			

Workstation	CFN90004935					
Channel Property	Flow (MS-PFT) Type	Gain in	Gain ex	CV in%	CVex%	syringe..	Cal. grade
Date of calibration							
29.06.2018	Cal	0.947	0.929	0.059	0.096	3.000	1.000

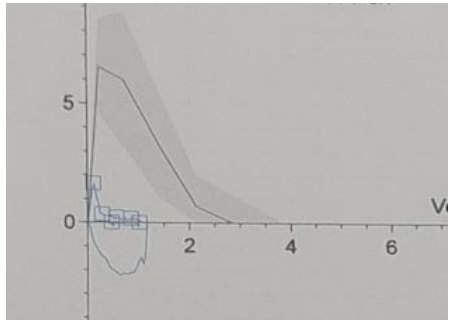
Test Qualitiy Categories Grade A ( ) B ( ) C ( ) D ( ) E ( ) F ( )

SFT

FEV1/FVC: %46 (LLN:60, z skoru:-3.61)=> Orta derece Obst.
FVC: 1.01 (LLN:1.84, z skor:-3) => Düşük=> Mix? => Body (TLC?)

Best Trial | **All Trials**

		Best	Pred UL	Pred LL	Z-Score	%(B/P)	1	2	Z-Score
FVC	L	1.01	3.84	1.84	-3.00	36	1.01		-3.00
FEV 1	L	0.46	2.89	1.22	-3.12	23	0.46		-3.12
PEF	L/s	1.63	8.49	4.51	-4.02	25	1.63		-4.02
FEV 1 % FVC	%	46.05	83.70	60.12	-3.61		46.05		-3.61
VC MAX	L	1.13	3.83	1.99	-3.19	39	1.01	1.13	-3.19
MFEF 75/25	L/s	0.21	3.92	0.50	-1.92	10	0.21		-1.92
MMEF 75/25	L/s	0.18	3.92	0.50	-1.95	8	0.18		-1.95
FEF 25	L/s	0.31	8.78	3.15	-3.30	5	0.31		-3.30
FEF 50	L/s	0.23	5.36	1.02	-2.24	7	0.23		-2.24
FEF 75	L/s	0.13	1.99		-0.74	18	0.13		-0.74
FIF 25	L/s	2.14						2.14	
MEF 50	L/s	0.22	5.36	1.02	-2.26	7	0.22		-2.26
MEF 75	L/s	0.35	8.78	3.15	-3.28	6	0.35		-3.28
FET	sec	5.49					5.49		
Quality FVC...		✔✔					✔✔		
Quality FEV1...		✔✔					✔✔		
Error FV ATS...		1					0		

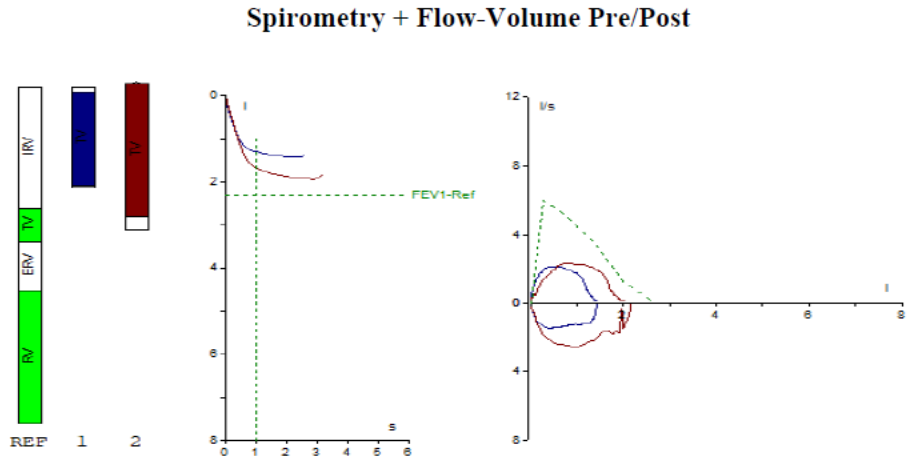


SFT

FEV1/FVC: %73 (LLN:70, z skoru:-1.26)=> Normal=> Obs yok
FVC: 4.26 (LLN:4.32, z skor:-1.74) => Düşük=> Hafif Rest Bzk

		Best Trial					All Trials			
		Best	Pred UL	Pred LL	Z-Score	%(B/P)	1	4	Z-Score	Z-Score Pred
FVC	L	4.26	6.32	4.32	-1.74	80		4.26	-1.74	
FEV 1	L	3.14	5.32	3.64	-2.63	70		3.14	-2.63	
PEF	L/s	7.26	12.06	8.08	-2.32	72		7.26	-2.32	
FEV 1 % FVC	%	73.71	94.50	70.92	-1.26			73.71	-1.26	
VC MAX	L	4.26	6.49	4.65	-2.34	76	3.62	4.26	-2.34	
MFEF 75/25	L/s	2.40	6.81	3.39	-2.60	47		2.40	-2.60	
MMEF 75/25	L/s	2.40	6.81	3.39	-2.60	47		2.40	-2.60	
FEF 25	L/s	4.93	11.39	5.77	-2.13	57		4.93	-2.13	
FEF 50	L/s	2.88	7.83	3.49	-2.10	51		2.88	-2.10	
FEF 75	L/s	0.94	3.96	1.40	-2.23	35		0.94	-2.23	
FIF 25	L/s	6.47					6.47			
MEF 50	L/s	2.88	7.83	3.49	-2.10	51		2.88	-2.10	
MEF 75	L/s	4.93	11.39	5.77	-2.13	57		4.93	-2.13	
FET	sec	7.12						7.12		
Quality FVC...		✓✓						✓✓		
Quality FEV1...		✓✓						✓✓		
Error FV ATS...		1						0		

