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CASE REPORT

AN ATHLETE RUNS THROUGH HIS ASTHMA

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INTRODUCTION

"As joggers accelerate to turn runners, the siren of wheeze slowly and steadily picks up volume and it takes only 10 minutes for it to blow the whistle, bringing the exercise induced asthmatic to an abrupt halt".

Asthmatics often find that reasonably hard exercise of moderate duration like 6-8 minutes of continuous moderately hard running causes troublesome exercise induced asthma (EIA) while either very brief, intense exercise or very prolonged exercise does not necessarily cause an attack (Fitch et al, 1976). Neither the cause of EIA nor the reasons why some forms of exercise have greater propensity to provoke EIA is known (Fitch et al, 1976). Even though asthmatics have often won gold medals in competitive swimming, they have seldom

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Sriram Singh (210). An asthmatic winning the 800 Metres Finals at the 1978 Bangkok Asian Games.

fared well in track athletics. This is not surprising, since free range running is generally recognised to be the most asthmagenic form of exercise (Fitch et al, 1976; Gail et al, 1979).

Free running even though considered as a more sensitive test for the clinical diagnosis of EIA in patients who do not have bronchospasm (Gail et al, 1979), a negative challenge in a laboratory setting may not necessarily exclude EIA (Peyton et al, 1979). Added to the unknown aetiology and the variation in the laboratory findings, which makes the diagnosis of EIA difficult,

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the International Olympic Committee's "doping regulations" have further cornered the clinicians from treating these asthmatics successfully.

The present case study deals with the rehabilitation of an asthmatic Olympic athlete back to competitive athletics under careful prophylactic medication with cromolyn sodium, a drug accepted under doping regulations.

The subject of this case study is an Indian athlete, Sriram Singh, who is the current Asian record holder in 800 metres race. A triple Olympian of Munich, Montreal and Moscow, he finished seventh in the world record breaking 800 metres finals at the Montreal Olympics.

CASE REPORT

When aged 28 years, Sriram Singh reported for medical aid in December 1977 with complaints of a cough, chest pain and breathlessness on exertion of one month duration. There was no past, childhood or family history of bronchial asthma or any other allergic manifestations. Auscultation of the lungs revealed rhonchi over right lung lower zone. Examination of peripheral blood smear, urine and stools gave normal results. Culture of sputum showed normal flora and AFB stain was negative. ECG was normal. X-ray of the chest showed residual mottling of old right basal pneumonitis (resolving) (Fig. 1). Pulmonary function tests showed no obstruction but marginal restriction in the airway as evidenced by low peak expiratory flow rate (PEFR), low vital capacity (VC) and low maximum breathing capacity (MBC) (Table I). The patient was treated with broad spectrum antibiotics, steam inhalation and breathing exercises. He was advised to avoid strenuous exercises. Pulmonary function tests repeated after this treatment still showed a low VC and low PEFR (Table I). But the athlete became asymptomatic and resumed training.

Fig. 1. Chest X-ray showing residual mottling of old right basal pneumonitis (resolving).

TABLE I

Pulmonary Function Tests

28 ♂ 173 cms	67 kg	BSA: 1.81 m ²	
	Mean Predicted Normal Values	Date 14 Feb. 78 (Before Treatment)	Date 27 Feb. 78 (After Treatment)
Tests			
Room Temperature		22°C	24°C
Expired Carbon dioxide		4.5%	4.5%
BTPS Factor		1.091	1.080
Tidal Volume		393 ml	518 ml
Respiratory Rate		23/mit	20/mit
Minute Volume		9.1 l	10.31 l
Peak Expiratory Flow Rate	638 l/mit	540 l/mit	580 l/mit
Vital Capacity	4.55 l	3.37 l	3.97 l
MBC	130 l	89.3 l	130.5 l
FEV ₁	85%	84.5%	85.14%
FEV ₂	93%	100%	100%
FEV ₃	97%		

In April 1978, while training for the Edmonton Commonwealth Games, he started feeling out of breath after 7-10 minutes of moderately hard running, and also complained of a cough and recurrent nasal obstruction. Blood tests showed eosinophil count of 17% with absolute eosinophil count being 1632/cumm. Clinically and radiologically the lung fields were clear. ENT check-up revealed pale nasal mucosa and left inferior turbinate hypertrophy. The diagnosis of allergic rhinitis was made and the patient was placed on salbutamol (Asthalin or Ventolin), tablets and antihistamines. His complaints of a cough and nasal obstruction subsided but his complaint of "feeling out of breath after 7-10 minutes of moderately hard running" still persisted. Running became laborious for him and he was declared unfit for further training.

