MUSC Health
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PHARMACY

Retrospective Analysis of Prednisone Tapering in Sarcoidosis Exacerbations

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Background

- Sarcoidosis is a multisystem disorder of unknown cause
  - Immunologic vs. genetic vs. environmental
- Frequently presents with bilateral hilar lymphadenopathy, pulmonary infiltration, as well as ocular and skin lesions
  - 90% of all cases have one or more of these features
  - Other organ systems: Liver, spleen, salivary glands, heart, nervous system, bones, muscle

Epidemiology

- Worldwide occurrence
  - All races, sexes, and ages
  - Usually develops before age 50
    - Peaks at 20-39 years old
- In the United States
  - African Americans > Caucasian
  - Women > men
  - More likely chronic and fatal in African Americans

Iannuzi et al. NEJM 2007; 357 (21): 2153-2165

Diagnosis

- Chest radiographic evidence

  PLUS

- Noncaseating granulomas on biopsy and compatible clinical features
  - Dyspnea
  - Cough
  - Vague chest discomfort
  - Wheezing

Treatment

- Corticosteroids are most commonly used
  - Therapy is not standardized
  - Previous suggestions:
    - 20-40 mg daily
    - As high as 1 mg/kg daily
- Cytotoxics
  - Azathioprine
  - Methotrexate
  - Hydroxychloroquine

Judson MA. CHEST 1999; 115: 1158-1165

Statement on sarcoidosis. Am J Respir Crit Care Med 1999; 160: 736-755

Iannuzzi MC et al. NEJM 2007; 357(21): 2153-2165

Purpose

- Primary objective
  - Evaluate changes in spirometry when 20 mg of prednisone is used for the treatment of acute pulmonary sarcoid exacerbations
- Secondary objective
  - Evaluate improvement in clinical symptoms

Methods

- Retrospective chart review from April 1999 to December 2007
- Approval through MUSC Institutional Review Board
- Inclusion
  - Patients identified as having a true sarcoid exacerbation determined by symptomatology, decline in pulmonary function tests ± radiographic changes

Methods

- Exclusion
  - Patients receiving > 5 mg prednisone for extrapulmonary disease
  - Patients with concomitant pulmonary disease
- Statistics
  - Paired t-test to compare differences in continuous variables

Results

Baseline Characteristics	
Number of patients	35
Number of sarcoid flares	40
Age in years (mean ± SD)	51 ± 12
Race (%) African-American Caucasian	 87.5 % 12.5 %
Sex (% female)	70 %
Weight in kilograms (mean ± SD)	90.8 ± 23.1
FEV1 % predicted pre-flare (mean ± SD)	75.1 ± 17.4
FVC % predicted pre-flare (mean ± SD)	83.4 ± 19.9
FEV1/FVC in % (mean ± SD)	69.0 ± 10.9

