STRUMENTI PROGNOSTICI PER LA MORTALITÀ A MEDIO E LUNGO TERMINE NEL PAZIENTE ANZIANO CON BPCO: CONFRONTO TRA VALUTAZIONE MULTIDIMENSIONALE E BODE INDEX

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La classica valutazione del paziente con BPCO si basa sulla misurazione del FEV1.

- Scarsamente correlato con la performance al 6' WT.[1]

- Non riflette lo stato di salute valutato dal paziente.[2]

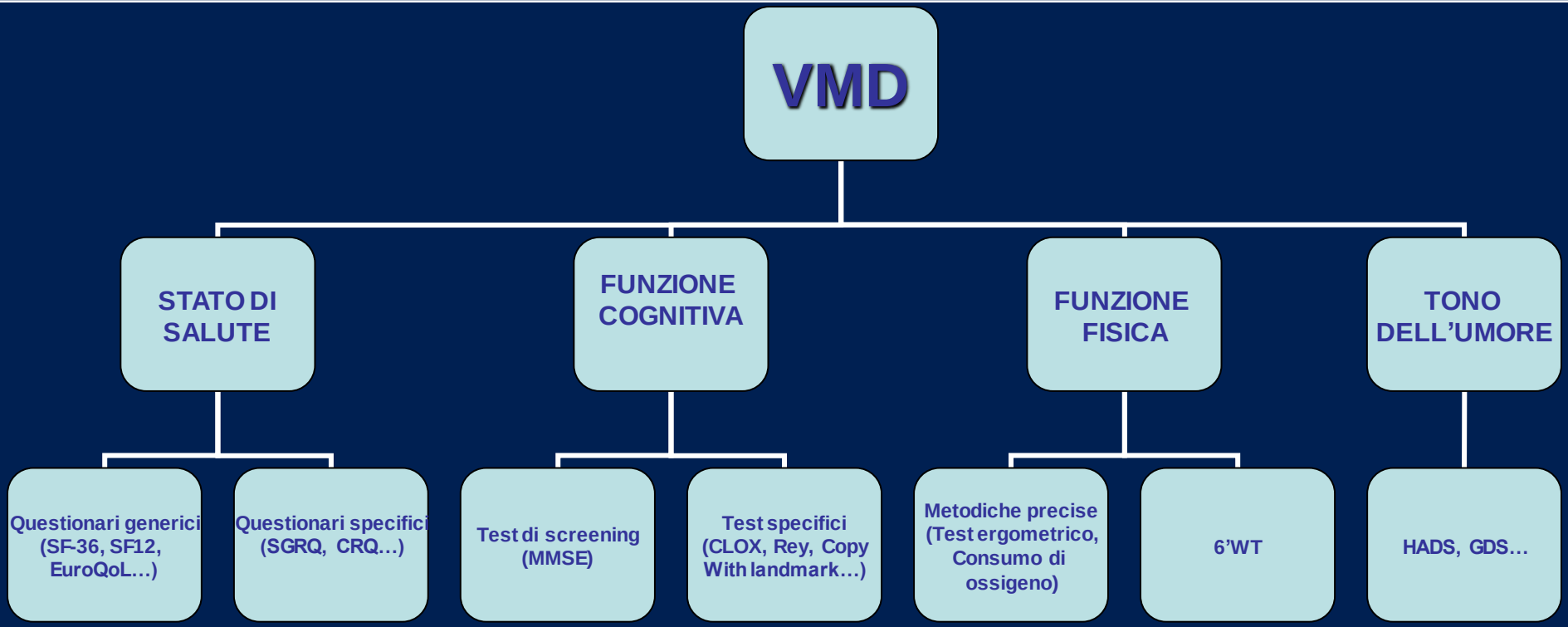
Una valutazione basata sulla sola funzione respiratoria (monodimensionale) non è in grado di catturare il reale stato di salute del paziente.

[1]Brown CD et al., J Chron Obstruct Pulm Dis 2008.

[2]Jones PW et al., Thorax 2001; Antonelli Incalzi et al., Eur Respir J 2003.