When the athlete reported to us in June 1978, his only symptom was his feeling out of breath after 7-10 minutes of moderately hard running. He was asymptomatic during his "warming-up" sessions and during jogging.

Clinical examination revealed no abnormal findings. But post-exercise auscultation of the lungs frequently revealed wheezing. Peripheral blood smear was normal (Hb 13.5 gm% and eosinophil count 4%). X-ray of the chest showed clear lung fields (Fig. 2). Skin sensitivity tests for allergy could not confirm any specific allergen. Immunoglobulin studies for IGG, IGA, IGM and IGE were normal. VO₂ max was 62 ml/kg body weight/minute. Pulmonary function tests showed slight reduc-

Fig. 2. Chest X-ray showing normal lung fields.

tion in VC and PEFR which could be attributed to his low fitness state due to detraining over a long time (Table II).

Corroborating his complaints, signs and symptoms and the investigations carried out, the case was diagnosed as exercise induced asthma and the patient was placed on sodium cromoglycate (Fitch et al, 1976; BMJ, 1979; Sterling, 1978). The initial dosage was one cartridge (20 mgm) every 6 hours in the spinhaler. Gradually the dose was tapered to one cartridge twice daily and finally to one cartridge half an hour before exercise (Fitch et al, 1976; Sterling, 1978; Anderson, 1979; BMJ, 1979).

Since the athlete was under detraining for a long time, a carefully regulated training programme was chalked out. For the first few days he was advised to do

only jogging, breathing exercises and stretch exercises. Gradually anaerobic exercises were introduced to increase his speed. Two weeks after he started prophylactic medication with sodium cromoglycate he was asked to undertake strenuous aerobic running which was the real test to assess his endurance capacity and the state of his lungs. Thus by September 1978, he could do moderately hard running for longer periods without any recurrence of his old symptom of breathlessness. His pulmonary function tests repeated at this stage showed all lung functions within normal limits (Table III). The athlete was subsequently cleared to attend the training camp for the Asian Games.

Then on 15th December, 1978 at the Bangkok Asian Games, this ace asthmatic athlete wrote a new chapter in athletic history when still under prophylactic medication with sodium cromoglycate he won the gold medal in the 800 metres.

The athlete is not yet asymptomatic and he still gets occasional exercise induced bronchospasms which are controlled by sodium cromoglycate. Recently at the Moscow Olympics he was a semi-finalist in the 800 metres in the distinguished company of Sebastian Coe and Steve Ovett.

DISCUSSION

The diagnosis of EIA in this athlete is based on the following significant observations:—

1. Breathlessness after 7-10 minutes of moderately hard running (Fitch et al, 1976).
2. The non-responsiveness of his symptoms to the treatment with antibiotics and antiallergic drugs.
3. Past history of pneumonitis. Infection is an important trigger factor mainly in intrinsic asthma (Sterling, 1978).

TABLE II

Pulmonary Function Tests						16 June 1978
28 ♂ 173 cms		63 kg				BSA 1.70 m²
Respiratory Rate — 20/mit						
Minute Volume — 16.0 l/mit						
Tidal Volume — 800 ml						
Tests	Predicted Values	Pre BD	Observed Values Post BD*	Percent Predicted		
				Pre BD	Post BD	
Vital Capacity	4.25 l	3.85	4.25	90.6%	100%	4.25
Peak Expiratory Flow Rate	600 l	560	570	93.3%	95%	
FEV ¹	3.40 l	3.20	3.40			FEV ₁
FVC	4.25 l	3.85	4.25			
FEV ₁ % FVC	80 ± 5%	83.1%	80.0%			

* BD (Broncho dialation with sodium cromoglycate)

