

# Examination about the usefulness of Hi-checker in smoking outpatients

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# Background

Hi-checker that can measure FEV1, FEV6, FEV1/FEV6% and lung ages is a simple Spirometer.

It may be ideal for screening of early detection of COPD.



Hi-checker



Spirometer

# Aim

In the present study, we investigated the detection ratio of COPD by Hi-checker in the smoking patients, and examined usefulness of Hi-checker compared with Spirometer.

# Subjects

Eighty-four outpatients of smoking cessation clinic

Age : 22~75 years old (Mean 48 y)

Sex : Male 59 patients, Female 25 patients

Brinkman smoking Index (B.I) : 105~2000 (Mean 519)

Smoking beginning age : 14~63 years old (Mean 21 y)

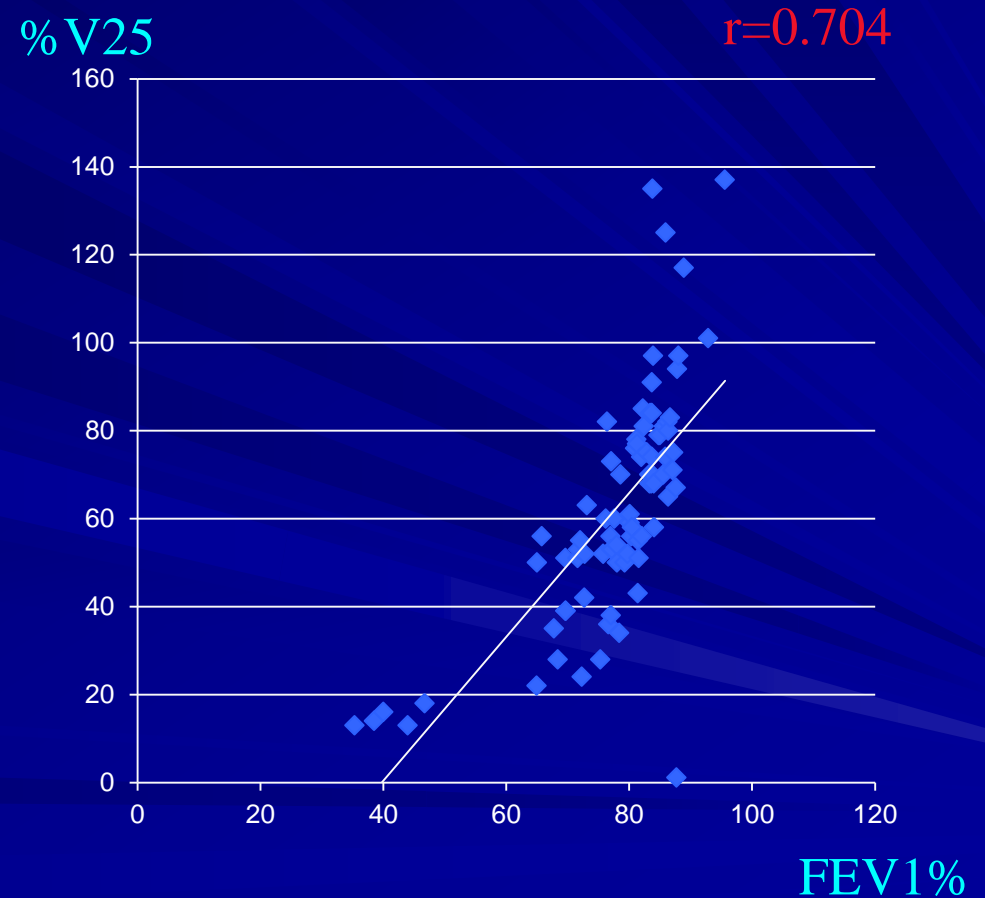
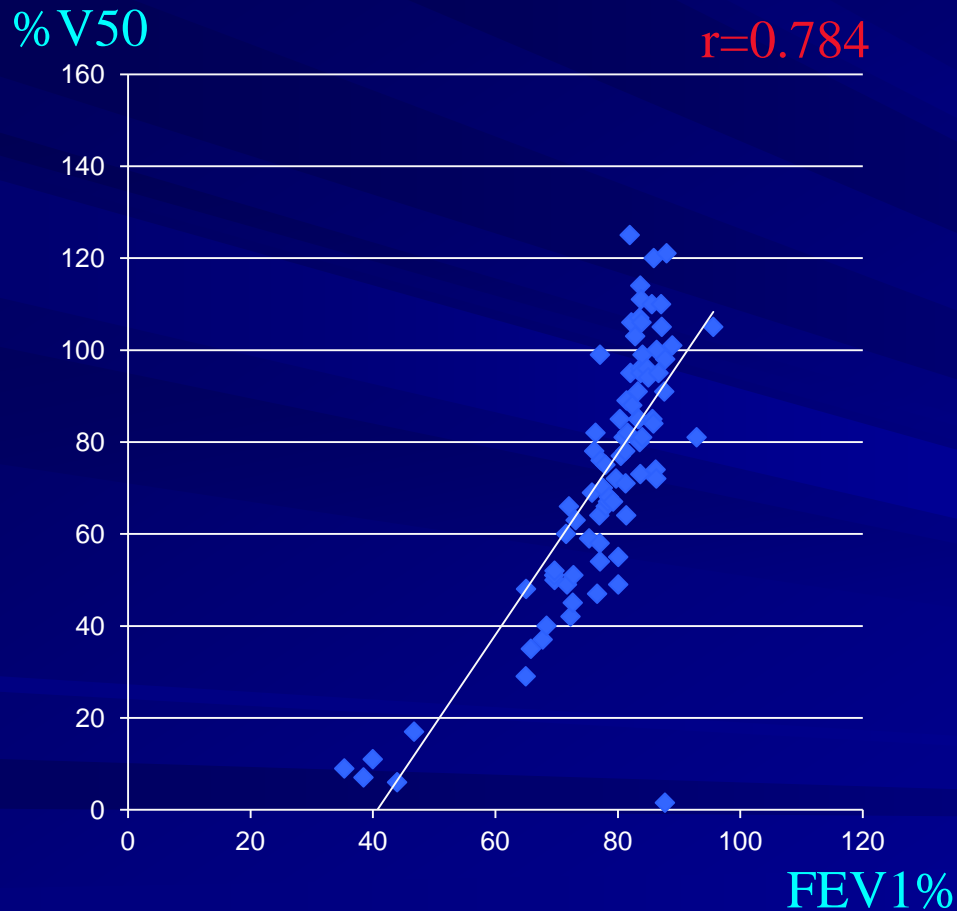
Smoking period : 6~60 years (Mean 22 y)