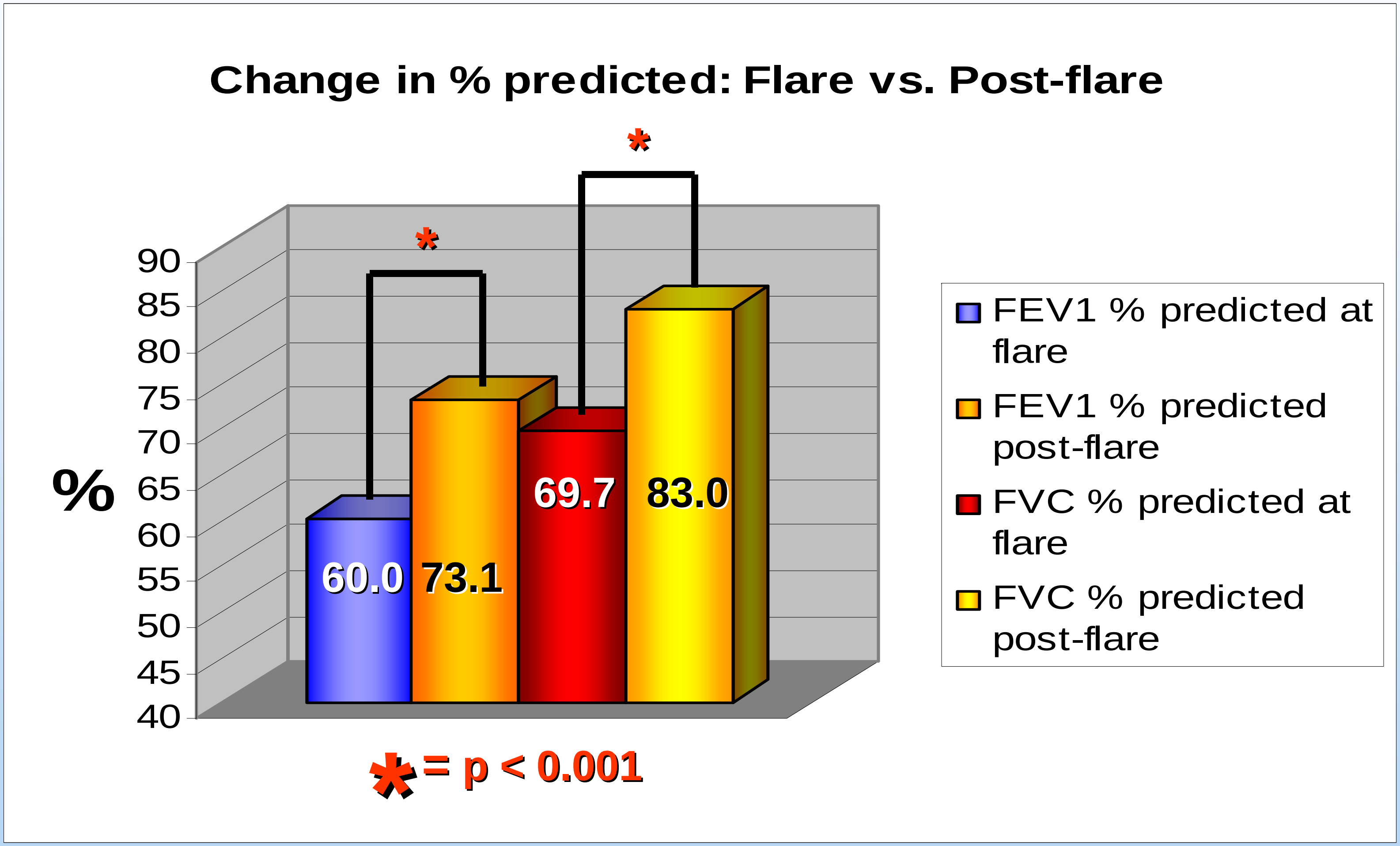
Results

Characteristics at sarcoid flare	
Dose of prednisone prior to flare in mg (median; range)	5 (0-20)
Dose of prednisone for flare in mg (median; range)	20 (0-20)
Prednisone increase in mg (mean ± SD)	14.5 ± 5.6
Symptoms (%)	
Cough	85 %
Wheeze	55%
Dyspnea	37.5%
Chest pain	10%
Fevers	5%
Night sweats	10%
FEV1 % predicted (mean ± SD)	60.0 ± 16.6
FVC % predicted (mean ± SD)	69.7 ± 15.2
FEV1/FVC in % (mean ± SD)	68.15 ± 11.98

