Original article:

Evaluation of superiority of Bronchial washings CBNAAT over Sputum CBNAAT"- A prospective Clinical study at Konaseema area of Andhra Pradesh

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ABSTRACT:

Background : Pulmonary tuberculosis is highly prevalent disease in India and to diagnose the case many modern investigations came to practice recently.Identifying sputum for acid fast bacilli is the diagnostic test for tuberculosis since 1887 after Robert Koch found this test.But diagnosing tubercle bacilli by this Z-N stain technique is only 30% and most of cases were missing. Recently a new investigative technique came to identify TB is CBNAAT.Sputum CBNAAT is a confirmative test for diagnosing TB and it's 90% sensitive and 95% specific.But this test is also failed to identify TB because most of the patients giving saliva instead of sputum.So we started doing flexible fibroptic bronchoscopy to get bronchial washings from deeper and mostly pathological area of lung.

Aim: Provide bronchial washings for CBNAAT is a better test for identifying TB rather than sputum CBNAAT.

Materials n Methods: All suspected tuberculosis patients are tested for sputum CBNAAT.If sputum CBNAAT is negative then we posted such cases for FOB and collect bronchial washings for CBNAAT.We compare the results of sputum CBNAAT and bronchial washings CBNAAT and try to prove which one is better for diagnosing TB.

Results & Conclusion: Even though FOB is a costly and skilful invasive test ,we did the test for all sputum CBNAAT negative cases and collect bronchial washings for CBNAAT to show it is superior in diagnosing TB.

Key words: FOB,Bronchial washings,CBNAAT,

Introduction:

Tuberculosis is one of the most important public health problems worldwide and is declared as Global emergency by the WHO.(1) Tuberculosis is a disease caused by mycobacterium tuberculosis and it is spreading through the air from infected person to other through droplet of sputum . People at high risk for developing active TB disease are those with a weak immune system including young children to old people suffering from diabetes ,HIV and malnourishment. Top countries with high TB infected patients are china ,Indonesia ,south Africa ,Bangladesh, Ethiopia, Pakistan Phillips, DR of Congo including India .WHO's target for 2035 is reducing of incidence of TB by 90% and reducing of mortality of TB by 95%.TB was diagnosed by identifying TB Bacilli in sputum by ZN stain or CBNAAT.Acid Fast Bacilli staining by fluorescent

microscopy remains fundamental tool of diagnosis,but may be negative in upto 50% active pulmonary tuberculosis.(2)Causes of smear negativity include low bacterial load(<10,000 bacilli/ml),poor quality of sputum sample,improper preparation and examination of smears,people with late stage HIVdisease,immune suppressed patients.(3) In smear negative cases to diagnose a tuberculosis,different other methods like sputum induction,gastric lavage in children,bronchoscopy for bronchial washings or BAL or TBNA and new molecular methods are used.(6) Even sputum AFB Negative and CBNAAT Non Detectable cases can be diagnosed by Bronchoscope just like gastric aspirate in children. Though it's an invasive procedure but its more effective in diagnosing TB. We have taken this challenge of sp.AFB and sputum CBNAAT cases for tuberculosis and did Bronchial washings for confirming TB by CBNAAT .

AIM:

To evaluate the Bronchial washings for CBNAAT is the ultimate test for the diagnosis of Tuberculosis.

MATERIALS & MATHODS:-

The Patients coming to dept.of pulmonary medicine ,Kims hospital with respiratory symptoms. Mostly they are from rural and villege areas of Konaseema. Diagnosing of active pulmonary tuberculosis is an important aim for TB control program . The poor people living in remote villages of Godavari delta area are not interested to visit health centres to get medical aid and treatment even to diagnose TB though they suffering from chronic cough.It is not their fault,it is due to their ignorance and lack of transport .

