

Cystic Fibrosis Research News

Title:

MICROBIOLOGICAL YIELD FROM INDUCED SPUTUM COMPARED TO OROPHARYNGEAL SWAB IN YOUNG CHILDREN WITH CYSTIC FIBROSIS.

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What was your research question?

How do bacteria identified in an induced sputum sample compare to bacteria from a cough swab? And, which sampling technique is better at identifying bacteria in the lungs of young children with CF, who have trouble producing sputum on their own accord?

Why is this important?

Young children with CF are usually unable to cough up a sputum sample voluntarily for bacterial testing, which is very important in CF care. An alternative sampling method widely used is to obtain a cough or throat swab; however, the accuracy and value of this method has been questioned. The best and most accurate method to obtain a 'sputum' sample from the lungs is to use bronchoalveolar lavage (BAL). This procedure requires children to be hospitalized, subjected to general anesthesia and specialists with the necessary skills. Therefore it is not suitable for routine repeated collection of sputum samples in young children with CF.

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What did you do?

Over a 4-year period we enrolled 32 children with CF under 5 years of age (age ranged from 1-44 months) into the study. Whenever sputum needed to be tested (for routine screening or if the child was sick), we collected a cough swab followed by an induced sputum sample. Induced sputum is performed by firstly, nebulising 5% saline solution to cause the child to cough and then by passing a suction catheter (a long tube) through the nose to remove sputum coughed up into the throat from the lungs. Both samples were sent to the laboratory for routine bacterial testing.

What did you find?

We analyzed 98 paired samples (induced sputum and cough swab from one child) and found that the induced sputum sample was better than the cough swab for identifying bacteria, which are important in CF, particularly if children were sick at the time. Overall, bacteria were detected in 46% of induced sputum samples compared to 28% of cough swabs. The results of the induced sputum sample and paired cough swab matched well if no bacteria were found in either sample. However if an induced sputum sample was positive for bacteria, the same bacteria were only found in around half (56%) of the paired cough swabs. Induced sputum was safe (no serious side effects) and the most common problem encountered was mild bleeding from the nose which occurred in 14 % of sampling episodes.

What does this mean and reasons for caution?

The findings of this study suggest that induced sputum should be the preferred method to identify bacteria in the lungs of young children with CF, who can't/won't cough voluntarily, especially if they are sick or have a new cough. However, collection of induced sputum is more difficult to do and is more time consuming compared to obtaining a cough swab. Furthermore, sputum results may not always direct the treatment or care of people with CF and simply identifying more bacteria in sputum does not always result in better or different treatment. In our study the bacterial results of induced sputum samples lead to a change in treatment for 6% of cases but this may differ in other clinics or countries.

What's next?

Similar studies with a greater number of children should be repeated elsewhere to see if the results match and are valid. The role of induced sputum and when it is most appropriate to obtain these samples should be further investigated. Induced sputum should now be compared to BAL to determine if they produce similar results or not.



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