Rev. Solunum Fonksiyon Testi



Static Values:

time			15:42		15:58		
medicament							
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	2.74	1.54	56	2.16	79	40
ERV	l	0.75	0.04	5	0.21	28	492
IRV	l		0.09		-0.06		-173
TV	l		1.42		2.01		42
IC	l	2.37	1.50	63	1.95	82	29

Dynamic Values:

FVCex	l	2.76	1.54	56	2.15	78	40

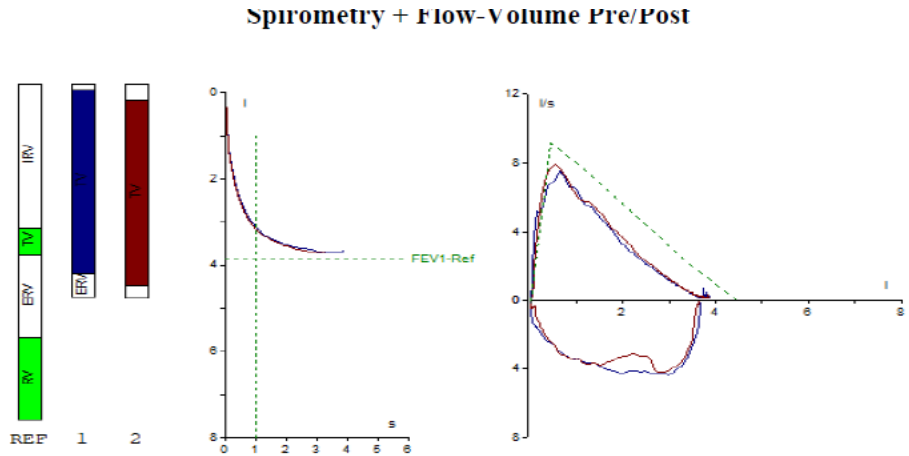
FEV1	l	2.32	1.38	60	1.84	80	33
FEV1/FVC	%	77	90	117	86	112	-5
FEV1/IVC	%	77	90	117	86	111	-5
PEF	l/s	6.05	2.16	36	2.33	39	8
MEF75	l/s	5.31	2.13	40	2.03	38	-5
MEF50	l/s	3.60	2.04	57	2.25	62	10
MEF25	l/s	1.24	1.28	103	1.59	128	24
MEF25-75	l/s	2.81	1.92	68	2.14	76	12
PIF	l/s	3.86	1.49	39	2.59	67	74
MIF50	l/s	3.38	1.35	40	2.44	72	81

BMI	kg/m²	25					
Aex	l*l/s		2.26		3.26		44
tex	s		2.8		3.4		20

Comment:

Rev SFT:
FEV1: 460 ml ve %33 bronkodilatör yanıtı (+) => Astım

Rev. Solunum Fonksiyon Testi



Static Values:

time			10:36		10:52		
medicament							
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	4.71	3.86	82	3.88	82	0
ERV	l	1.51	0.43	28	0.25	17	-42
IRV	l		0.12		0.30		139
TV	l		3.30		3.33		1
IC	l	3.10	3.43	111	3.63	117	6

Dynamic Values:

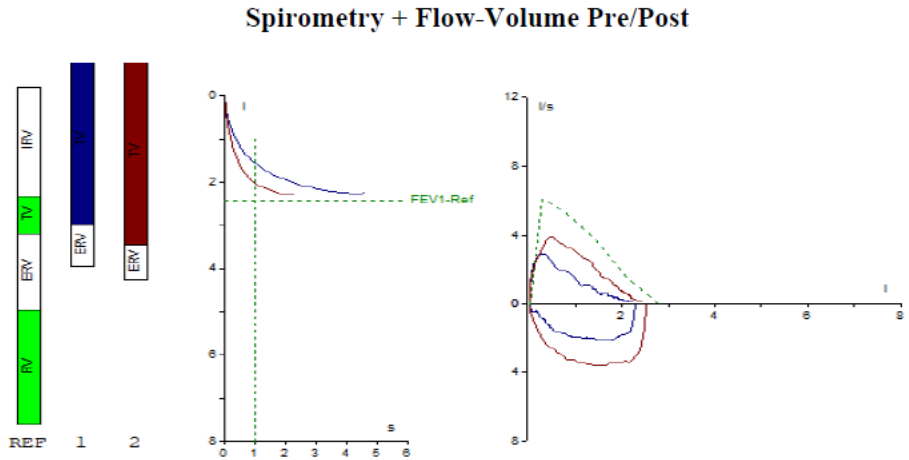
FVCex	l	4.51	3.86	86	3.88	86	0
FEV1	l	3.88	3.17	82	3.24	83	2
FEV1/FVC	%	83	82	99	84	101	2
FEV1/IVC	%	83	82	99	84	101	2
PEF	l/s	9.21	7.52	82	7.90	86	5
MEF75	l/s	7.81	6.54	84	6.32	81	-3
MEF50	l/s	5.13	3.47	68	3.86	75	11
MEF25	l/s	2.32	1.40	60	1.49	64	7
MEF25-75	l/s	4.83	3.06	63	3.24	67	6
PIF	l/s	4.48	4.37	98	4.20	94	-4
MIF50	l/s	5.63	4.15	74	3.49	62	-16
BMI	kg/m²	24					
tex	s		3.9		3.6		-7
Aex	l*l/s		13.48		14.11		5