Our KIMS hospital were provided regular buses that are going and bringing all the poor malnourished people for registration and for diagnosing TB. Indian guidelines on TB care are envisaged in RNTCP National strategic plan for TB control 2012-2017.(10). Govt of India provided 15 CBNAAT Machines in all districts of Andhra Pradesh and they are functioning well from January 2018 onwards.CBNAAT machine diagnosing tuberculosis accurately,early , easy by detecting TB bacilli in sputum . Our hospital provided Bronchoscope in our dept for all purposes and we are doing B'scope for all suspected TB who are negative for sputum AFB and sputum CBNAAT.

We are using Olympus Bronchoscope and doing the simple invasive procedure under local anaesthesia with 2% Xylocaine.Before admission in pulmonology ward,we are explaining the bronchoscopic procedure to all patients in their local Telugu and then getting written consent from patient or from husband if the patient is a female. All necessary investigations like Liver profile of Hepatitis A,B,C,HIV,CT,BT,CBP,FBS along with sputum AFB,CBNAAT,culture sensitivity,Chest X-ray and Xylocain skin sensitivity test are doing.After all tests are satisfactory,then posted the patient for bronchoscopy.We are applying 2% Xylocain nebulisation for anaesthetising lower respiratory tract,Xylocain spray for oropharynx and Xylocain jelly for anaesthetising and lubricating nasal cavities to ease the passage of tip of bronchoscope.We are going to pathological site directly and aspirate Bronchial washings by instilling 20 ml normal saline twice or thrice. After 20 seconds of instillation of normal saline ,then we as aspirate bronchial washings by slow suction.These secretions collected by suction trap and send for CBNAAT minimal 5ml in a Falcon tube immediately. After procedure we kept the patient for observation for in RICU and discharged next day if the patient condition was good .Bronchoscopy for bronchial washings or BAL ia superior to induced sputum in investigating a case of suspected TB.(7) In our patients without sputum, we avoided induction of sputum by hypertonic saline nebulisation as it produces more strain to the patient and getting less sputum for investigating purpose.

Inclusion criteria:

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All adult patients, whose sputum for AFB and CBNAAT Negative only Posted for bronchoscopy.

Exclusion criteria:

Those patients who are not giving consent and HIV positive were excluded from this study.

RESULTS:

Table:1.SEX DISTRIBUTION OF ALL CASES

SL.NO	SEX	NO.OF CASES	% OF CASES
1	Male	29	74%
2	Female	10	26%
Total	both	39	100%

Table:2.AGE DISTRIBUTION OF BR.WASHINGS-CBNAAT CASES:

Age Group Yr's	No of cases Male	female	Total	% of cases
11-20	1	0	1	2.5%
21-30	3	0	3	7.6%
31-40	4	1	5	13%
41-50	3	2	5	13%
51-60	4	2	6	15%
61-70	6	4	10	25%
71-80	5	1	6	15%
81-90	3	0	3	7.6%
TOTAL	29	10	39	

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Table.3: Pattern of Clinical symptoms of cases:

Symptom	Male	Female	Total	%
1.dry cough >2wks	4	2	6	15%
2. cough with sputum	8	6	14	36%
3.Fever >2wks	4	3	7	18%
4.Dyspea	2	1	3	7.6%
5.Heamoptysis	1	0	1	2.5%
6.Weight loss	6	2	8	25.1%
% of Dry cough Vs Wet cough : 15% Vs 36%				

Table. 4: Associated Risk factors:

Risk factor	Male	Female	Total	%of Risk
1.Diabetes	8	2	10	25%
2.Smoking	15	2	17	43%
3.HIV	0	o	0	0%
4.H/o TB contact	2	3	5	12.5%
5.Malnutrition	4	3	7	18%

Table.5 CBNAAT MONTHLY REPORT FROM AREA HOSPITAL, AMALAPURAM, EAST GODAVARI Dist.from Sep.'18 to Dec.'18:

