Pneumothorax in Substance Abuse

To the Editor:

A pulmonary complication not mentioned by Glazroth et al ("The Impact of Substance Abuse on the Respiratory System," Chest 1987; 91:596-602) is the iatrogenically-created traumatic pneumothorax. Traumatic pneumothorax is a common complication in IV drug abusers who utilize the "pocket shot," the central approach to the internal jugular vein.1 Fourteen patients who sustained a total of 16 pneumothoraces (including one tension pneumothorax) were recently reported by Wisdom et al.1 Success with CASP (catheter aspiration of a simple pneumothorax) may be the treatment for any simple pneumothorax.

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Necrotizing Soft Tissue Infections and Adjunctive Hyperbaric Oxygen

To the Editor:

Norwood and Civetta, in their review on sepsis (Chest 1987; 92:137-44), regarding the management of Clostridial gas gangrene, profess that "appropriate antibiotic therapy and radical surgical debridement must be initiated based on the clinical diagnosis alone." The authors failed to mention an important advance in the treatment of Clostridial infections cited in one of their references: namely, hyperbaric oxygen therapy.2 The emphasis of that reference, which reviews 20 years of clinical experience in treating Clostridial gas gangrene with adjunctive hyperbaric oxygen, is that early, radical life-saving surgery (eg, high amputation) is not necessary when hyperbaric oxygen therapy is available to set up an oxygen barrier against the spread of disease at the advancing disease margin. Early combined therapy with antibiotics, conservative debridement and fasciotoomies, and hyperbaric oxygen has been shown to reduce mortality and morbidity in this disease.1

My experience in treating two cases of Clostridial infection with adjunctive hyperbaric oxygen has been favorable. I also am impressed that this modality might be helpful in some of the commoner mixed aerobic-anaerobic necrotizing soft tissue infections mentioned by Norwood and Civetta.

From 1981 through 1986, I treated 16 necrotizing soft tissue infections including ten cases of non-Clostridial fasciitis with myonecrosis, four cases of pure necrotizing fasciitis and two cases of pure

Clostridial myonecrosis. Bacterial isolates averaged 2.8 organisms per case, 56 percent of which were anaerobes in nonClostridial cases.

The high mortality rate of these infections (up to 75 percent) in recent series, probably owing to the presence of underlying disease states, has been reviewed by Bakker.3 My series was no exception with respect to the presence of underlying host factors. Of the 16 patients, 11 had diabetes, six had peripheral vascular disease, two were parenteral drug abusers and one had end-stage renal disease. Average age was 56 years (range 18 to 89).

Treatment utilizing broad spectrum aerobic and anaerobic antibiotic coverage, surgery (average 2.7 procedures per patient) and hyperbaric oxygen given at least once daily (average 18 treatments) produced favorable results: of the 16 patients five recovered completely, three died and six had amputations (three below the knee.) All of the amputations occurred in patients with peripheral vascular disease. Both Clostridial cases survived without amputation and retained useful function of the involved limbs (foot and arm).

Table 1 shows the treatment outcome related to the time of initiation of combined modality therapy from the time of diagnosis. Delays in either surgery or initiation of hyperbaric oxygen therapy were associated with all of the deaths (all patients received antibiotic therapy early in their course).

Clinical experience in treating polymicrobial, nonClostridial necrotizing soft tissue infections with adjunctive hyperbaric oxygen is still anecdotal, although there are good theoretic reasons for its use based on relief of local tissue hypoxia,3 differing oxygen susceptibilities of bacteria in these infections4 and the oxygen dependence of leukocyte phagocytic function.3 A recent report shows the benefit of hyperbaric oxygen in the treatment of experimental polymicrobial intra-abdominal sepsis.6 I agree with Bakker7 that it is beneficial when treatment is applied adjunctive to a course of antibiotics and early, adequate surgical debridement of the wounds.

While hyperbaric oxygen is not a substitute for surgery or antibiotics in the treatment of either Clostridial or nonClostridial necrotizing soft tissue infections, it is available in many areas where physicians practice critical care medicine and deserves at least a brief mention in discussions of the therapy of these infections as a possible adjunctive treatment.