Comment:

Test: 17.04.2024 / 10:52
BTPS: 24 / 1013 / 20 [°C / mbar / %]

Rev SFT: N => Astım şüphesi varsa BPT istenmeli!
(FEV1: 70 mL, %2 değişim => Bd yanıt yok)

Rev. Solunum Fonksiyon Testi



Static Values:

			time	13:35		13:56		
			medicament					
parameter	unit	pred.	pre	%pred.	post	%pred.	post%pre
VC	l	2.80	2.34	84	2.52	90	7
ERV	l	1.01	0.56	55	0.45	45	-19
IRV	l		-0.41		-0.40		-4
TV	l		2.20		2.46		12
IC	l	1.95	1.79	92	2.07	106	16
Dynamic Values:							
FVCex	l	2.83	2.34	83	2.43	86	4

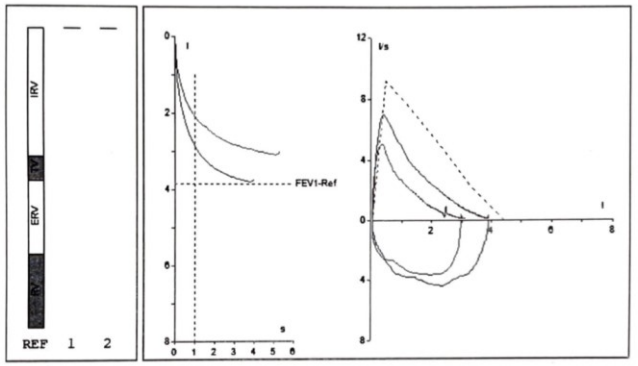
FEV1	l	2.42	1.56	64	2.10	87	35
FEV1/FVC	%	81	67	82	86	107	30
FEV1/IVC	%	81	67	82	83	103	25
PEF	l/s	6.09	2.95	48	3.92	64	33
MEF75	l/s	5.49	2.14	39	3.67	67	71
MEF50	l/s	3.86	1.13	29	2.64	68	134
MEF25	l/s	1.64	0.49	30	1.20	73	144
MEF25-75	l/s	3.36	1.02	30	2.27	68	122
PIF	l/s	4.02	2.16	54	3.59	89	67
MIF50	l/s	3.68	1.98	54	3.53	96	78
BMI	kg/m²	28					
tex	s		4.6		2.4		-47
Aex	l*l/s		3.07		5.31		73

Comment:

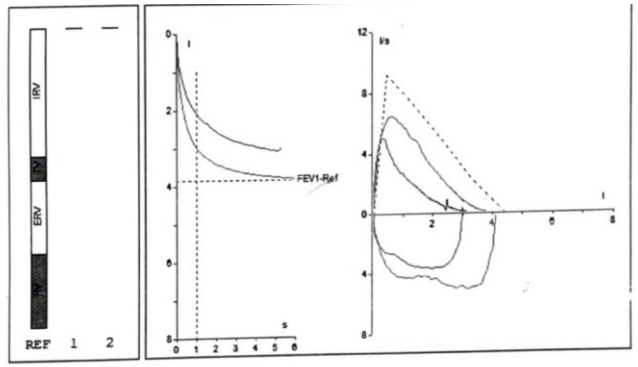
Test: 29.04.2024 / 13:56
BTPS: 24 / 1013 / 20 [°C / mbar / %]

Rev SFT: Obst düzelmiş (FEV1/FVC %67 -> %86)
FEV1: 540 ml ve %35 bronkodilatör yanıtı (+) => Astım

Bronş Provokasyon Testi



Static Values: time			14:40			14:49 METHACOLİN 0.25 mg		
medicament								
parameter	unit	pred.	pre	%pred.		post	%pred.	post%pre
VC	l	4.69						
ERV	l	1.50						
IRV	l							
TV	l							
IC	l	3.09						
Dynamic Values:								
FVCex	l	4.49	3.90	87		3.17	71	-19
FEV1	l	3.85	2.88	75		2.10	55	-27
FEV1/FVC	%	83	74	90		66	80	-10
FEV1/IVC	%	83						
PEF	l/s	9.16	6.98	76		5.00	55	-28
PEF/FVC	l/s		1.79			1.58		-12
MEF75	l/s	7.78	4.91	63		3.14	40	-36
MEF50	l/s	5.10	2.49	49		1.56	31	-37
MEF25	l/s	2.29	0.99	43		0.53	23	-46
MEF25-75	l/s	4.78	2.17	45		1.26	26	-42



