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Original Research Article

Tuberculosis in HIV: Correlation of Tuberculin Test and Radiological Presentation of Tuberculosis with CD4 Count

Dr. M. G. Krishna Murthy[1], Dr. M. Sravan Kumar[2], Dr. Tarigopula Pramod Kumar[3], Dr. P. Sunitha[4]
[1]Associate Professor, [2]Professor, [4]Postgraduate, Department of Pulmonary Medicine, Kakatiya Medical College, Warangal, Telangana, India
[3]Assistant Professor, Department of Pulmonary Medicine, Gandhi Medical College, Hyderabad, Telangana, India

***Corresponding author**
Dr. M. G. Krishna Murthy
Email: imkrishna@rediffmail.com

Abstract: Fight against human immunodeficiency virus (HIV) is incomplete without addressing the problems associated with difficult diagnosis of tuberculosis in HIV-Tuberculosis co infected patients. Chest X-ray and Tuberculin test are primary tools to evaluate tuberculosis in HIV. The aim is to study the mode of radiological presentation of Pulmonary Tuberculosis with varying CD4 count, to study the response to PPD in Tuberculosis patients with HIV at different levels of immune suppression and to assess the reliability of the test CD4 in the suspicion of Tuberculosis in HIV patients. This prospective observational was conducted on 100 patients suffering with HIV and all the patients were subjected to necessary investigations to diagnose HIV and TB co-infection, like Sputum for AFB, Chest X-ray, Tridot test and the level of immune status like Tuberculin test, CD4 Count, and other if necessary. The results were recorded and analyzed. In our study majority of patients with count <200 cells /cumm were associated with atypical radiological pattern and the patients with CD4 >200 cells/cumm were associated with typical radiological pattern. Furthermore, the reliability of Tuberculin testing in the management of Tuberculosis is debatable. However it cannot be excluded as a diagnostic parameter because in the few cases that a positive tuberculin test is seen, the positive test may help to clinch the diagnosis. In patients with CD4 lower than 200, non cavitory infiltration and consolidation predominated. Involvement of lungs was atypical; diffuse or mid and lower zone involvement than classical upper lobe involvement. A high index of suspicion is necessary for the accurate and timely diagnosis of tuberculosis in HIV positive patients.
Keywords: HIV; Tuberculosis; Radiological presentation; Tuberculin test; Sputum for AFB; CD4 count.

INTRODUCTION

Following its advent HIV / AIDS is relentlessly spreading around the world with no signs of regression [1]. In 1993 World Health Organization (WHO) had declared TB as a "Global Emergency". The WHO has estimated between the years 2000 and 2020, one billion people will be infected with the tuberculous bacillus, 200 million will develop clinical tuberculosis and 35 million will die from it. Unfortunately there are parts of the world where TB has been flourishing unhindered since ages. And now forming a deadly synergy with HIV/AIDS has led to a dramatic increase in the number of cases of TB worldwide [1].

India has the third highest number of people living with HIV/AIDS. As per the 2008-09 HIV estimates, there are an estimated 23.9 lakh people currently living with HIV/AIDS in India with an adult prevalence of 0.31 percent in 2009. The number of new annual HIV infections has declined by around 56% during the last decade (2000-2009). This is one of the most important evidence on the impact of the various interventions under National AIDS Control Programme and scaled up prevention strategies.

In 2012 in India under RNTCP about 8, 21,807 (56%) TB patients were tested for HIV and 44,063 (5%) were found to be HIV positive. About 92% HIV infected TB patients were initiated on CPT and 74% were initiated on ART. Over 2012–2017, RNTCP proposes to treat 83 lakh TB patients, including 1.2 lakh TB patients for MDR TB. Among HIV-infected TB patients, 90% will be provided ART during TB treatment to reduce death .The RNTCP also aims that >90% of TB patients have known HIV status. Though only 5% of TB patients are HIV-infected, in absolute terms it means more than 100,000 patients annually, ranks 2nd in the world and accounts for about 10% of the global burden of HIV-associated TB [2] according to TBC India 2013.

The Millennium Development Goals include targets to improve child health and survival and for improved control of priority communicable disease (including TB and HIV). Progress in improving TB/HIV clinical care will contribute to achieve these goals. Clinicians must have a vital contribution not only to the clinical care of patients, but also to public health [3]. By giving more reports in the form of clinical trials, clinicians can contribute to understand the epidemiology & the aspects of HIV -TB co-infection.

