

UPPER LUNG BRONCHIAL BREATHING IN PULMONARY TUBERCULOSIS

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BACKGROUND

Pulmonary tuberculosis is associated with abnormal sounds recognized by clinicians since the elegant descriptions of these sounds by Laennec nearly 200 years ago.

Since the advent of the chest x-ray less attention has been paid to auscultatory findings as x-rays have been considered to be more reliable.

Observer variability and lack of objective documentation likely contributed to the lack of interest in auscultation.

Computerized lung sound analysis is now available that circumvents the problems of observer variability and lack of objective documentation.

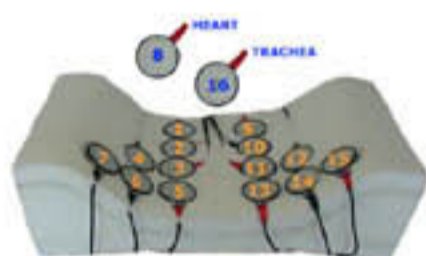
PURPOSE

Our goal was to study the sounds of patients with pulmonary tuberculosis using objective methodology.

METHODS

-- A 16-channel lung sound analyzer (Stethographics Model STG1602) was used to collect 20 seconds samples of sound.

-- This figure shows the soft foam backpad with microphones embedded in chestpieces, and method of application.



RESULTS

The findings in the 287 patients we studied are summarized in Table 1. Of note, we observed bronchial breathing to be present in the upper chest in 4 of the 10 subjects studied. Bronchial breath sounds were not seen in the upper chest in 157 normal subjects studied in a similar fashion.

Figure 1 is the chest x-ray of the patient whose sounds are presented in Figure 2.

Table 1.

	Normals	COPD	CHF	Pneumonia	IPF	Tuberculosis
Bronchial Breathing	0	0	2	1	3	4
No Bronchial Breathing	157	102	95	77	13	6
Total	157	102	97	78	16	10
Percentage	0%	0%	0.02%	0.01%	19%	40%



Figure 2.

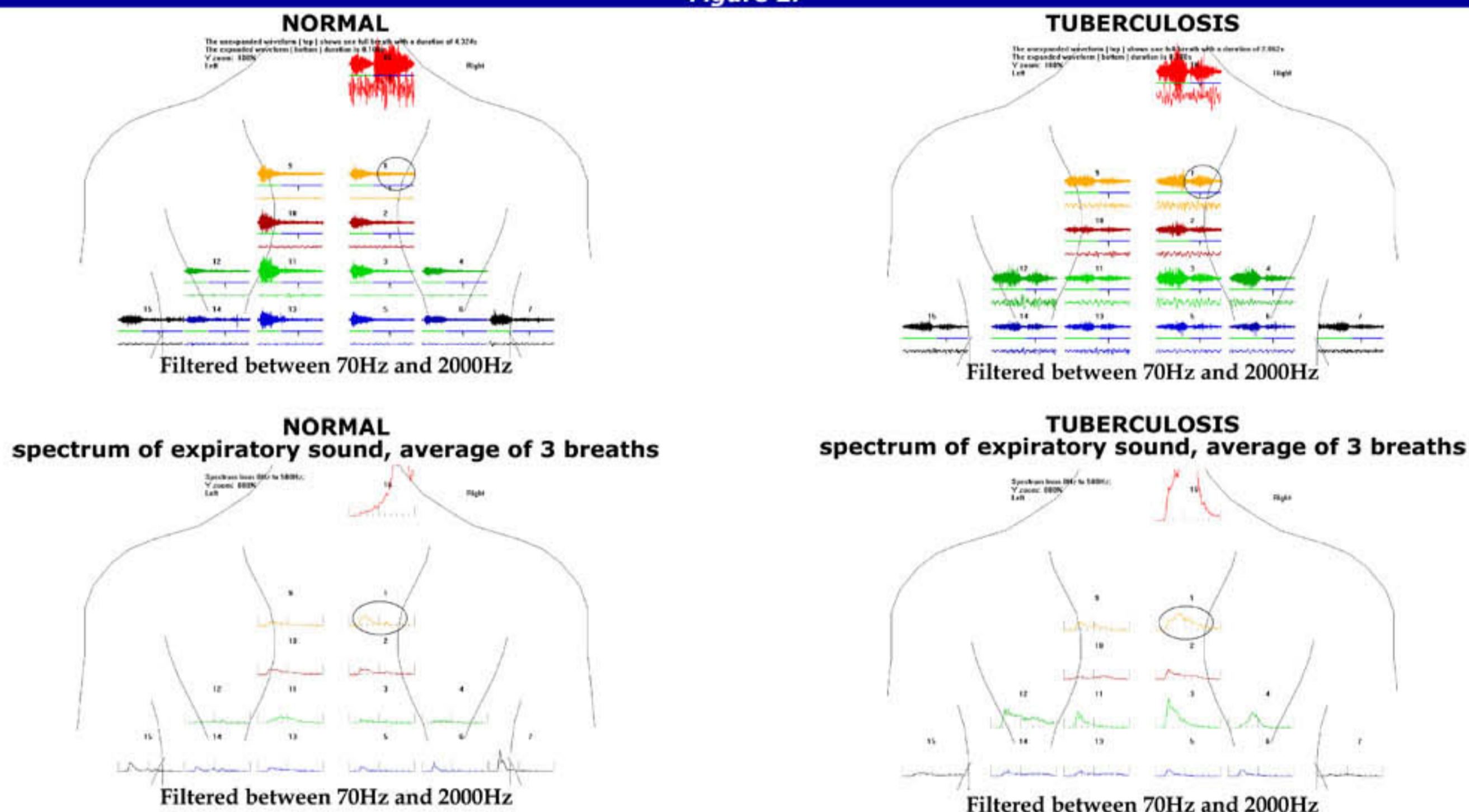


Figure 2 contrasts the waveform of normal subject with that of a patient with pulmonary tuberculosis. Note: The cavity disease is present in the left upper lobe (Fig.1). The bronchial sound was recorded over the right upper chest (Fig.2). This is consistent with studies of bronchial breathing done by Bullar, J. et al (Proc Roy Soc, London, 37:411-422,1884)

DISCUSSION

Bronchial breathing is well recognized as an auscultatory finding in advanced pulmonary tuberculosis. As we studied only patients with advanced disease, it is not surprising, that 4 of the 10 had bronchial breathing. It was a surprise to find upper lung bronchial breathing in 3 of the 16 patients with IPF. However, IPF is easily distinguishable from tuberculosis by the presence of numerous crackles. Likewise, the presence of bronchial breathing in hospitalized patients with CHF or Pneumonia is not likely to present diagnostic difficulty, as these patients are acutely, not chronically, ill.

The findings we observed with our multichannel device can also be recorded with a single channel device (STG1). This consists of a stethoscope connected to a PDA. It is portable and can be easily used in rural areas where x-ray equipment is unavailable.

CONCLUSION

These data suggest that the presence of bronchial breathing in the upper chest can be a useful sign of tuberculosis in situations where chest x-rays are not readily available.