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Original article

An Italian survey on the use of hypertonic solution in aerosol

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Abstract. Hypertonic saline (HS) preceded by a bronchodilator is an inexpensive, safe, and effective additional therapy for patients with cystic fibrosis. A questionnaire composed of 14 closed-ended questions was prepared and sent by email to the Directors of 30 Italian CF Centers for verifying which the indications in CF patients of inhaled HS and HS with hyaluronan (HSHA) are, how tolerability to HSHA is assessed and how compliance and tolerability to HSHA is evaluated. (www.actabiomedica.it)

Key words: hypertonic saline, cystic fibrosis, hyaluronan, inhaled therapy

Introduction

Hypertonic saline (HS) preceded by a bronchodilator is an inexpensive, safe, and effective additional therapy for patients with cystic fibrosis (CF). Inhaled HS improves lung function and decreases pulmonary exacerbations in people with CF (1) and is recommended for individuals older than 6 years of age with moderate benefit, grade of recommendation B (2). However, side effects such as cough, narrowing of airways and saltiness cause intolerance of the therapy in 8% of patients, undermining treatment adherence (1). The combination of HS solution (7%) with hyaluronan (0,1%) (HSHA) was shown to be better tolerated both in the short (3) and in the long-term (4-5).

Materials and Methods

A questionnaire composed of 14 closed-ended questions (9 multiple choice and 5 dichotomous) was prepared and sent by email to the Directors of 30 Italian CF Centers (C).

Questions aimed at verifying what the indications in CF patients of inhaled HS and HSHA were, how tolerability to HSHA is assessed and how compliance and tolerability to HSHA are evaluated.

Outcomes

The questionnaire was completed and sent back by 23 C, representing about 3000 Italian CF patients. Most C prescribe HS in symptomatic patients with cough and bronchorrea (21 C, 91,3%), asymptomatic patients with initial radiologic alterations (17 C, 73,9%), or in patients with frequent exacerbations (16 C, 69,6%), see Fig. 1. HSHA is prescribed in all C, while only 52,3% of C indicates it in children < 6 years old. The most represented criteria in prescribing HSHA are poor tolerance to HS (21, 91,3%), and broncho-obstruction (6 C, 26,9%), followed by limited

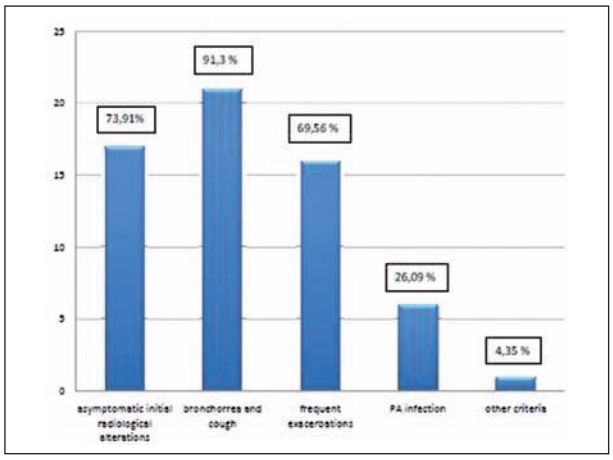

Figure 1. Criteria considered in HS prescription

commercialization (5 C, 21,7%) and poor compliance (4 C, 17,4%), see Fig. 2. Respondents identified reasons for not prescribing HSHA in reduced tolerability (17 C, 73,9%), ongoing treatment with HS (11 C, 47,8%) or DNase (7 C, 30,4%). Twice daily administrations are recommended by the majority of respondents (18 C, 78%). Treatment with HSHA is prescribed by 11 C (47,8%) to 30-50% of their patients, and up to 80% in 4 C (17,39%), more than 50% of C answered that in at least 50% of patients HSHA inhalation is performed regularly, see Fig. 3.