Dimensioni da esplorare nella BPCO:

- Stato di salute e qualità della vita correlata allo stato di salute
- Funzione fisica
- Funzione cognitiva
- Tono dell'umore
- Qualità del sonno
- Fattori sociali
- Stato nutrizionale
- Osteoporosi e deformità vertebrali



In più:

-Età, - Sesso, - Fattori sociali, - Stato nutrizionale, - Comorbidità, - Qualità del sonno, - Stato nutrizionale, - …

- Test funzionali (FEV1) - Sintomatologia (mMRC)

Il BODE index

È uno strumento di Valutazione MultiDimensionale (VMD) sviluppato ed applicato per la BPCO, in grado di predire la sopravvivenza.

Il BODE index: cosa è?

Vengono presi in considerazione 4 fattori:

-BMI (B)

-Grado di ostruzione del flusso aereo (O)

-La dispnea (D)

-La capacità all'esercizio (E).

Il BODE index: come si calcola?

	0	1	2	3
BMI	>21	≤21		
FEV1 (% del teorico)	≥65	50-64	36-49	≤35
Distanza percorsa al 6'WT (mt)	≥350	250-349	150-249	≤149
Dispnea (MMRC)	0-1	2	3	4

Ne deriva quindi un punteggio da 0 a 10, dove i valori più elevati correlano con un maggior rischio di morte.

Obiettivo

Confrontare il valore prognostico del BODE index e di una VMD con strumenti geriatrici standard.

Metodi

Abbiamo preso in considerazione la popolazione dello studio SaRA (Salute Respiratoria nell'Anziano).

- FEV1/FVC < 0,7
- No Asma.

Quality Control of Spirometry in the Elderly
The SA.R.A. Study

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We evaluated the outcome of the spirometry quality control program of the SA.R.A. multicenter project, the aim of which is the multidimensional assessment of asthma and COPD in the elderly (≥ 65 yr). The factors determining this quality were also evaluated. The program was based on standardized procedures (ATS recommendations), performed by specifically trained and certified personnel; a fully-computerized spirometer with customized software was used for spirometry. A reference center made monthly controls. Overall, 638 cases and 984 controls were examined. Spirometric measurements were obtained in 607 cases and 912 controls; 508 and 747 tests with at least three acceptable curves were obtained in cases and in controls, respectively (NS). The percentage of reproducible tests ranged between 95.8% for FEV_1 in controls and 87.6% for FVC in cases. The average reproducibility for FEV_1 was 61.6 ml in cases and 58.3 ml in controls (NS). Cognitive impairment, shorter 6-min walk distance, and lower educational level were found to be independent risk factors for a poorer acceptability rate (logistic regression analysis). Male sex and age were risk factors for a poorer reproducibility of FEV_1. Reproducibility tended to improve with time ($p < 0.001$). Although spirometry becomes increasingly difficult in aging patients, a rigorous quality control program can ensure that reliable data are obtained in the majority of patients.

Consequent to progressive population aging in affluent countries, the number of elderly patients with chronic respiratory diseases is increasing. Spirometry is the most widely used test of respiratory function, and is essential for the diagnosis and management of these diseases. Although spirometry is considered relatively simple to perform, it requires a high degree of cooperation and motivation from the patient, and a high level of technical skill and experience from the operator (1–3). Spirometry is more difficult in the elderly because of the frequent presence of cognitive impairment, poor motivation, and physical disabilities (4–6). Therefore, the application of quality control procedures is crucial to obtain reliable spirometric data in this population.

The Italian Society of Gerontology and Geriatrics (SIGG) has promoted the SA.R.A. (Salute Respiratoria nell'Anziano) multicenter project, the aim of which is the multidimensional assessment of asthma and COPD in the elderly. The project was developed through a network of Italian geriatric and pulmonary institutions and the application of standardized and validated methodology. Spirometry was included in the multidimensional assessment.

In organizing a multicenter study involving pulmonary and geriatric teams, based in academic and district hospitals, it is crucial to try to reduce any diversity of competence and experience of investigators. Therefore, measures were taken to ensure spirometry was conducted correctly over time and across centers.

The aims of the present study were to evaluate the outcome of the spirometry quality control program, and to establish the factors determining the quality of spirometric performance in the elderly.

