than in the group in which $Q_sp$ did not increase (13.3 ± 1.2 vs 27.5 ± 3.1 percent, mean ± SE, $p < .001$).

$Q_sp$ with 100 percent oxygen may increase as a result of absorption atelectasis and redistribution of regional pulmonary blood flow to poorly or nonventilated lung areas. However, a decline in $Q_sp$ with 100 percent oxygen may result from a decrease in "shunt like" effects produced by low $V/Q$ areas or diffusion impairment. It has been suggested that the change in $Q_sp$ with increasing $F_{IO2}$ is a result of the interaction between those factors which will increase and those which will decrease $Q_sp$. Our data suggest that this interaction favors an increase in $Q_sp$ with 100 percent oxygen in those patients where $Q_sp$ at the maintenance $F_{IO2}$ is low, but does not in more severely ill patients where $Q_sp$ at the maintenance $F_{IO2}$ is higher.

We agree that measurement of $Q_sp$ after administration of 100 percent oxygen may be misleading and may result in overestimation of $Q_sp$. However, measurement of $Q_sp$ at the maintenance $F_{IO2}$ and with 100 percent oxygen may give an estimate of the net effect of factors influencing the change in $Q_sp$ with 100 percent oxygen and provide some insight into the pathophysiology of the underlying respiratory failure.

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REFERENCES


To the Editor:

Undoubtedly some differences between our data and yours exist. We agree this is most likely related to the severity of pulmonary pathology studied. Our study avoided patients with extremely high intrapulmonary shunts because we were interested in evaluating the effects of 100 percent oxygen on shunt measurements with moderate disease.

The concept that 100 percent oxygen may increase shunting as a result of absorption atelectasis and/or redistribution of regional pulmonary blood flow is well recognized. Equally well accepted is the phenomenon that appropriate increases in $F_{IO2}$ will decrease the shunt effect (venous admixture) component of a shunt measurement. Douglas et al demonstrated that a reduction of maximum effect in venous admixture was generally achieved at oxygen concentrations in the 40 to 50 percent range. Further increases in oxygen concentration resulted in increased shunt measurements. While we can conceptualize severe degrees of shunt effect (venous admixture) requiring oxygen concentrations higher than 40 to 50 percent, it is difficult to conceive that these severe $V/Q$ imbalances require 100 percent oxygen in order to be adequately compensated.

We can find no basis for your statement that measurements of shunt at 100 percent oxygen may provide insight into the pathophysiology of the underlying respiratory failure. You have conceded that the administration of oxygen can result in overestimation of the shunt measurement; therefore, such a measurement may reflect either the underlying pulmonary pathophysiology or iatrogenic changes attributable to the methodology. At present, there is no way to ascertain the degree to which these two possibilities are occurring and therefore, this approach is clinically of little value in evaluating the existing pulmonary pathology.

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Conjunctival and Tonsillar Biopsies in Sarcoidosis

To the Editor:

We have studied the suitability of conjunctival and tonsillar biopsies for histologic diagnosis of sarcoidosis in 146 consecutive white patients (mean age 37 years, 87 women and 59 men). In 139, the clinico-radiologic diagnosis of sarcoidosis was confirmed histologically, mainly (127) from mediastinal lymph nodes. Seventy-one had extrathoracic sarcoid changes also. The disease was active in 49. Conjunctival biopsy was taken from the lower fornix of 136 patients, using the method of Crick et al. If biocmicscopy revealed nodules, the specimen was taken from them. Tonsillar biopsy was taken from 50 patients (unselected), after applying surface anesthesia with 10 percent lidocaine spray, from the upper pole of the left tonsil which always looked normal macroscopically. The procedures involved no complications.

Conjunctival biopsy revealed epithelioid cell granulomas in 23 patients (17 percent). Of the 35 with conjunctival nodules suggestive of sarcoidosis on slit-lamp examination, 14 (40 percent) showed granulomas on biopsy. Granulomas were found more often in the active (13/44) than in the inactive (10/92) phase of the disease, and more often in generalized (17/69) than in intractorachically restricted disease (8/67). Tonsillar biopsy revealed granulomas in five patients (10 percent), all with active disease (5/17). Three of these had generalized (3/19) disease. At least one of the two biopsies showed granulomas in 11 (28 percent), again more often in those with active (6/11) or generalized (8/17) than with inactive (5/30) or restricted intrathoracic (3/24) disease.