# Methods

The obstructive pulmonary impairment was detected by the pulmonary function test using both Hi-checker and Spirometer.

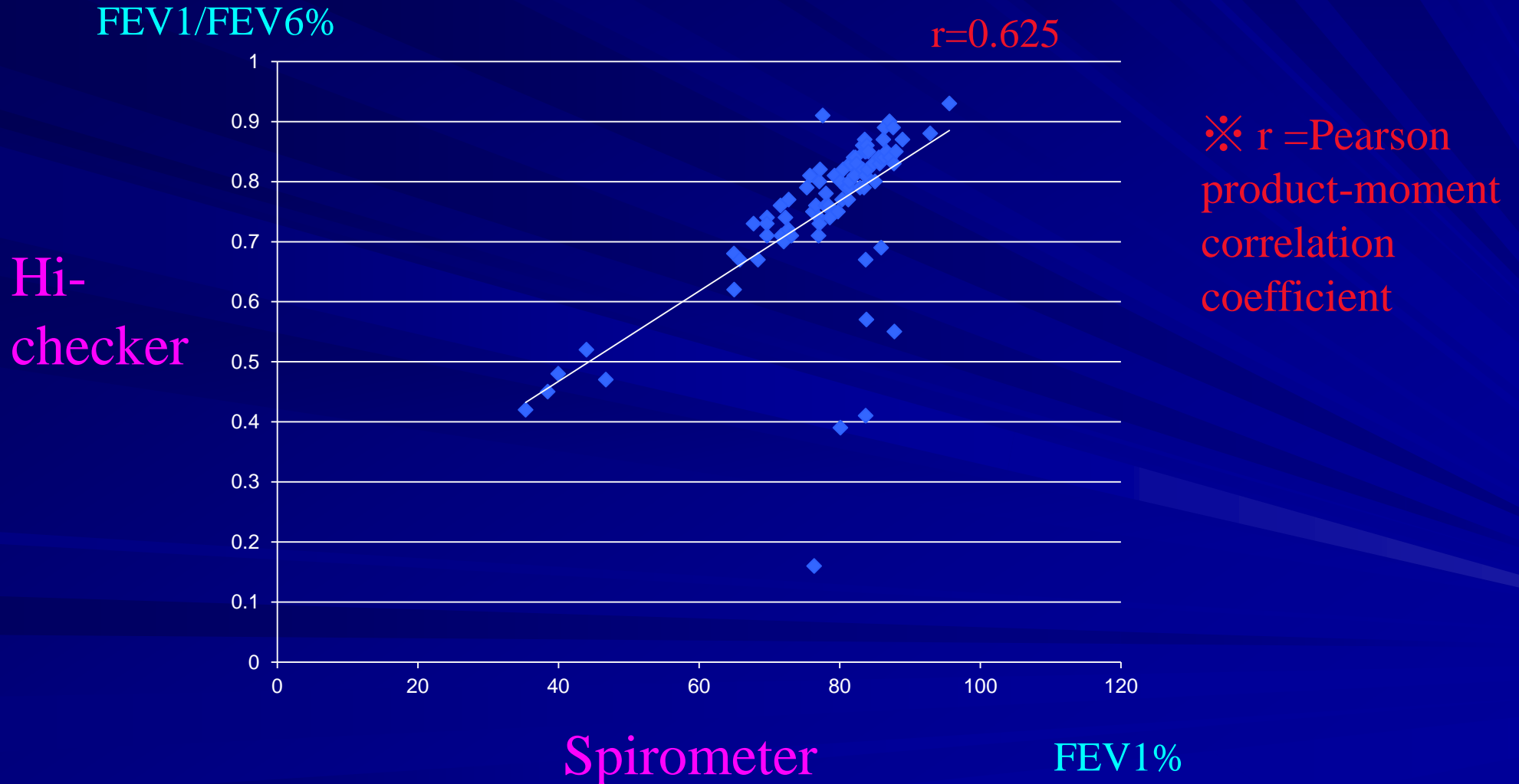
And we compared the detection ratio of COPD by Hi-checker and the one by Spirometer.