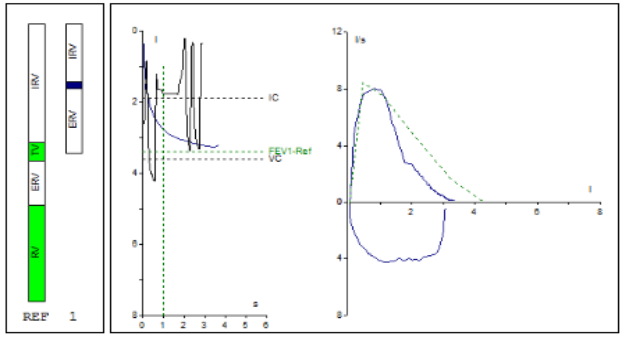
Static Values: time			14:49 METHACOLİN 0.25 mg			15:03 SALBUTAMOL 2.5 mg		
medicament								
parameter	unit	pred.	pre	%pred.		post	%pred.	post%pre
VC	l	4.69						
ERV	l	1.50						
IRV	l							
TV	l							
IC	l	3.09						
Dynamic Values:								
FVCex	l	4.49	3.17	71		3.95	88	25
FEV1	l	3.85	2.10	55		3.03	79	44
FEV1/FVC	%	83	66	80		77	93	16
FEV1/IVC	%	83						
PEF	l/s	9.16	5.00	55		6.49	71	30
PEF/FVC	l/s		1.58			1.64		4
MEF75	l/s	7.78	3.14	40		5.84	75	86
MEF50	l/s	5.10	1.56	31		3.12	61	99
MEF25	l/s	2.29	0.53	23		0.95	41	79
MEF25-75	l/s	4.78	1.26	26		2.53	53	100

- BPT: 0.25 mg Metakolin ile FEV1'de %27'lik düşüş olup provokasyon (+) => Astım ile uyumlu
- Sonrasında Salbutamol inh ile FEV1'de 930 mL ve %44 bd yanıt (+)

SFT -DLCO

180 cm, 80 kg, male
Test: 29.05.2019 / 13:45 h

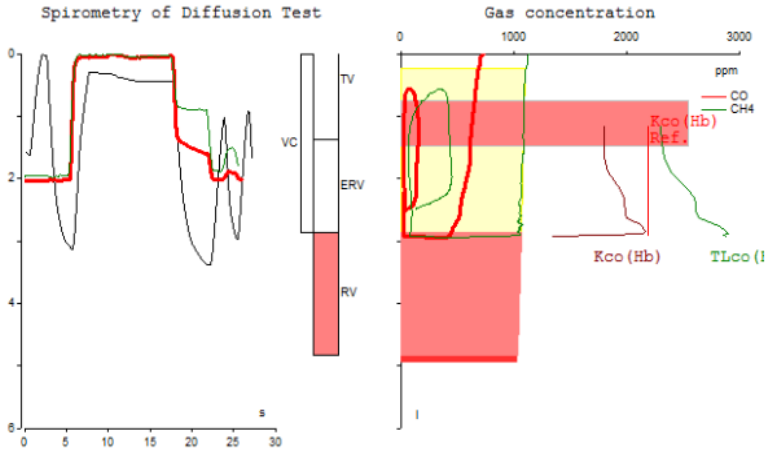
Spirometry + Flow-Volume



parameter	unit	pred	act.	%pred
VC	l	4.54	3.41	75
ERV	l	1.16	1.70	147
IRV	l		1.53	
TV	l		0.18	
IC	l	3.60	1.70	47
FVCex	l	4.36	3.41	78
FEV1	l	3.40	2.85	84
FEV1/FVC	%	76	84	111
FEV1/IVC	%	76	84	111
PEF	l/s	8.45	8.07	95
MEF75	l/s	7.50	8.02	107
MEF50	l/s	4.49	3.38	75
MEF25	l/s	1.69	1.26	74
MEF25-75	l/s	3.44	3.08	90
PIF	l/s	3.72	4.26	115
MIF50	l/s	4.62	4.08	88
BMI	kg/m²	25		
tex	s		3.9	
Aex	l*l/s		12.95	

180 cm, 80 kg, male
Test: 29.05.2019 / 13:48 h

CO Diffusion

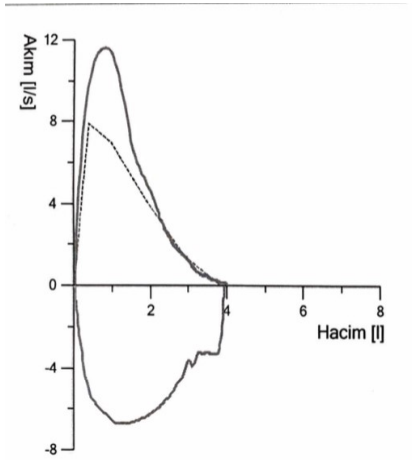


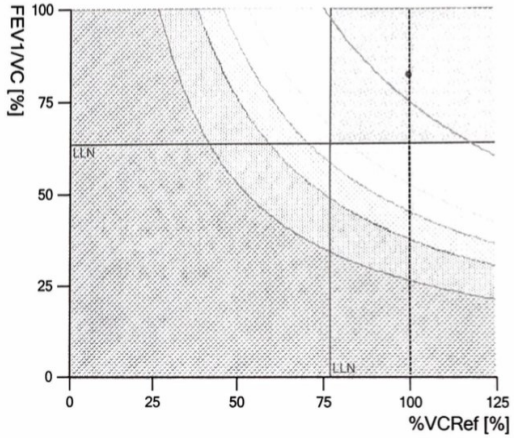
(sv) :