Our study shows that conjunctival sarcoid lesions are fairly common also in white patients, although opposing opinions have been expressed. The relation of conjunctival sarcoid-
dosis to activity and generalization of the disease seems distinct.3

Positive tonsillar specimens were fewer than had been reported,4 but even lower figures have been quoted.8 These differences might be due to differences in selecting patients, and taking and processing biopsies. In tonsillar specimens, granulomas were sparsely located. Therefore, in some of our cases they might have escaped biopsy.

Conjunctival and tonsillar biopsies are quick and painless and suited for outpatient work. Conjunctival biopsy, possibly combined with a tonsillar one, helps to verify sarcoidosis histologically in a remarkably high proportion of the cases, and is to be recommended in preference to any major procedures.

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REFERENCES


Survival in Bronchogenic Carcinoma

To the Editor:

Long-term survival of three patients with bronchogenic carcinoma complicated by superior vena caval obstruction was reported by Nogeire et al (Chest 75:325-329, 1979). Two patients succumbed to the disease and one had an early recurrence. We wish to report a similar patient with an apparent cure who presented with life-threatening symptoms secondary to caval obstruction.

CASE REPORT

A 30-year-old white woman with a 60 pack/year smoking history developed the abrupt onset of facial and neck edema in July, 1972. One month later, she became dyspneic and presented to the emergency room where examination revealed an acutely ill, semi-comatose woman with non-pitting edema of face, eyelids, neck and arms and dilated vessels over shoulders and forehead. Superior venacavagram showed occlusion of the superior vena cava and left innominate vein. Mediastinal tomograms showed a 3 x 3 cm mass extending into the distal trachea and right main stem bronchus. Bronchoscopy with biopsy indicated undifferentiated carcinoma.

The patient received initially 3500 R to a single anterior mediastinal field to cover the upper two-thirds of the mediastinum. She then received intravenous cyclophosphamide in an unknown dose followed by oral cyclophosphamide and corticosteroid daily. Two-and-one-half months later, tomograms showed a marked regression of the mass. The repeat films in March of 1974 were normal, as were bone scan, bone marrow aspirate and biopsy, and liver biopsy. Cyclophosphamide was changed in October 1974 to pulse therapy given orally one week out of four and was discontinued in June 1975.

In February, 1978 the patient was seen with increased cough, and a chest x-ray film revealed mass densities in the left hilum and left lower lobe which cleared with antibiotic therapy. Repeat bronchoscopy was performed which was totally normal as were bronchial biopsy and washings, bone scan, CT brain scan, and liver scan. Tomograms in May 1978 were normal. In February, 1980 the patient continues to be well and disease free, eight years after the discovery of her cancer.

Our patient is unusual in that she has survived eight years in spite of three prognostically poor features: (1) location of tumor in the trachea and right main stem bronchus places this patient in a T3 category, according to the classification of the American Joint Committee on Cancer Staging, with the poorest survival rate of 8 percent for five years when compared to midlung location (50 percent) and lobar and main bronchus location (25 percent).1 (2) Undifferentiated carcinoma has been reported to have a slightly worse prognosis than either squamous cell or adenocarcinoma2 and does not respond well to chemotherapy as does small cell carcinoma. (3) Patients with the complication of superior vena caval obstruction do particularly poorly, with a one-year survival rate of 1 percent, as noted by Nogeire in Chest.

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REFERENCES


Unusual Complication during Bronchial Brushing Through the Flexible Fiberoptic Bronchoscope

To the Editor:

In the last few years, there have been reports of some of the complications that may occur with the use of the fiberoptic bronchoscope. Up to now, the incidence of these complications has been scarce and it has been mentioned only at the accidental appearance of pneumothorax, pneumonia, obstruction of airways, some other minor complications and also hemorrhage of variable severity between the rare hemoptic expectoration and transitory and the lethal massive hemoptysis.1,4

We report an exceptional complication not mentioned until now: the persistent endobronchial pierce of the brush. This unusual accident posed remarkable initial difficulties, but it was handled successfully due to a maneuver of which knowledge can be useful in solving other similar cases.

Figure 1A shows the radiologic image of the accident when we attempted endobronchial brushing in a 43-year-old patient who presented signs suggestive of bronchopulmonary carcinoma of peripheral localization. The referred complication appears at the moment that penetration of the brush

CHEST, 78: 6, DECEMBER, 1980

COMMUNICATIONS TO THE EDITOR 901