METHODS

Subjects

Twenty-four pulmonary or geriatric institutions, distributed throughout Italy (*see* APPENDIX) took part in the investigation. The group was coordinated by a scientific committee. Data from individual centers were collected by a coordinating center at the Clinica Pneumologica of the University of Palermo. The coordinating center was also responsible for the quality control, the retrieval, and the final processing of data. The study protocol conformed to guidelines issued by the relevant ethical committee.

Metodi

I pazienti arruolati sono stati seguiti per 15 anni, fissando end-points a 5, 10 e 15 anni dall'arruolamento.

DATI AMMINISTRATIVI

Metodi:

Capacità predittiva:

- statistica-c derivata da modelli di Cox che includevano le componenti del BODE e della VMD rispettivamente;

Capacità discriminativa:

- rischio relativo di mortalità per quartili di BODE e di VMD.

Popolazione: 563 pazienti

Età media	73.3 (5.51)
Genere (% uomini)	76.7 %
FEV 1 medio % (media e DS)	69 (24.7)
Distanza percorsa al 6'WT (media e DS)	67.5 % del teorico (24.8)
BMI (media e DS)	25.8 (3.95)
BODE index (media e DS)	2.5 (2.3)
Barthel index (media e DS)	94 (6.9)
MMSE (media e DS)	27 (3.6)
MMSE < 24 (%)	11.8 %
GDS (media e DS)	3 (3.2)
GDS ≥ 5 (%)	31.3 %
Prevalenza di cardiopatia ischemica	12.7 %
Prevalenza di scompenso cardiaco	6.9 %
Prevalenza di stroke	3.7 %

563 pazienti arruolati
FEV1 < 80%
FEV1 < 80%
FEV1 < 80%
FEV1 < 80%
279 pazienti (FEV1medio: 54%)

Mortalità:

5 anni → 30.2 %

10 anni → 52.1 %

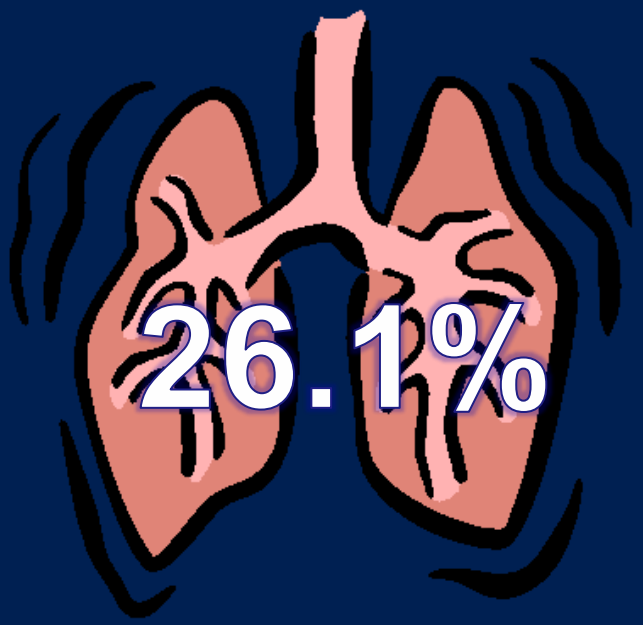
15 anni → 65.7 %

Cause:

Mal. Cardiovasc. → 19.9 %

BPCO → 13.3 %

Tumore Polmone → 8.8 %



Mortalità:

	5 – years mortality HR (95% CI)	10 – years mortality HR (95% CI)	15 – years mortality HR (95% CI)
ALL PATIENTS			
FEV1 %*	1.05 (1.00 – 1.10)	1.04 (1.01 – 1.08)	1.03 (1.00 – 1.06)
WT %*	1.07 (1.03 – 1.11)	1.05 (1.02 – 1.08)	1.05 (1.03 – 1.08)
MMRC score	1.08 (0.94 – 1.25)	1.14 (1.02 – 1.27)	1.13 (1.02 – 1.25)
BMI**	1.00 (0.94 – 1.07)	1.05 (1.00 – 1.10)	1.03 (0.98 – 1.08)
c statistic	0.644	0.640	0.630
FEV1 < 80%			
FEV1 %*	1.05 (0.98 – 1.12)	1.04 (0.99 – 1.10)	1.04 (0.99 – 1.09)
WT %*	1.07 (1.03 – 1.12)	1.05 (1.01 – 1.08)	1.05 (1.02 – 1.08)
MMRC score	1.04 (0.89 – 1.22)	1.12 (0.99 – 1.26)	1.08 (0.96 – 1.21)
BMI**	100 (0.93 – 1.07)	1.03 (0.97 – 1.09)	1.02 (0.97 – 1.07)
c statistic	0.64	0.62	0.62

