DGAFMS memorandum issued in 1997 states that in view of the likelihood of recurrence in an individual who has had an episode of HAPO, such individuals should be made unfit for service at HA. The revised draft memorandum, which is yet to be published and circulated, does state that only patients with severe HAPO, recurrent HAPO (>1 episode) or with associated pulmonary arterial hypertension are made unfit for service in HA. Inhaled nitric oxide has shown promising results in various trials [6]. However no cost-benefit analysis has been done so far. This novel form of therapy should be used whenever indicated to save every precious life.

We agree that the reported incidence of HAPO is decreasing. This does not mean we should lower our guard, as it remains a potentially fatal condition. Need for continued education for everchanging troops cannot be overemphasized.

References

1. Heath D, William DR. Man at high altitude. 2nd ed. Edinburgh: Churchill Livingstone, 1981.

Quinolones Losing Favour in Enteric Fever

Dear Editor,

Salmonella enterica serovar *typhi*, is endemic in India. Since 1990's Fluoroquinolones (ciprofloxacin, ofloxacin) had been effective for multidrug resistant (MDR) strains, resistant to Ampicillin, Chloramphenicol and Co-trimoxazole (ACCo). Presently however, many isolates of *Salmonella*, MDR and non-MDR show delayed response to ciprofloxacin [1,2]. In UK, decreased sensitivity to ciprofloxacin increased from 2.7% in 1995 to 23% in 1999 [1]. An increase in Minimum Inhibitory Concentration (MIC) of ciprofloxacin (0.004-0.0039 mg/L in 1990 to 0.19-0.2 mg/L in 2003) has also been noted in India [2]. This is attributed to point-mutation in quinolone resistance determining region (QRDR) of topoisomerase gene, *gyrA* in *Salmonella* and leads to simultaneous resistance against nalidixic acid, a non-fluorinated narrow-spectrum quinolone [1]. Resistance to 30 µg nalidixic acid disc (zone diam < 13mm) is a simple laboratory indication of low-level susceptibility/resistance to ciprofloxacin [3]. Recent reports from India show nalidixic acid resistant *salmonella* (NARST) even among non-MDR *salmonella* strains [2,4]. At our institute in Pune, we carried out MIC to ciprofloxacin for 21 isolates of *S typhi* from different parts of the country known to be resistant to nalidixic acid (MIC > 128 mg/L). Disk strengths and zone interpretations were in accordance with National Committee for Clinical Laboratory Standards (NCCLS). Out of 21 strains, 14 were known MDR isolates and 7 were sensitive strains. MIC for ciprofloxacin was raised in all, being 0.5 mg/L in 16 isolates (9MDR strains) and 1.0 mg/L in 5 isolates (all MDR strains and all 7 sensitive strains). An MIC of >0.125 mg/L of ciprofloxacin has been associated with poor clinical response in several studies [1,2,4,5]. These strains will either respond poorly or inappreciably to ciprofloxacin in-vivo, even if found sensitive invitro using 5 µg ciprofloxacin disc [3]. The current

2. Peter HH, Robert CR. High altitude illness. N Engl J Med 2001; 345: 104-14.
3. Gabry AL, Ledoux X, Mozziconacci M, Martin C. High altitude pulmonary oedema at moderate altitude (<2400m; 7870ft): A series of 52 patients. Chest 2003; 123: 49-53.
4. Jerome He, Severinghaus JW. High Altitude pulmonary edema. N Engl J Med 1996; 334:662-4.
5. Sartori C, Lipp E, Duplain H, et al. Prevention of high-altitude pulmonary edema by beta-adrenergic stimulation of the alveolar transepithelial sodium transport. Am J Crit Care Med 2000; 161: Suppl: A 415. abstract.
6. Urs Scherrer, Laurent V, Alain D, et al. Inhaled nitric oxide for high-altitude pulmonary edema. N Engl J Med 1996; 334:624-9.

Maj Rajan Kapur*

*Clinical Tutor, Department of Medicine, Armed Forces Medical College, Pune-40.

NCCLS breakpoints may have to be reevaluated for *Salmonellae* [3,5]. These strains respond well to ceftriaxone or azithromycin [1,2,4]. Laboratories should look for nalidixic acid resistance in *Salmonella* isolates as a surrogate marker of decreased fluoroquinolone susceptibility and alert the physician. A blood culture is a must before starting any antibiotic in suspected enteric fever so that diagnosis is confirmed and the strain made available to the laboratory for further characterization.

References

1. Threlfall EJ, Ward LR. Decreased susceptibility to ciprofloxacin in *Salmonella enterica* serotype *typhi*, United Kingdom, Emerg Infect Dis 2001;7:448-50.
2. Rodrigues C, Shenai S, Mehta A. Enteric fever in Mumbai, India: the good news and the bad news. Clin Infect Dis 2003;36:535.
3. Hakanen A, Kotilainen P, Jalava J, Siitonen A, Huovinen P. Detection of decreased fluoroquinolone susceptibility in *Salmonellas* and validation of nalidixic acid screening test. J Clin Microbiol 1999;37:3572-77.
4. Chandel DS, Chaudhary R. Enteric fever treatment failures: a global concern. Emerg Infect Dis 2001;7: 762-3.
5. Joshi S, Wattal C, Sharma A, Oberoi JK, Prasad KJ. Quinolones- drug of choice for enteric fever? Ind J Med Microbiol 2004;22(4):271-2.

Col (Mrs) K Kapila*, Lt Col SK Chumber*, Col J Jena#, Dr. D Pradhan, Wg Cdr AN Ghosh****

*+,**Associate Professor, #Professor and Head, **Post Graduate Student, Department of Microbiology, Armed Forces Medical College, Pune.