Objectives of the Study

1. To study the mode of radiological presentation of Pulmonary Tuberculosis with varying CD4 count, so as to provide an empirical approach for early diagnosis and treatment of Tuberculosis in HIV patients.
2. To study the response to PPD in Tuberculosis patients with HIV at different levels of immune suppression.
3. To assess the reliability of the test CD4 in the suspicion of Tuberculosis in HIV patients.
4. To assess indirectly the level of immune suppression in a patient known to have tuberculosis.

MATERIALS AND METHODS

Study design

A prospective observation study consisting of 100 patients suffering with HIV and TB, to study the mode of radiological presentation of Pulmonary Tuberculosis with varying CD4 count, so as to provide an empirical approach for early diagnosis and treatment of Tuberculosis in HIV patients, and to study the response to PPD in Tuberculosis patients with HIV at different levels of immune suppression.

Sources of Data

The subjects of the study were selected from patients who visit the outpatient department or had been admitted to Government Chest Diseases & Tuberculosis Hospital, Kakatiya Medical College from January 2012 to September 2013.

Inclusion Criteria

1) Patients 18 years and above
2) Patients who are HIV seropositive
3) Patients having active Tuberculosis proved by one or more of following criteria:
   - Sputum smear positive for AFB
   - Pleural fluid positive for AFB or ADA
   - Smear negative Pulmonary Tuberculosis

Exclusion Criteria

1 Non HIV people.
2 Patients aged below 18 years.
3 Patients who withdraw consent.
4 Patients with Diabetes.

Pulmonary tuberculosis cases are diagnosed as per the case definitions of the Revised National Tuberculosis Control Program.

Case Definition

Pulmonary tuberculosis, smear-positive TB: A patient with at least 1 or 2 initial sputum smear samples (direct smear microscopy) positive for AFB,

Pulmonary tuberculosis, Smear-negative TB: A patient with symptoms suggestive of TB with at least 2 sputum samples negative for AFB and radiographic abnormalities consistent with active pulmonary TB as determined by MO, followed by a decision to treat the patient with a full course of anti-tuberculosis therapy.

A patient diagnosed with both pulmonary (infiltrates) and extra pulmonary (pleural effusion) TB classified as pulmonary TB in this study.

Method of collection of data

One hundred patients satisfying the above mentioned criteria were included in the study.Detailed history regarding the illness was recorded and thorough physical examination of all the systems was carried out. Appropriate laboratory and radiological investigations were done as required pertaining to each case.

All the patients who satisfy inclusion criteria are enrolled and were subjected to following investigations.

Mantoux Skin Test

0.1 ml of purified protein derivative – 5TU injected intradermally into the left forearm of the patients. The results are read at 48-72 hours later. Induration in the transverse axis is measured. Positive reactions indicate that the patients had been exposed to TB. Induration of more than 5 mm is indicative of TB infection in HIV infected patients.

Sputum for AFB

To diagnose pulmonary TB, sputum is examined form Acid fast bacilli using standard Ziehl Neelsen Staining method. Our hospital has Designated Microscopy Center (DMC) under RNTCP with well trained Lab technician every slide is examined under the microscope using 40 x objectives to select the suitable area of the slide and examine under the 100 x lenses using a drop of immersion oil for the characteristic acid fast bacilli. At least 100 oil immersion fields were examined before declaring a smear as negative. In case of the scanty result,another 100 oil immersion fields were examined.

Screening for HIV

Our hospital has a recognized ICTC centre where serum samples were screened for HIV after adequate counselling, using 3 different kits;

1) COMBAIDS, PAREEKSHAK (TRILINE), AIDSCAN (TRISPOT)
2) PAREEKSHAK HIV-1/2 TRILINE CARD TESTS
3) AIDSCAN HIV ½ TRISPOT TEST.

Patient is confirmed when the sample is positive in all three kits. These are all screening tests only.

CD4 Count

CD4 count was done using Flow Cytometry. Probes specific for various cell surface markers, such as CD3, CD4, and CD8.It is calculated in cells/μL.