A 5 anni:

	5 – years mortality HR (95% CI)
ALL PATIENTS	
FEV1 %*	1.05 (1.00 – 1.10)
WT %*	1.07 (1.03 – 1.11)
MMRC score	1.08 (0.94 – 1.25)
BMI**	1.00 (0.94 – 1.07)
c statistic	0.644
FEV1 < 80%	
FEV1 %*	1.05 (0.98 – 1.12)
WT %*	1.07 (1.03 – 1.12)
MMRC score	1.04 (0.89 – 1.22)
BMI**	100 (0.93 – 1.07)
c statistic	0.64

	5 – years mortality HR (95% CI)
ALL PATIENTS	
BODE score = 0	Reference
BODE score 1- 2	1.041 (0.605 - 1.792)
BODE score 3 - 4	1.885 (1.103 – 3.221)
BODE score > 4	3.547 (2.148 - 5.858)
FEV1 < 80%	
BODE score = < 2	Reference
BODE score 2 – 3	1.487 (0.799 – 2.768)
BODE score 4 – 5	2.599 (1.438 - 4.699)
BODE score > 5	2.984 (1.632 – 5.456)

A 10 anni:

	10 – years mortality HR (95% CI)
ALL PATIENTS	
FEV1 %*	1.04 (1.01 – 1.08)
WT %*	1.05 (1.02 – 1.08)
MMRC score	1.14 (1.02 – 1.27)
BMI**	1.05 (1.00 – 1.10)
c statistic	0.640
FEV1 < 80%	
FEV1 %*	1.04 (0.99 – 1.10)
WT %*	1.05 (1.01 – 1.08)
MMRC score	1.12 (0.99 – 1.26)
BMI**	1.03 (0.97 – 1.09)
c statistic	0.62

	10 – years mortality HR (95% CI)
ALL PATIENTS	
BODE score = 0	Reference
BODE score 1- 2	1.503 (1.009 – 2.238)
BODE score 3 - 4	2.113 (1.395 – 3.200)
BODE score > 4	3.903 (2.616 - 5.823)
FEV1 < 80%	
BODE score = < 2	Reference
BODE score 2 – 3	1.759 (1.119 – 2.764)
BODE score 4 – 5	2.264 (1.432 - 3.579)
BODE score > 5	3.034 (1.908 – 4.824)

A 15 anni:

	15 – years mortality HR (95% CI)
ALL PATIENTS	
FEV1 %*	1.03 (1.00 – 1.06)
WT %*	1.05 (1.03 – 1.08)
MMRC score	1.13 (1.02 – 1.25)
BMI**	1.03 (0.98 – 1.08)
c statistic	0.630
FEV1 < 80%	
FEV1 %*	1.04 (0.99 – 1.09)
WT %*	1.05 (1.02 – 1.08)
MMRC score	1.08 (0.96 – 1.21)
BMI**	1.02 (0.97 – 1.07)
c statistic	0.62

	15 – years mortality HR (95% CI)
ALL PATIENTS	
BODE score = 0	Reference
BODE score 1- 2	1.678 (1.193 – 2.360)
BODE score 3 - 4	2.082 (1.442 – 3.007)
BODE score > 4	3.777 (2.638 - 5.407)
FEV1 < 80%	
BODE score = < 2	Reference
BODE score 2 – 3	1.510 (1.017 – 2.241)
BODE score 4 – 5	1.996 (1.340 - 2.974)
BODE score > 5	2.518 (1.669 – 3.800)

Si differenzia dalla VMD?