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REFERENCES
1 Hart GB, Lam RC, Strauss MB. Gas gangrene. J Trauma 1983; 23: 991-1000

Table 1—Treatment Outcome Related to Initiation of Therapy

<table>
<thead>
<tr>
<th>Therapy</th>
<th>No. who survived</th>
<th>No. who died</th>
</tr>
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<tbody>
<tr>
<td>Surgery delayed beyond 24 hrs. or Hyperbaric oxygen therapy initiated after 48 hrs.</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Surgery within 24 hrs. or Hyperbaric oxygen therapy initiated within 48 hrs.</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

x² = 4.67, p < .05

REFERENCES

To the Editor:

The comments of Dr. Zanetti are greatly appreciated. Perhaps rather than using the term "radical surgical debridement," a more appropriate term may have been "widespread surgical debridement" or "early aggressive surgical intervention." We certainly did not mean to imply that every patient with Clostridial myonecrosis or mixed aerobic-anaerobic infections require immediate amputation.

There is no doubt that hyperbaric oxygen, as adjunctive therapy, is beneficial in treating Clostridial infections and may, in fact, limit the amount of surgery and deformity from surgery that is eventually required.

The data reported by Dr. Zanetti also suggest that hyperbaric oxygen therapy may be beneficial in nonClostridial polymicrobial infections. Although my experience is limited, several of my colleagues have used adjuvant hyperbaric oxygen therapy extensively, even for fungal infections,1 and believe that outcome was improved. As Dr. Zanetti readily points out, however, hyperbaric oxygen therapy is not a substitute for adequate repeated surgical debridement and antibiotic treatment. One must not assume that hyperbaric oxygen therapy is a replacement for these cornerstones of therapy. The margins of resection must extend into grossly healthy tissue to eradicate the usually relentless spread of these severe infections.

If hyperbaric oxygen therapy is available, it certainly should be used as adjuvant therapy for Clostridial infections. It should also be considered for patients with mixed polymicrobial infections resulting in necrotizing fasciitis, but further data such as Dr. Zanetti's must be evaluated before hyperbaric oxygen therapy can definitely be considered as an effective form of treatment that makes a significant difference in outcome.

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REFERENCE

Erratum

We were pleased to find our case report published in the August issue of Chest ("Acute Pulmonary Edema Caused by Venous Air Embolism After Removal of a Subclavian Catheter," Chest 1987; 92:364-65). However, we wish to call to your readers' attention an error: figures 1 and 3 have been interchanged, although the legends are correctly placed.

We wish to mention this error for the sake of clarity.

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Differential Diagnosis of Pulmonary Nodule

To the Editor:

This case illustrates a new addition to the differential diagnosis of a pulmonary nodule.

An 83-year-old woman was noted to have polymyalgia rheumatica following referral to Duke University Medical Center for fever, arthralgias, and an elevated erythrocyte sedimentation rate. Chest x-ray film revealed a 14 x 25 mm left lower lung field nodule that had doubled in size since 1982. Fluoroscopic evaluation revealed the nodule to be intracardiac and echocardiographic examination confirmed mitral annual calcification.

This case represents a new addition to the differential diagnosis of pulmonary nodule: mitral annular calcification (MAC). The patient's slowly enlarging nodule was initially suspected to be a tumor. Only after fluoroscopy for transbronchial biopsy was the true location of the "nodule" ascertained.

Mitral annular calcification is a degenerative process occurring primarily in elderly patients, with a higher prevalence in women.1 MAC is noted in approximately 10 percent of patients in autopsy studies; however, the vast majority of these are not diagnosed premortem.2 Hypertension, mitral valve disease (including mitral valve prolapse and mitral valve replacement), aortic valve disease, hypertrophic cardiomyopathy, and abnormal calcium and phosphorus metabolism (including chronic renal failure)3,4 have all been thought to predispose to the development of MAC. The degree of severity of MAC encompasses a wide spectrum, as do the lists of complications directly related to MAC. Patients who were diagnosed antemortem were generally symptomatic and presented with mitral regurgitation, mitral stenosis, endocarditis, or conduction disturbances.

MAC is most readily diagnosed by echocardiography, although it has been described after fluoroscopy and routine radiography. Due to the anatomic configuration of the mitral ring and subvalvular angle, calcification generally occurs in the shape of a U, J, or C and is thus not usually confused with a pulmonary nodule. Two cases of complete circular calcification have been described at autopsy.5 This case represents an antemortem diagnosis of complete circular calcification of the mitral annual ring presenting as a pulmonary nodule.

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REFERENCES