parameter	unit	pred	act.	%pred
HB	g/dl		15.9	
HbCO	%			
TLC	l	7.30	4.82	66
TLco	mmol/kPa/min	9.75	5.22	54
TLco(Hb)	mmol/kPa/min	9.75	5.04	52
Kco	mmol/kPa/min/l	1.34	1.12	84
Kco(Hb)	mmol/kPa/min/l	1.34	1.09	81
FRC	l	3.70	3.44	93
RV	l	2.54	1.97	78
RV/TLC	%	39	41	106
IVC CH4	l	4.54	2.86	63
VCex	l		3.41	
BMI	kg/m²	25		
T90 in	s		1.61	
t diff.	s		12.13	

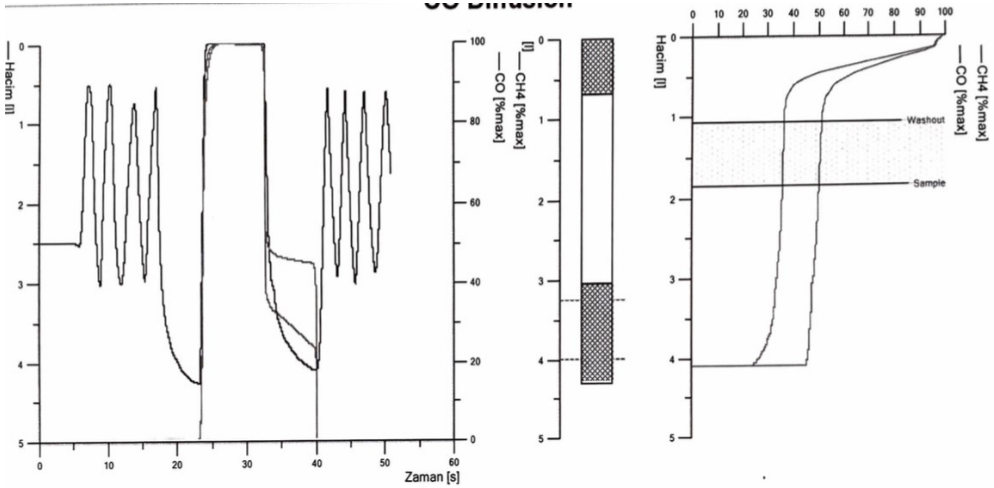
SFT: FEV1/FVC: %84, FVC:%78 (Hafif restriktif bzk)
DLCO: %52 (Orta derece difüzyon↓) => İAH

SFT -DLCO





	Birim		Öngörülen	LLN	Z-Skor	Önce	%Pred.		%Pred.
VC	l	(1)	3,99 (1)	3,07		4,00	100%	4,00	100%
IC	l	(3)	3,24 (3)			3,68	114%	3,68	114%
IRV	l								
FVC	l	(1)	3,85 (1)	2,85		4,00	104%	4,00	104%
FVCIn	l	(1)	3,85 (1)	2,85		3,94	102%	3,94	102%
IC/FVC	%								
FEV1	l	(1)	2,99 (1)	2,15		3,28	110%	3,28	110%
FEV1/FVC	%	(1)	75 (1)	64		82	109%	82	109%
FEV1/VC	%	(1)	75 (1)	64		82	109%	82	109%
PEF	l/s	(1)	7,87 (1)	5,88		11,62	148%	11,62	148%
MEF75	l/s	(1)	7,01 (1)	4,20		11,23	160%	11,23	160%
MEF50	l/s	(1)	4,12 (1)	1,95		4,68	114%	4,68	114%
MEF25	l/s	(1)	1,43 (1)	0,15		1,22	85%	1,22	85%
TV	l	(28)	0,78 (28)			3,74	480%	3,74	480%
FVCmax	l	(1)	3,85 (1)	2,85		4,00	104%	4,00	104%
MEF25-75	l/s	(1)	3,20 (1)	1,49		3,42	107%	3,42	107%
MEF50-75	l/s					2,23		2,23	



	Birim		Öngörülen	Önce	%Pred.		%Pred.
TLco (Hb)	mmol/kPa/min	(1)	8,73	5,37	61%	5,37	61%
Kco (Hb)	mmol/kPa/min/l	(1)	1,31	0,82	62%	0,82	62%
Tdiff	s			9,46		9,46	
TLC	l	(1)	6,66	6,73	101%	6,73	101%
VA	l	(1)	6,50	6,57	101%	6,57	101%
FRC	l	(1)	3,53	3,71	105%	3,71	105%
RV	l	(1)	2,48	2,46	99%	2,46	99%
VI	l	(1)	3,99	4,27	107%	4,27	107%
ERV	l	(1)	1,05	1,25	118%	1,25	118%
RV/TLC	%	(1)	39	37	93%	37	93%
FRC/TLC	%	(1)	58	55	95%	55	95%