# Correlation between FEV1% and %V50, %V25 in Spirometer

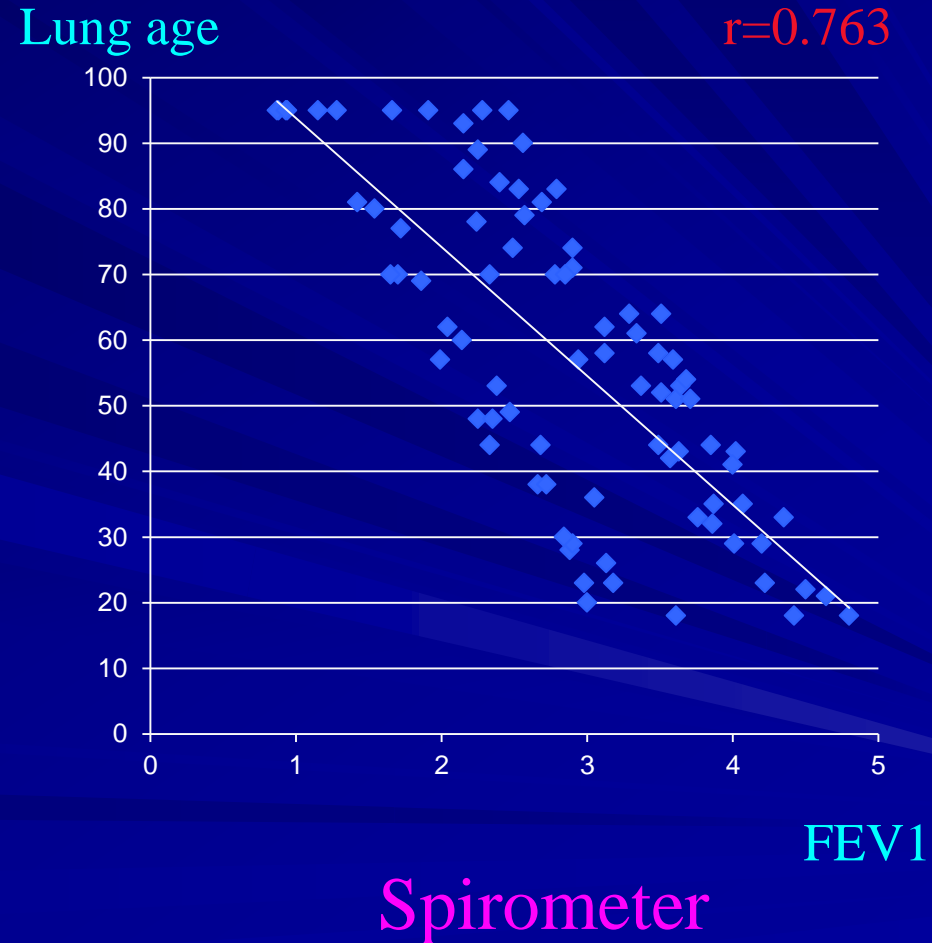
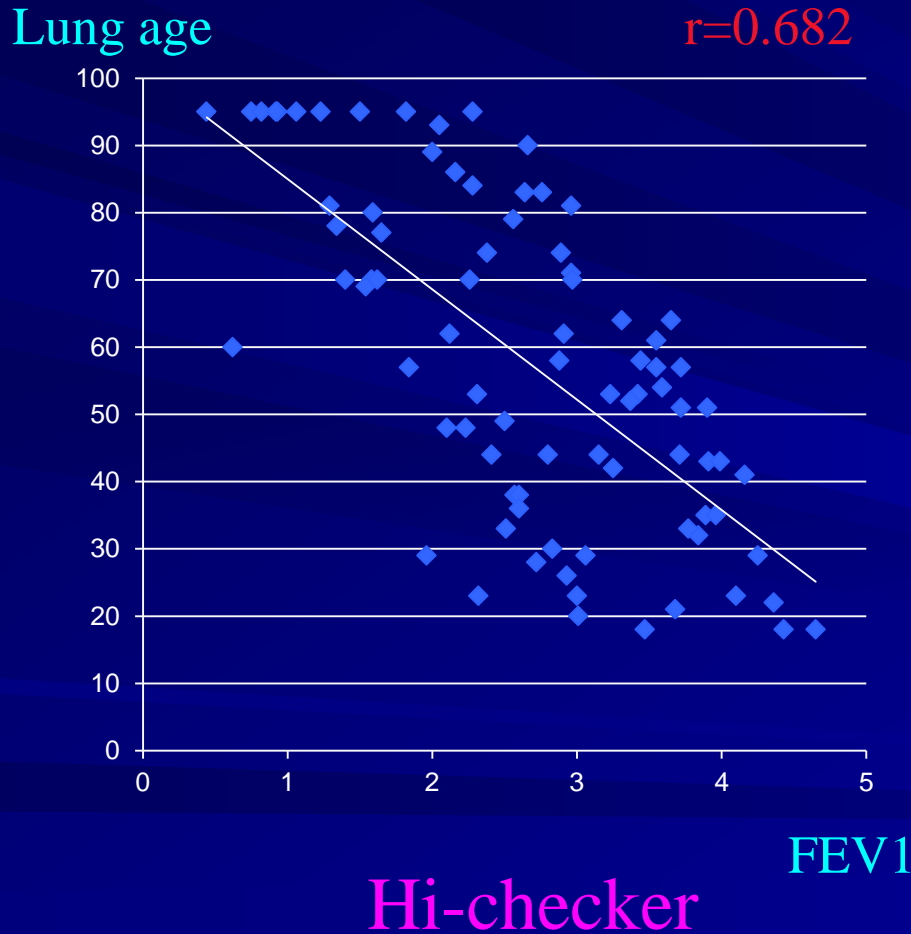