TABLE III

Pulmonary Function Tests

28 ♂ 173 cms

65 kg

26 Sept. 78

Individual under daily medication with sodium cromoglycate

Test	Mean Predicted Normal Values ± SD	Observation Values Time of Testing			
		2.30 p.m.	5 p.m. Basal	5 min After Exercise	10 min After Exercise
VC (ml)	4303 ± 490	4250	4155	4205	4255
VC % Normal		98.7%	96.7	97.7	99
ERV (ml)	1500 ± 200	1412			
FRC (ml)	3098 ± 490	3040			
Thoracic Gas Volume	3098 ± 490	3000			
RV (ml)	1517 ± 290	1628			
TLC (ml)	5843 ± 600	5878			
RV/TLC (%)	< 35	27.7			
FVC (ml)	4303	4040	4155	4205	4255
FEV ₁ (ml)	3440 ± 150	3285	3290	3200	3340
FEV ₁ % VC	80 ± 5	77.8	79.25	76	78.5
Mean Expiratory Flow Rate (l/mit)	230 ± 50	234	183	190	181
Compliance Static (l/cm H ₂ O) Dyn f = 1 f = 2	0.1 – 0.2		f – 30 = 0.140 f – 80 = 0.150		
DL co (SS; PA co) ml/min/mm Hg	15 – 20	19			

4. EIA is an important problem for many allergic rhinitic patients who do not have clinical asthma (Gail et al, 1979).
5. The age of the athlete. The onset of intrinsic asthma is more common in the adult group (Sterling, 1978).
6. No positive past, childhood or family history of bronchial asthma (Sterling, 1978).
7. No psychological or nervous factors. He is a happily married man and also a seasoned international athlete.
8. Pulmonary function tests showed a non-obstructive, restrictive type of ventilatory defect (Tables I, II, III).
9. His responsiveness to the prophylactic treatment with sodium cromoglycate (Fitch et al, 1976; BMJ, 1979;

Sterling, 1978; Anderson, 1979; Saunders et al, 1978).

CONCLUSION

This case presentation stresses:—

1. The importance of correctly diagnosing diseases peculiar to sportsmen.
2. The effectiveness of cromolyn sodium in the management of EIA.
3. The extent to which an asthmatic could succeed in competitive athletics.
4. The importance of avoiding unnecessary restrictions on physical activities in asthmatics.

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APPEAL FOR SUPPORT

Our sister organisation, the Société Française de Médecine du Sport, have gone to a great deal of trouble to organise a meeting to which a warm invitation has been extended to members of the British Association of Sport and Medicine. This event was notified in the December issue of the Brit. J. Sports Med. among 'Future Meetings of BASM and Other Organisations' (Vol. 15 p. 298). So far, the response from BASM has been lamentable, — only five or six members having signified their intention of attending.

The venue is CAEN, in Normandy, half way between Cherbourg and le Havre, a few hours by ferry from Southampton, or by direct flight to Caen from London.

Thursday, May 20th — Sunday, 23rd

Hotel accommodation is available, at costs depending upon the category of hotel, from £10* to £17**** a night. Meals are extra. A Banquet terminates the Congress (£16). Some rooms are also available in the University City at £3.50 a night. The registration fee for delegates is £30, and for those accompanying, £17.

Excursions have been arranged to the Bayeux Tapestry, to Mont Saint-Michel, around the city, and to neighbouring towns such as Honfleur.

Applications should be sent IMMEDIATELY to:

Congress Registration:
Dr. J. Fabre,
Laboratoire de Physiologie,
Faculté de Médecine,
CHU Côte de Nacre,
14032 CAEN Cédex, France.

Hotel Reservations:
Office de Tourisme,
Syndicat d'Initiative,
Hôtel d'Escoville,
14300 CAEN,
France.

We hope to have more support from our members for this nearby international event, and for the excellent social programme for members' families. The UK "Team Captain" who wishes to hear from those interested is Mr. John King, FRCS, 124 Murray Avenue, BROMLEY, Kent (01-460-0705) or the London Hospital Dept. of Orthopaedic Surgery, Whitechapel, LONDON E3 4LL.

(The information given including prices, are based upon the information we have been given, and we can take no responsibility for their accuracy. We are basing costs on £1 = 10 Fr. francs approx.)