SFT: FEV1/FVC: %82, FVC:%104 (Normal)

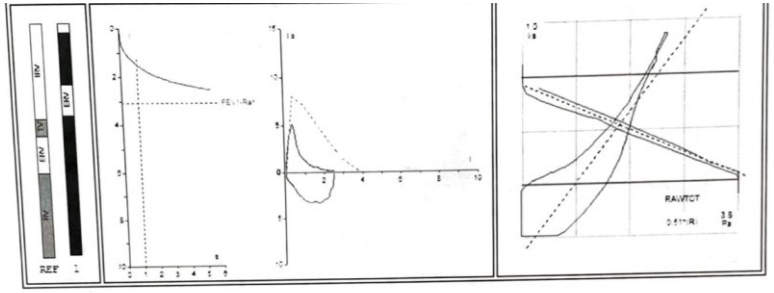
DLCO: %61 (Hafif derece difüzyon↓) => 1) **Erken dönem İAH**

2) Pulm Vas.Hast.

3) Anemi

4) Smoker

SFT- Body pletis.- DLCO



Spirometry, Flow-Volume

parameter	unit	pred	act.	%pred
VC	l	4.08	2.62	64
IC	l	3.19	1.73	54
FVCex	l	3.93	2.62	67
FEV1	l	3.07	1.54	50
FEV1/IVC	%	76	59	78
FEV1/FVC	%	76	59	78
PEF	l/s	7.98	5.11	64
MEF75	l/s	7.09	2.45	35
MEF50	l/s	4.19	0.76	18
MEF25	l/s	1.49	0.37	25
MEF25-75	l/s	3.26	0.74	23

Resistance :

RAWtot	kPa/(l/s)	0.30	0.51	170
sRAWtot	kPa*s	1.06	2.52	237

Volumes :

TGV	l	3.54	4.94	139
TLC	l	6.74	6.67	99
VC	l		2.62	
RV	l	2.47	4.05	164
TGV/TLC	%	57	74	129
RV/TLC	%	39	61	155

Comment:

Results calculated from Sample Volume (sv) :

parameter	unit	pred	act.	%pred
HB	g/dl		15.6	
TLC	l	6.74	5.45	81
TLco(Hb)	mmol/kPa/min	8.91	4.37	49
Kco	mmol/kPa/min/l	1.32	0.86	65
Kco(Hb)	mmol/kPa/min/l	1.32	0.84	63
FRC	l	3.54	4.15	117
RV	l	2.47	3.46	140
RV/TLC	%	39	63	163
IVC CH4	l	4.08	1.99	49

Body Pletismografi:

- FEV1/FVC: %59 (FEV1:%50 ağırderece obs)
- FVC: %67
- TLC: %99, RV: %164, RV/TLC: %155

DLCO: %49 => KOAH (Amfizem)

SFT- Body pletis.- DLCO

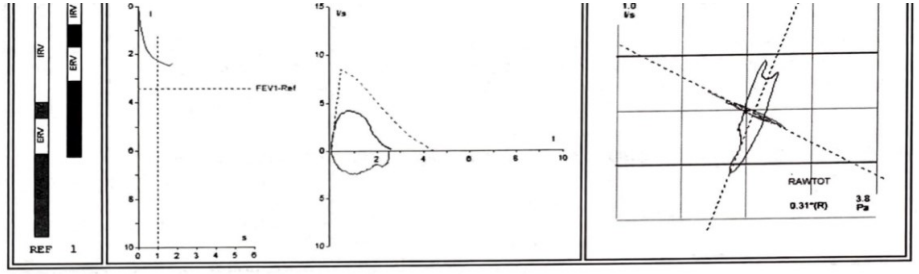
	Birim		Öngörülen	Önce	%Pred.		%Pred.		%Pred.		%Pred.
VC	l	(1)	3,43	3,23	94%	3,13	91%	3,23	94%	3,18	93%
VC	l	(1)	3,43	3,28	96%	3,28	96%	3,23	94%		
FEV1	l	(1)	2,65	1,75	66%	1,75	66%	1,63	62%		
FEV1/FVC	%	(1)	76	53	70%	53	70%	54	70%		
FEV1/VC	%	(1)	76	53	70%	53	70%	50	65%		
PEF	l/s	(1)	7,39	3,70	50%	3,70	50%	3,09	42%		
MEF75	l/s	(1)	6,53	2,11	32%	2,11	32%	1,97	30%		
MEF50	l/s	(1)	3,85	0,85	22%	0,85	22%	0,83	22%		
MEF25	l/s	(1)	1,28	0,30	24%	0,30	24%	0,22	17%		
Rawtot	kPa/(l/s)	(1)	0,30	0,67	224%	0,69	230%	0,68	226%	0,64	214%
Rawin	kPa/(l/s)			0,54		0,59		0,51		0,53	
Rawex	kPa/(l/s)			0,86		0,84		0,88		0,80	
sRawex	kPa*s			4,39		4,28		4,52		4,10	
TLC	l	(1)	5,70	6,85	120%	6,85	120%	6,81	119%	7,41	130%
TGV	l	(1)	3,19	4,76	149%	4,76	149%	4,44	139%	5,77	181%
RV	l	(1)	2,19	3,57	163%	3,57	163%	3,53	162%	4,14	189%
TGV/TLC	%	(1)	56	70	123%	70	123%	65	116%	78	138%
RV/TLC	%	(1)	37	52	141%	52	141%	52	140%	56	151%