✂  $r$  = Pearson product-moment correlation coefficient

# Correlation between FEV1/FEV6% by Hi-checker and FEV1% by Spirometer



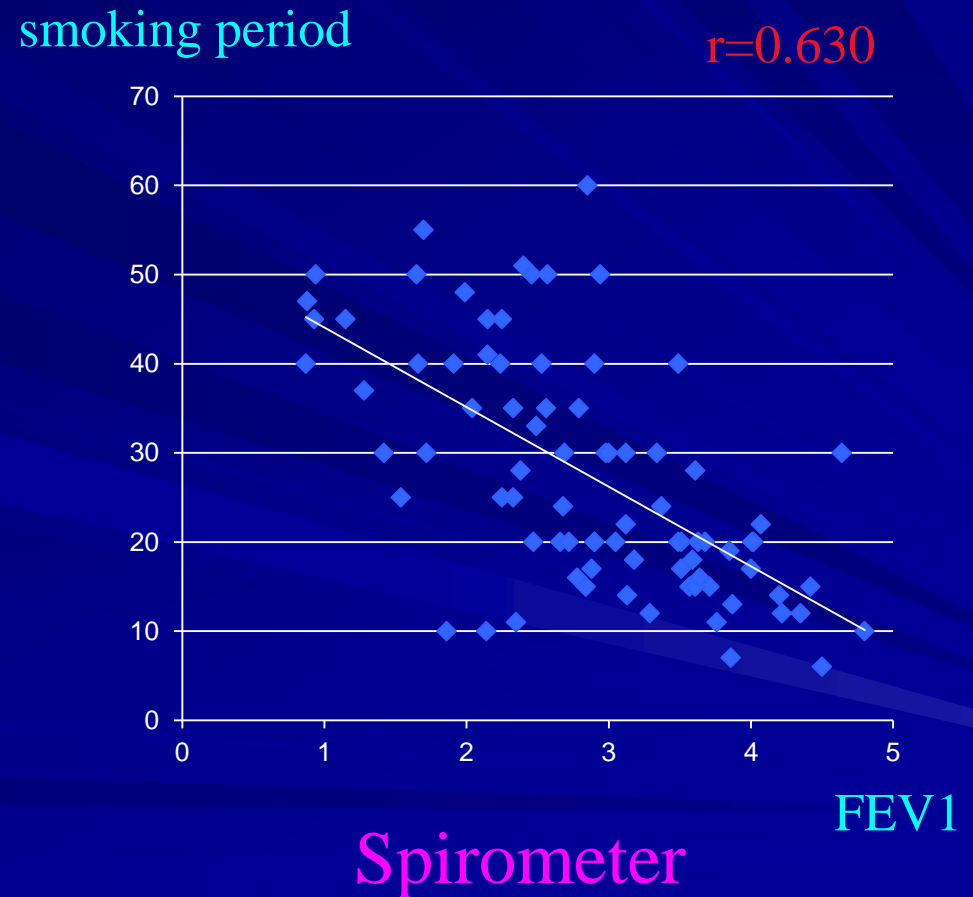
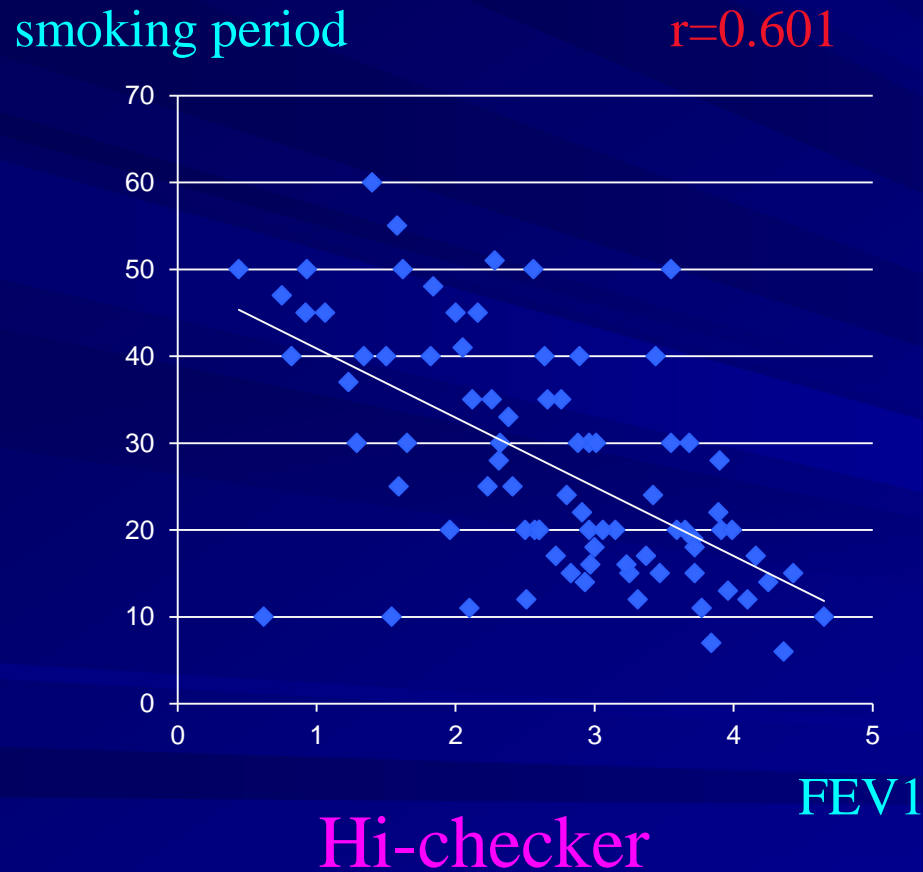
# Correlation between lung ages and FEV1 by Hi-checker and Spirometer