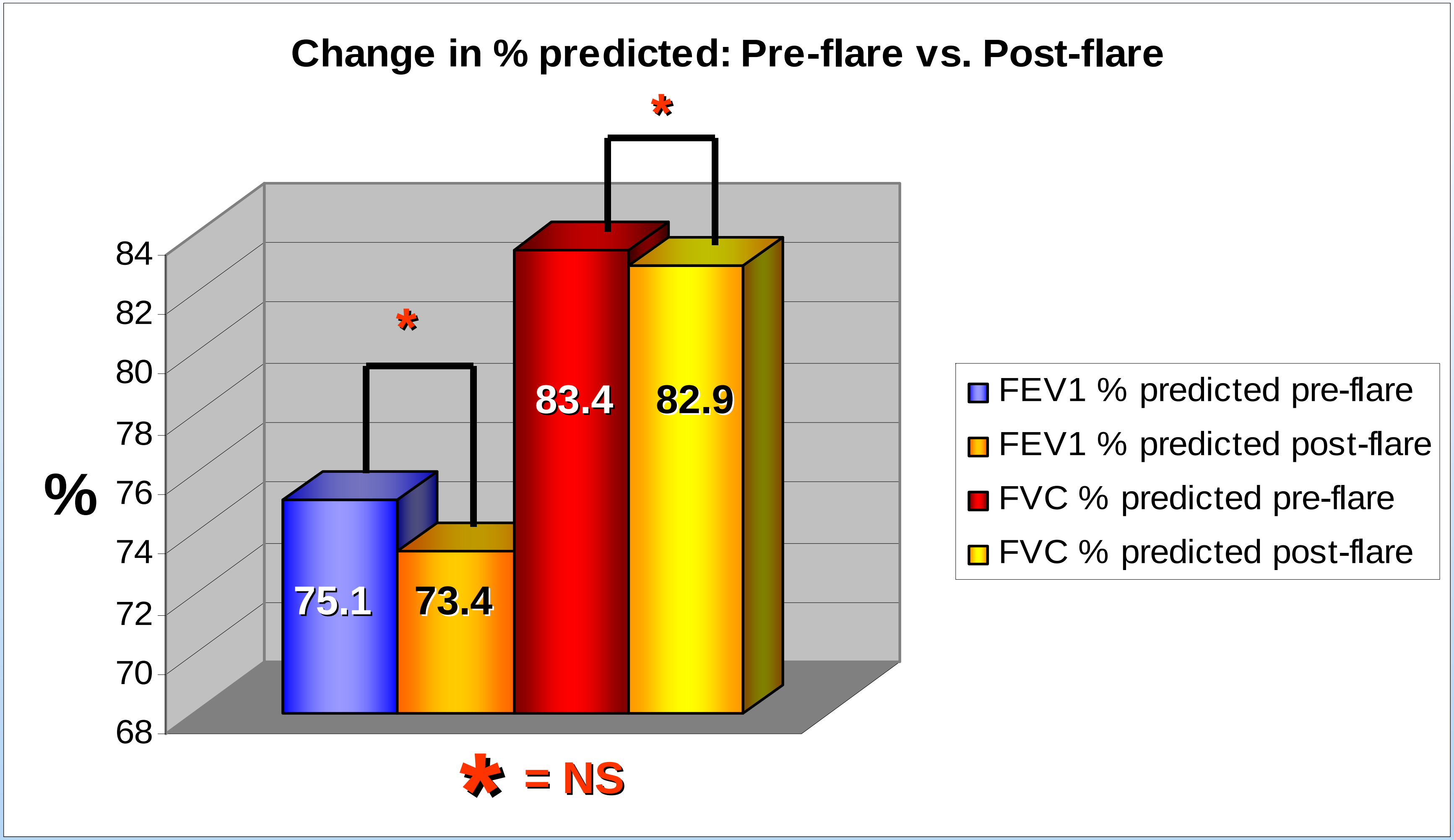
Results

Characteristics post-sarcoid flare	
Time from flare to follow-up in days (mean ± SD)	24.6 ± 17.8
Weight in kilograms (mean ± SD)	89.1 ± 23.1
Symptoms (%)	
Cough	55%
Wheeze	25%
Dyspnea	10%
Chest pain	5%
Fevers	2.5%
Night sweats	15%
FEV1 % predicted (mean ± SD)	73.1 ± 17.7
FVC % predicted (mean ± SD)	83.0 ± 19.1
FEV1/FVC in % (mean ± SD)	70.75 ± 11.20