Chest X-ray

Chest X-ray PA view and other views, if necessary computed tomographic scans of the chest were performed. Patients were assigned to one of two groups. Those with findings characteristic of reactivation or post-primary tuberculosis (typical pattern) or those with findings uncharacteristic of reactivation tuberculosis (atypical pattern). The criteria for the typical and atypical pattern were established prior to the interpretation of the radiographs. The atypical pattern included those subjects with lower and middle lobe opacities, anterior segment upper lobe opacities, mediastinal or hilaradenopathy, pleural effusions, diffuse opacities, interstitial nodules, or a normal chest radiograph. Typical reactivation or post-primary disease pattern included upper lobe opacities in the apical or posterior segments with or without cavitations [4]. Additional investigations like Pleural fluid analysis, FNAC of lymph nodes, HRCT chest if strongly indicated.

History, examination, investigation and diagnosis were recorded in the form of a proforma. The results were recorded and analyzed.

RESULTS

This prospective observational study was conducted on 100 patients suffering with HIV and TB in Government Chest Diseases and Tuberculosis Hospital, Hanamkonda. Statistical analysis was performed using statistical package for social sciences (SPSS version 17). Numerical data was entered as such, categorical data was appropriately coded. Descriptive measures obtained included frequencies, proportions, mean and standard deviation. Inferential statistics obtained included Chi Square test and P values for significance.

Table 1:Age distribution

AGE IN YEARS	PERCENTAGE
18-30	**29 %**
31-40	**51 %**
41-50	14 %
51-60	5 %
>60	1 %

Table 1 shows the age group in the study ranged from 20 to 65 with mean age 36.51, standard deviation ± 8.43932. More common age groups are 51% in 31-40 and 29% in 18-30.

Table 2: Age distribution with CD4 count

YEARS	CD4 ≤ 200		CD4 201-350		CD4 > 350	
	NUMBER	%	NUMBER	%	NUMBER	%
18-30	14	28 %	7	25 %	8	36.4 %
31-40	27	**54 %**	16	**57.1 %**	8	**36.4 %**
41-50	6	12 %	4	14.2%	4	18.2 %
51-60	4	8 %	1	3.6 %	0	0 %

Table: 2 Shows age distribution with CD4 count. 31 to 40 years is the commonest age at presentation. Chi Square =6.834 is not significant with P value = 0.55.

Table 3: Sex distribution

Sex	**Number of cases**	**Percentage**
Males	62	62
Females	38	38

Table 3 Shows in the present study, Males (62%) are more commonly affected with HIV with tuberculosis than Females (38%).

Table 4: CD4 count percentage

CD4 COUNT	NUMBER OF CASES	PERCENTAGE
≤200	50	50 %
201-350	28	28 %
> 350	22	22 %

Table 4 shows in these study 50 % patients belong to CD4 group ≤ 200

Table 5: Test percentage

INDURATION	**NUMBER OF CASES**	**PERCENTAGE**
≤ 5mm	36	36 %
6-10 mm	23	23 %
>10 mm	41	41 %

Table 5 shows in this study on Tuberculin testing, 41 % had induration >10mm, 36 % had induration of ≤ 5mm, 23 % had induration of 6-10 mm.

Table 6: sputum for AFB percentage

TYPE	**NUMBER OF CASES**	**PERCENTAGE**
POSITIVE	27	27 %
NEGATIVE	73	73 %

Table 6 Shows in this study majority of the patients(73%) had sputum for AFB negative.

Table 7: HIV types percentage

TYPE	**NUMBER OF CASES**	**PERCENTAGE**
1	97	97 %
2	1	1 %
1 AND 2	1	2 %

Table 7 Shows in this study majority of the patients(97%) had belong to HIV type 1.

Table 8:Radiological pattern with CD4 counts

CD4 COUNT	TOTAL	TYPICAL PATTERN		ATYPICAL PATTERN	
		NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
≤200	50	0	0 %	50	100 %
201-350	28	4	14.28 %	24	**85.71** %
>350	22	13	**59** %	9	40.9 %

Table 8 Shows atypical radiological pattern seen in all patients (100%) with CD4 ≤ 200, 85.71% % with CD4 201-350, typical in 59% with CD4 > 350. Fischer exact test Chi Square = 38.01, Significant with P value <0 .001.