✧  $r$  = Pearson product-moment correlation coefficient



# Correlation between smoking period and FEV1 in both Hi-checker and Spirometer



✧  $r$  = Pearson product-moment correlation coefficient

# Profiles of 28 patients whose FEV1/FEV6% were less than 0.75 (obstructive pulmonary impairment) by Hi-checker

No	Sex	Age	Hi-checker	Spirometer	Diagnosis	Stage	B.I
			FEV1/FEV6%	FEV1%			
1	M	70	0.42	35.34	COPD (CPE)	Ⅲ期	1410
4	M	65	0.52	44	COPD (CPE)	Ⅳ期	1350
2	M	66	0.45	38.49	COPD (CPE)	Ⅳ期	800
3	M	69	0.48	40	COPD (CPE)	Ⅲ期	750
5	M	64	0.47	46.74	COPD (CPE)	Ⅲ期	675
6	F	57	0.68	64.97	COPD (CPE)	Ⅱ期	740
7	M	62	0.62	65.02	COPD(CB)	Ⅰ期	800
8	F	74	0.67	65.81	COPD (CPE)	Ⅰ期	375
9	M	65	0.73	67.75	COPD(CB)	Ⅱ期	240
10	M	63	0.67	68.38	COPD (CPE)	Ⅱ期	900
11	M	59	0.74	69.69	COPD(CB)	Ⅰ期	1200
12	M	36	0.73	69.64	BA	Step I	600
13	F	70	0.71	69.67	BA	Step I	330
14	M	59	0.71	71.72	CG		1575
15	M	33	0.7	72.06	BA	Step I	240
16	M	60	0.74	72.3			1600
17	M	28	0.72	72.7			300
18	F	34	0.71	73.13	Psycosis		560
19	M	75	0.16	76.39	HCC	Ⅰ期	1250
20	M	34	0.71	77			300
21	M	58	0.74	77.06	CT-COPD		1640
22	F	63	0.74	78.6			1440
23	F	32	0.39	80.1			200
24	M	37	0.41	83.7			800
25	F	48	0.67	83.7			600
26	M	74	0.57	83.82	BPH		1200
27	M	47	0.69	85.92	HT		750
28	M	60	0.55	87.8			1200

# Results

There was an interrelation between FEV1% and %V50, %V25 by Spirometer.

FEV1/FEV6% by Hi-checker was correlated with FEV1% by Spirometer.

Moreover, lung ages and smoking period was correlated with FEV1 in both Hi-checker and Spirometer.

Twenty-eight patients were FEV1/FEV6<0.75 by Hi-checker and 13 patients of them were FEV1%<70% by Spirometer.

There were 11 patients with COPD and 2 patients with bronchial asthma in 13 patients with obstructive pulmonary impairment by using  $\beta$ -stimulant inhalation (bronchodilator).

B.I was higher than 400 in 9 of 11 patients with COPD.

# Consideration

Hi-checker was useful as screening of early detection of COPD, however it was necessary for diagnosis of COPD to check the obstructive pulmonary impairment by Spirometer and the bronchial reversibility.

Moreover, it is suggested that airway obstruction advanced according to the long smoking period.