	Birim		Öngörülen	Önce	%Pred.		%Pred.
TLco (Hb)	mmol/kPa/min	(1)	7,79	7,16	92%	7,16	92%
Kco (Hb)	mmol/kPa/min/l	(1)	1,37	1,24	91%	1,24	91%
Tdiff	s			10,59		10,59	
TLC	l	(1)	5,70	5,92	104%	5,92	104%
VA	l	(1)	5,57	5,79	104%	5,79	104%
FRC	l	(1)	3,19	4,20	132%	4,20	132%
RV	l	(1)	2,19	2,73	125%	2,73	125%
VI	l	(1)	3,43	3,19	93%	3,19	93%
ERV	l	(1)	1,01	1,48	147%	1,48	147%
RV/TLC	%	(1)	37	46	125%	46	125%
FRC/TLC	%	(1)	56	71	126%	71	126%

Body Pletismografi:
- FEV1/FVC: %53 (FEV1:%66 orta derece obs)
- FVC: %96
- TLC: %120, RV: %163, RV/TLC: %141

DLCO: %92 => KOAH (Kr Bronşit ağırlıklı, hava hapsi az)

SFT- Body pletis.- DLCO



irometry, Flow-Volume

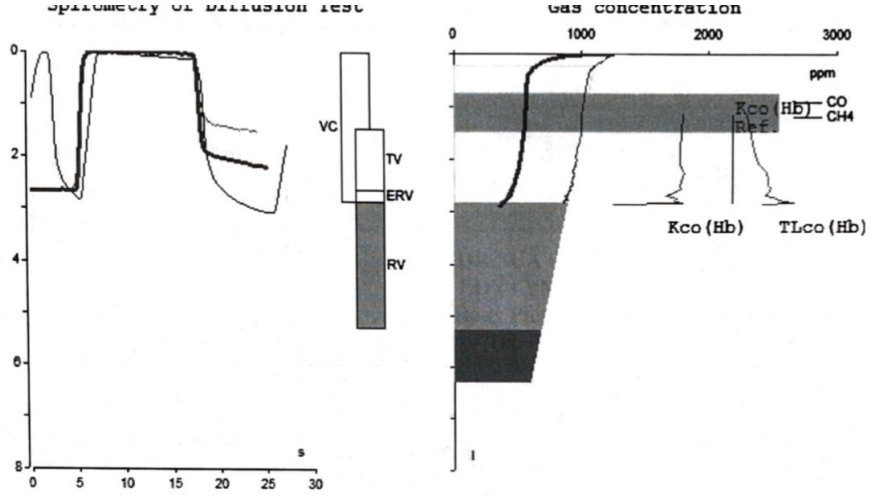
parameter	unit	pred	act.	%pred
VC	l	4.64	2.59	56
IC	l	3.74	1.49	40
FVCex	l	4.46	2.59	58
FEV1	l	3.44	2.33	68
FEV1/IVC	%	75	90	120
FEV1/FVC	%	75	90	120
PEF	l/s	8.51	4.24	50
MEF75	l/s	7.58	4.18	55
MEF50	l/s	4.51	3.84	85
MEF25	l/s	1.69	1.50	88
MEF25-75	l/s	3.37	3.19	95

sistance :

RAWtot	kPa/(l/s)	0.30	0.31	104
sRAWtot	kPa*s	1.14	1.10	96

lumes :

TGV	l	3.80	3.53	93
TLC	l	7.54	5.02	67
VC	l		2.59	
RV	l	2.64	2.42	92



sults calculated from Sample Volume (sv) :

parameter	unit	pred	act.	%pred
HB	g/dl		15.3	
TLC	l	7.54	5.25	70
TLco(Hb)	mmol/kPa/min	9.89	5.47	55
Kco	mmol/kPa/min/l	1.31	1.10	84
Kco(Hb)	mmol/kPa/min/l	1.31	1.08	83
FRC	l	3.80	2.64	70
RV	l	2.64	2.42	91

Body Pletismografi:
- FEV1/FVC: %90
- FVC: %58 (orta derece rest bzk)
- TLC: %67

DLCO: %55 (orta derece dif bzk) => İAH (Trx BT: Fib NSİP)