Sl.No	CBNAAT YR 2018	Sep 2018	Oct2018	Nov 2018	Dec 2018	Total
1	Total No. of CBNAAT	251	414	361	243	1269
2	Total No. MTB Not Detected	188	351	303	218	1060
3	Total No. MTB Detected	27	47	50	17	141

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4	Total no. of Presumptive TB	168	294	275	201	938
5	Total no. of Referred cases from private sector	10	33	22	21	86

Table:5 B . CBNAAT MONTHIY REPORT FROM AREA HOSPITAL, AMALAPURAM, EAST GODAVARI Dist.,from Jan.2019 to Aug.'19 :

Sl.No	CBNAAT YR 2019	1/19	2/19	3/19	4/19	5/19	6/19	7/19	8/19	Total
1	Total test of CBNAAT	265	344	390	326	432	421	528	500	3,206
2	Total No MTB Not Detected	238	316	364	306	410	376	481	398	2,889
3	Total No MTB Detected	19	22	20	11	18	20	26	23	159
4	Total no. of Presumptive TB	232	208	358	298	393	367	464	392	2,712
5	Total no of Referred cases from private sector	12	30	14	18	27	17	22	16	156

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Table 6:Br.WASHINGS CBNAAT MONTHLY Report- Sep.2018 to Aug.2019:

Sl. No	No of cases posted for B'Scopy	9/18 10	10/18 33	11/18 22	12/18 21	1/19 12	2/19 30	3/19 14	4/19 18	5/19 27	6/19 17	7/19 22	8/19 16
1	No.of cases SP.AFB Neg.	1	9	6	5	3	9	4	3	10	4	4	5
2	No.of cases SP.CBNAAT Neg.	2	4	7	6	3	4	3	2	11	6	7	8
3	No.of Cases for Br. Washing – CBNAAT	2	3	4	3	1	2	3	1	6	4	4	6
4	No.of Cases for Br. Washing – CBNAAT Positive	2	2	4	3	0	0	2	1	3	2	2	3

DISCUSSION:

Sputum smear negative pulmonary tuberculosis still remains a common problem faced by the clinicians,over 50% of smear negative patients would be needing chemotherapy by 12 months if left untreated.(4)The mortality rate for smear negative culture positive cases was 14.1% compared with 34.7% observed in smear positive patients.(5)Sputum positive patients have dessiminated tuberculosis all over lungs and succumb to disease before starting ATT and hence better to diagnose the case in early stage by latest investigations.In compare with sputum CBNAAT test we were found Bronchial washings for CBNAAT is much superior. Bronchial washings aspirated from pathological site of patient's lungs give very good diagnostic yield of tuberculosis and also other pathological conditions.

Bronchoscope is an expensive and invasive procedure but in our KIMS hospital we are doing the procedure at cheaper rate under local Xylocain nebulisation .Most common complications are heamoptysis or pneumothorax which are not found in all our cases. If patient was comfortable and discharged from RICU in next day .After knowing the results if tuberculosis was detected in bronchial washings , we keep the patient under anti TB Durgs.

CONCLUSION:

1.Bronchoscopy had an added advantage in collecting bronchial washings from deep pathological lesions of lung and subject the bronchial washings for CBNAAT to detect TB.

Studies have already established the utility of CBNAAT in Indian perspective with more than 90% sensitivity and 90-100% specificity(9).

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Most of the men are undergoing Bronchoscopy for diagnosis of bronchial washings for tuberculosis and thay are around 60 - 70 years age group.

Sputum induction by Nebulisation was avoided in our patients because of more strain with less sputum or nil sputum collection even after nebulisation .If induced sputum is negative for AFB and still thinking of tuberculosis,then start ATT on empirical basis.Bronchoscopy can be posted for those patients to rule out bronchial washings for malignancy or CBNAAT of TB.(8).

2.we strongly recommend to Govt of India to include Bronchoscope also as an investigating procedure for diagnosing TB.

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