Results

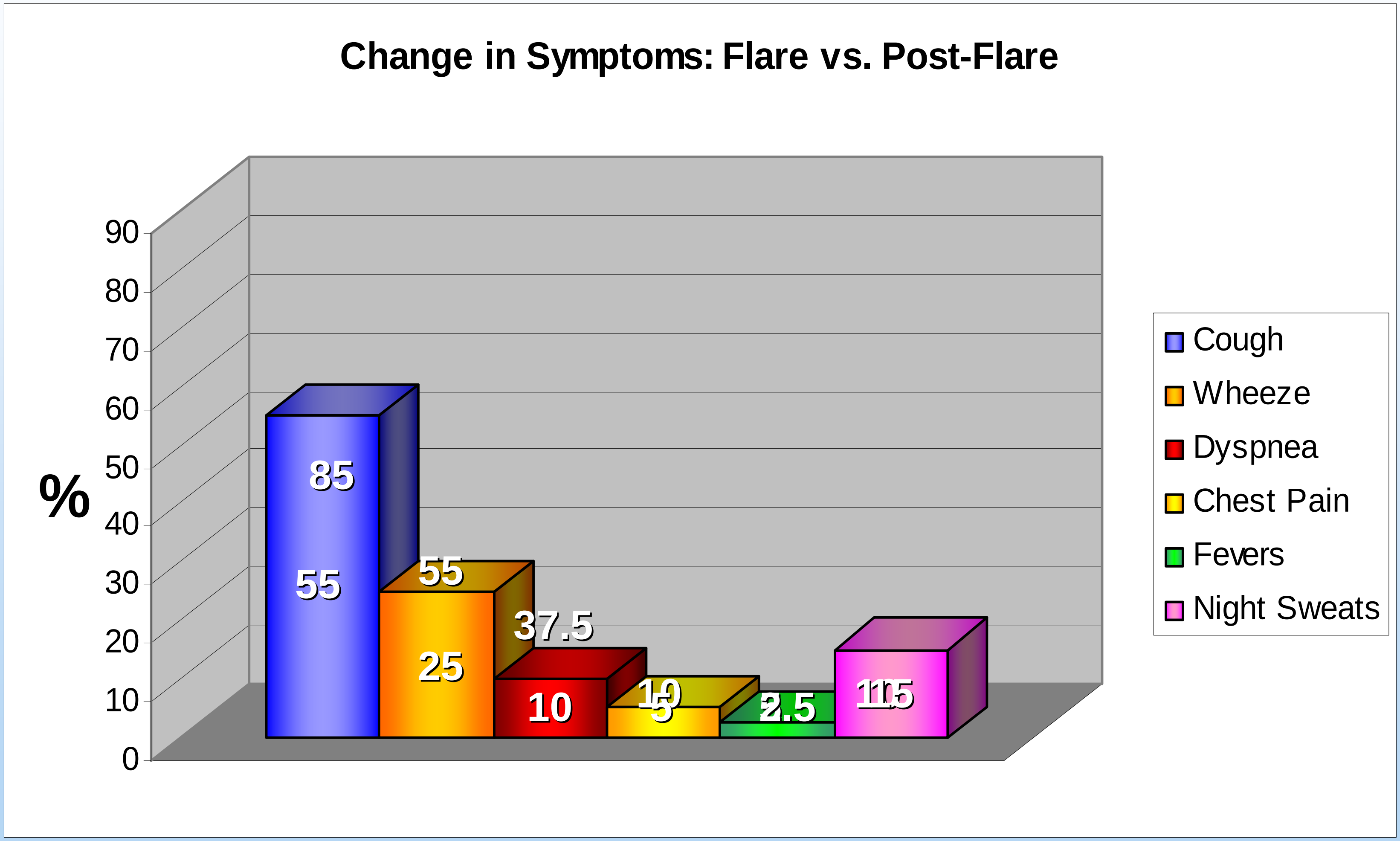

Change in % predicted: Flare vs. Post-flare
*
*
90
85
80
75
70
65
60
55
50
45
40
%
60.0
73.1
69.7
83.0
FEV1 % predicted at flare
FEV1 % predicted post-flare
FVC % predicted at flare
FVC % predicted post-flare
* = p < 0.001

Results



Change in % predicted: Pre-flare vs. Post-flare
%
84
82
80
78
76
74
72
70
68
*
*
75.1
73.4
83.4
82.9
FEV1 % predicted pre-flare
FEV1 % predicted post-flare
FVC % predicted pre-flare
FVC % predicted post-flare
* = NS

Results



Change in Symptoms: Flare vs. Post-Flare
%
90
80
70
60
50
40
30
20
10
0
85
55
55
25
37.5
10
10
5
2.5
11.5
Cough
Wheeze
Dyspnea
Chest Pain
Fevers
Night Sweats

Limitations

- Retrospective design
- No comparator groups
  - Would starting at initial higher doses be more beneficial compared to 20 mg of prednisone?
- Lack of long-term data
  - Will time between exacerbations be shorter in those patients taking 20 mg vs. 40 mg?

Conclusions

- 20 mg of prednisone will significantly improve pulmonary function tests during an acute sarcoidosis flare
- Lower dose prednisone will return patients to their baseline lung function as well as improve clinical symptoms
  - On average of 25 days

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Retrospective Analysis of Low-Dose Prednisone in Sarcoidosis Exacerbations

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