Table 9: Radiological features with CD4 count

ATYPICAL PATTERN	**CD4≤ 200**		**CD4 201-350**		**CD4> 350**	
UNIFOCAL INFILTRATES	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
LEFT LOWER LOBE	2	4 %	0	0 %	0	0 %
RIGHT LOWER LOBE	3	6 %	1	3.6%	0	0 %
DIFFUSE INFILTRATES	7	14 %	0	0 %	1	4.54 %
BIL MID & LOWER ZONES	14	28 %	6	21.4%	0	0 %
MEDIASTINAL ADENOPATHY	2	4 %	0	0 %	0	0 %
MILIARY	3	6 %	1	3.6 %	0	0 %
PLEURAL EFFUSION	21	42 %	17	60.7 %	8	36.4 %
TYPICAL PATTERN	**CD4≤ 200**		**CD4 201-350**		**CD4> 350**	
UNILATERAL UZ INFILTRATES	0	0 %	1	3.6 %	2	9.09 %
BIL UZ CAVITY	0	0 %	2	7.2 %	3	13.36 %
BIAPICAL INFILTRATES	0	0 %	1	3.6 %	8	36.36 %

Table 9 Shows Pleural effusion is seen in majority 46 % patients in all 3 CD4 groups.

Table 10:Correlation of tuberculin test with CD4 count

CD4 COUNT	TOTAL	TUBERCULIN TEST INDURATION					
		≤ 5mm		6-10 mm		>10 mm	
		NUMBER	PERCENTAGE	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
≤200	50	33	**66** %	14	28 %	3	6 %
210-350	28	3	10.3 %	9	31 %	16	**55** %
>350	22	0	0 %	0	0 %	22	**100** %

Table 10 Shows Tuberculin test has induration of >10mm in 100 % patients with CD4>350, induration of ≤ 5mm in 66 % with CD4 ≤200 and 55% had induration of >10 mm in patients with CD4 range is 210-350. Chi Square = 67.41 significant result with P value < 0.001.

Table 11: Correlation of sputum for AFB with CD4 count

	SPUTUM FOR AFB				
	POSITIVE		NEGATIIVE		
CD4 COUNT	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE	TOTAL
CD4≤200	7	14%	43	**86**%	50
CD4 201-350	6	21.4%	22	**78**.5%	28
CD4 >350	13	**59**%	9	40.9%	22

Table 11 Shows Majority of Patients with CD4 counts <200 (86%) and CD4 count range of 201-350 (78.5%) are negative for Sputum AFB, while 59% of patients with CD4 count>350 are positive for Sputum AFB. Chi-square = 16.56, result is significant with P value =0.0002.

DISCUSSION

HIV and Tuberculosis, deadly duo is a major public health problem in developing countries of the world. TB is the most common opportunistic infection in HIV/AIDS patients [5, 6, 7]. TB and HIV fuel each other, hence untreated HIV - TB co infection further increases the morbidity and mortality. So early diagnosis is very necessary to prevent the morbidity and mortality. This study, documents the various clinical presentations of TB among HIV patients. The x-ray presentation, sputum for AFB, Tuberculin reactivity was analyzed. CD4 count was analyzed in HIV patients and compared with radiological presentations and Tuberculin test. Various studies show that even in HIV/AIDS pulmonary TB is the most common. It basically depends on the level of patient's immune suppression. When TB occurs in the earlier period of HIV infection, pulmonary TB is more common. When TB occurs late in the period HIV infection, i.e., after a significantly depressed CD4 count, extra pulmonary TB is more common. Sometimes both pulmonary and extra pulmonary TB may co-exist in the same patient.

A total of 100 patients, 62 males and 38 females diagnosed with HIV and Tuberculosis were taken into the study. According to National Sample Survey carried out between 1955-1957 (ICMR1958) prevalence of tuberculosis is lower in females than males and this is correlated with my study. Males are at higher risk for HIV/TB co infection [8], in a study [9]done in 2004 in Brazil, males are commonly affected with HIV. This is correlating with my study.

In the present study majority of the patients belongs to age group 31 – 40. Most of the patients are in reproductive age group. 80% of the patients are in age group between 18 -40 years. This shows that the sexually active and economically productive group of the population is most vulnerable to HIV/TB co infection [8].This indicates a trend of young and productive generation being affected; a reflection of the devastating effects India will face as the younger generation work force is affected.