Tolerability is almost always assessed (20 C, 87%), most frequently by evaluation of symptoms combined with spirometry with or without bronchodilator test; 3 C (15%) evaluated only symptoms. 16 of the respondents considered HSHA as more tolerable, mostly for a combination of reduced throat irritation, irritative cough and salty taste (13 C), see Fig. 4. Among patients treated with HSHA, less than 30% are treated

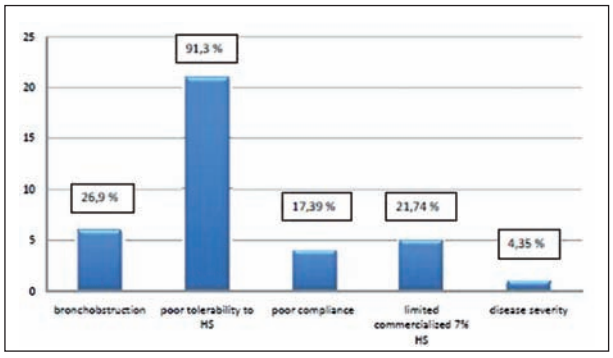

Figure 2. Conditions in which HSA is preferred to HS alone

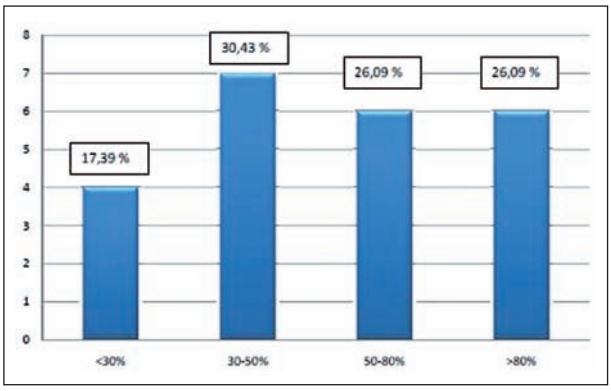

Figure 3. Regular administration in chronic use of HSA

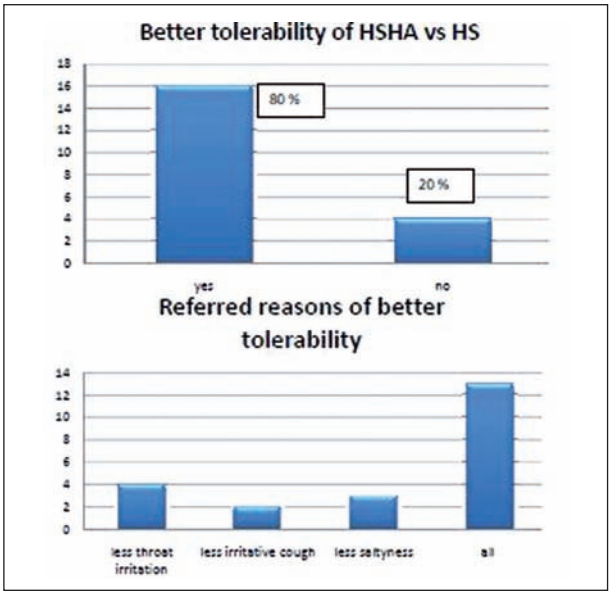

Figure 4.

also with DNase, in the majority of C (14 C, 60,8%), while in 7 C this association is prescribed in 30-50% of patients.

Conclusions

The questionnaire is representative of the majority of Italian CF Centers. Inhaled HS is a cornerstone in CF therapy and there is agreement between respondents upon the indications of treatment. HSHA is prescribed in all the interviewed Italian Centers and is preferred in patients with previous poor tolerance to

HS, even if sometimes it's the first-choice prescription. Most Italian Centers indicate a twice-daily HSHA administration, preceded by bronchodilator; 50% of them prescribe HSHA in patients younger than 6 years.

Tolerability is regularly assessed before prescription. HSHA is described as a better-tolerated option in the long-term, with possible implications on compliance (3-5).

A challenge would be to achieve uniformity in indications, administration and tolerability assessment of HS and HSHA.

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