	5 – years mortality HR (95% CI)	10 – years mortality HR (95% CI)	15 – years mortality HR (95% CI)
ALL PATIENTS			
Age	1.044 (1.012 – 1.076)	1.035 (1.010 – 1.060)	1.050 (1.027 – 1.072)
Gender (males)	1.779 (1.128 – 2.808)	1.605 (1.145 – 2.250)	1.409 (1.056 – 1.881)
MMSE*	1.057 (0.965 – 1.159)	1.101 (1.026 – 1.181)	1.091 (1.025 – 1.161)
GDS score	1.080 (1.027 – 1.136)	1.063 (1.021 – 1.107)	1.069 (1.031 – 1.108)
Barthel index	0.974 (0.955 – 0.994)	0.976 (0.961 – 0.992)	0.981 (0.967 – 0.996)
c statistic	0.63	0.632	0.632
FEV1 < 80%			
Age	1.049 (1.011 – 1.089)	1.045 (1.014 – 1.077)	1.052 (1.023 – 1.082)
Gender (males)	1.728 (1.002 – 2.981)	1.457 (0.976 – 2.177)	1.338 (0.936 – 1.911)
MMSE*	1.010 (0.906 – 1.125)	1.064 (0.978 – 1.158)	1.064 (0.986 – 1.149)
GDS score	1.079 (1.020 – 1.141)	1·056 (1.008 – 1.105)	1.055 (1.011 – 1.101)
Barthel index	0.979 (0.957 – 1.001)	0.981 (0.964 – 0.999)	0.988 (0.971 – 1.004)
c statistic	0.617	0.618	0.613

Si differenzia dalla VMD?

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ALL PATIENTS			
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GDS score	1.079 (1.020 – 1.141)	1·056 (1.008 – 1.105)	1.055 (1.011 – 1.101)
Barthel index	0.979 (0.957 – 1.001)	0.981 (0.964 – 0.999)	0.988 (0.971 – 1.004)
c statistic	0.617	0.618	0.613

Per quartili di VMD?

	5 – years mortality	10 – years mortality	15 – years mortality
	HR (95% CI)	HR (95% CI)	HR (95% CI)
ALL PATIENTS			
Quartile I	Reference	Reference	Reference
Quartile II	0.826 (0.459 – 1.487)	1.249 (0.811 – 1.923)	1.176 (0.806 – 1.716)
Quartile III	1.483 (0.885 – 2.485)	2.095 (1.405 – 3.125)	2.192 (1.546 – 3.108)
Quartile IV	2.570 (1.594 – 4.143)	3.004 (2.035 – 4.436)	3.136 (2.223 – 4.426)
FEV1 < 80%			
Quartile I	Reference	Reference	Reference
Quartile II	0.746 (0.382 – 1.457)	1.032 (0.639 – 1.666)	1.188 (0.774 – 1.825)
Quartile III	1.516 (0.850 – 2.703)	1.609 (1.028 – 2.517)	1.859 (1.232 – 2.805)
Quartile IV	2.351 (1.367 – 4.043)	2.504 (1.620 – 3.871)	2.595 (1.730 – 3.891)

BODE	VMD
BPCO	Per patologie diverse
Nato per popolazione <65 aa	Tipico dell'età geriatrica
In grado di eseguire una spirometria e di deambulare	Non richiede "peculiarità" fisiche
Non tiene in considerazione età e sesso se non per il calcolo del FEV1	Tiene in considerazione età e sesso

Limiti:

1. Sottorappresentazione di pazienti con FEV1 < 30%
2. Sottorapressentazione di donne (1/3)

Conclusione:

Sia il BODE che la classica VMD sono associabili in maniera comparabile con la mortalità, anche a lungo termine, in pazienti affetti da BPCO.

Ciò conferma l'importanza di un approccio multidimensionale anche in presenza di un'unica patologia.

Il nostro studio riafferma l'importanza del FEV1 all'interno dello score BODE, tuttavia, in chi non è in grado di eseguire una manovra espiratoria forzata, questo potrebbe essere sostituito dalla VMD classica.

Grazie per l'attenzione