SFT- Body pletis.- DLCO

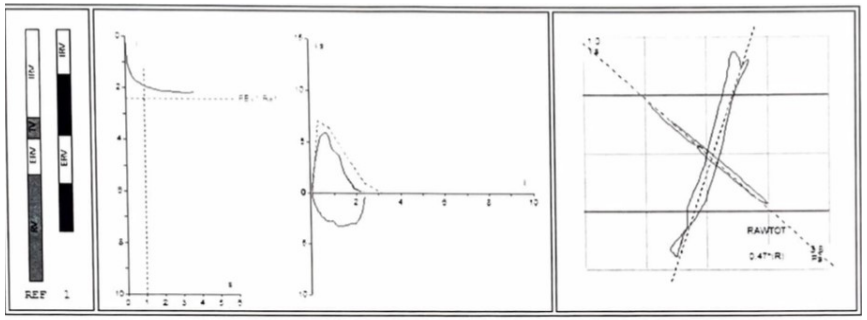
	Birim		Öngörülen	Önce	%Pred.		%Pred.		%Pred.		%Pred.
VC	l	(1)	2,58	3,29	128%	3,28	127%	3,26	126%	3,29	128%
VC	l	(1)	2,58	3,29	128%	3,29	128%	3,29	128%	3,29	128%
FEV1	l	(1)	2,23	2,67	120%	2,56	115%	2,67	120%	2,62	117%
FEV1/FVC	%	(1)	80	82	102%	78	98%	82	102%	80	100%
FEV1/VC	%	(1)	80	81	101%	78	97%	81	101%	79	99%
PEF	l/s	(1)	5,84	5,39	92%	5,48	94%	5,39	92%	5,24	90%
MEF75	l/s	(1)	5,32	4,61	87%	4,49	84%	4,61	87%	4,35	82%
MEF50	l/s	(1)	3,71	2,57	69%	2,49	67%	2,57	69%	2,53	68%
MEF25	l/s	(1)	1,53	1,39	91%	1,02	66%	1,39	91%	1,30	85%
Rawtot	kPa/(l/s)	(1)	0,30	0,42	139%	0,43	144%	0,43	144%	0,48	159%
Rawin	kPa/(l/s)			0,36		0,41		0,35		0,43	
Rawex	kPa/(l/s)			0,49		0,48		0,50		0,53	
sRawex	kPa*s			1,97		1,92		1,99		2,12	
TLC	l	(1)	4,24	5,12	121%	5,12	121%	5,04	119%	5,19	122%
TGV	l	(1)	2,45	3,33	136%	3,33	136%	3,09	126%	3,03	123%
RV	l	(1)	1,50	1,83	122%	1,83	122%	1,74	116%	1,89	126%
TGV/TLC	%	(1)	53	65	124%	65	124%	61	116%	58	111%
RV/TLC	%	(1)	35	36	103%	36	103%	35	100%	37	105%

	Birim		Öngörülen	Önce	%Pred.		%Pred.
TLco (Hb)	mmol/kPa/min	(1)	7,48	6,93	93%	6,93	93%
Kco (Hb)	mmol/kPa/min/l	(1)	1,76	1,37	78%	1,37	78%
Tdiff	s			9,19		9,19	
TLC	l	(1)	4,24	5,20	123%	5,20	123%
VA	l	(1)	4,10	5,06	123%	5,06	123%
FRC	l	(1)	2,45	3,35	137%	3,35	137%
RV	l	(1)	1,47	1,94	132%	1,94	132%
VI	l	(1)	2,63	3,26	124%	3,26	124%
ERV	l	(1)	0,98	1,41	144%	1,41	144%
RV/TLC	%	(1)	34	37	110%	37	110%
FRC/TLC	%	(1)	52	64	123%	64	123%

Body Pletismografi:
- FEV1/FVC: %82
- FVC: %128
- TLC: %121

DLCO: %93 => Normal

SFT- Body pletis.- DLCO



ıetry, Flow-Volume

parameter	unit	pred	act.	%pred
VC	l	3.28	3.68	112
IC	l	2.60	2.53	97
FVCex	l	3.18	2.35	74
FEV1	l	2.42	2.04	84
FEV1/IVC	%	74	55	75
FEV1/FVC	%	74	87	117
PEF	l/s	7.04	5.90	84
MEF75	l/s	6.34	5.85	92
MEF50	l/s	3.57	3.87	108
MEF25	l/s	1.02	1.00	99
MEF25-75	l/s	2.70	2.66	99

ance :

RAWtot	kPa/(l/s)	0.30	0.47	157
sRAWtot	kPa*s	1.02	1.09	106

es :

TGV	l	3.41	2.30	67
TLC	l	6.02	4.83	80
VC	l		2.37	
RV	l	2.55	1.15	45
TGV/TLC	%	59	48	80
RV/TLC	%	43	24	56

ınt:

Results calculated from Sample Volume (sv) :

parameter	unit	pred	act.	%pred
HB	g/dl		11.6	
TLC	l	6.02	4.58	76
TLco(Hb)	mmol/kPa/min	7.31	2.55	35
Kco	mmol/kPa/min/l	1.21	0.52	43
Kco(Hb)	mmol/kPa/min/l	1.21	0.58	47
FRC	l	3.41	2.52	74
RV	l	2.55	2.31	91
RV/TLC	%	42	50	119
IVC CH4	l	3.28	2.27	69

Results calculated with

Body Pletismografi:
- FEV1/FVC: %87
- FVC: %74 (hafif derece rest bzk)
- TLC: %80

DLCO: %35 (Ağır derece dif. bzk) => İAH

(Trx BT: üst loblarda amfizem, alt loblarda fibrozis: CPFE)

,,Dikkatiniz için teşekkürler…!”

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