Regarding sputum for AFB analysis, 27 out of 100 cases in HIV-TB, are smear positive for AFB. The 'P' value 0.0002 which is quite significant. In Brazil study [8, 9] most cases of HIV are sputum negative for AFB. This is correlating with my study. This is consistent with observation made out by Zumla Malon and Henderson et al [10]. Sputum smear negativity alone does not indicate absence of tuberculous infection. Ideally[11] these patients should be subjected to sputum culture and sensitivity. Even more bronchoscopy, BAL, Tran bronchial biopsy may be needed to provide microbiological confirmation. In limited resources settings, culture for AFB is not feasible. Moreover, the reason being less sputum smear positivity in HIV/TB is due to less cavity formation. The yield of AFB in HIV infected individuals becomes low due to excretion of fewer organisms per milliliter. This makes very difficult to confirm pulmonary tuberculosis in HIV positive individuals.

The most common clinical presentation was fever, cough, weakness and loss of weight [12]. This is comparable to the registry of AIDS at NACO which also shows fever, cough, and loss of weight as the commonest symptoms. It seems that HIV does not alter the classical symptoms of TB.

On analyzing the Radiographic pattern with CD4 count, it is very well noted that upper zone infiltration is common when the count >200 and when the count is <200 atypical presentation like mediastinal adenopathy, lower zone infiltration are common. This has significant 'P' value< 0.001. Various studies also proved this statement [13, 14, 15]. A study done in 2001 in Brazil, absence of cavity is very much significant in HIV positive cases which correlated with the present study [16]. In our study all the subjects with CD4≤200 and 85.71 % subjects with CD4 201-350, presented with atypical chest x-ray findings. These included lower zone infiltrations, diffuse bilateral extensive infiltration, miliary patterns, hilar lymphadenopathy and pleural effusion. This is consistent with other studies [17]. Cavitary lesions especially involving upper zones are rare to absent in various studies like Zumla Malon and Henderson et al [18] Decker CF and LazarusA et al. There are 4 cases of miliary mottling seen in the present study as compared to Sowmya Swaminathan *et al* TRC [19] who has noted 11 cases out of 78 HIV-TB.

The relationship between CD4 count and Monteux reading, sputum positivity, Chest x-ray findings were studied in our 100 HIV/TB co infected persons [20]. Regarding PPD reactivity by Monteux test the 'p' value is < 0.001, which is quite significant. The percentage of tuberculin testing positivity is 64%. This increased percentage of negativity (mantoux anergy) in group with low CD4 count is comparable to other studies [21]. Zumla Malon and Henderson et al also insisted negative TB is more common in HIV positive individuals. Mark FitzGerald, MD and Stan Houston, MD et al observed in his study and stated the false negative tuberculosis test are more likely in a HIV infected patients and is increasingly more common with increasing immuno suppression. 5mm induration following injection of tuberculin is taken as positive test

for TB in HIV infected individuals by Kothari et al [22]. Anergy was noted in CD4 + lymphocyte count of < 200 /µl. In present study, CD4 lymphocyte count of ≤ 200 cells/ µl was observed in 50 out of 100 co infected persons. This is consistent with the study done by Alpert et. al [23].

CONCLUSION

Pulmonary tuberculosis is more commonly seen in HIV infected individuals, in third and fourth decade. Males are commonly affected than females. The most common symptoms observed were fever, cough and loss of weight. Tuberculosis can occur at any level of depletions of CD4 count but when the CD4 count level is grossly low, extra pulmonary TB is more common.

There is increased incidence of mantoux anergy, sputum negativity; atypical chest x-ray findings were noted in HIV positive individuals especially in the lower CD4+ count. The risk of acquiring pulmonary tuberculosis is greater in HIV positive person than the general population.

Prompt diagnosis and timely administration of ATT and ART therapy results in effective cure of pulmonary TB in HIV positive individuals. Unless properly managed, the negative synergy between TB and HIVthreatens to become a major public health problem in future. Fortunately effective interventions are available for both; however integration of these interventions in clinical care and programs is critical.

Seropositive tuberculosis patients commonly present with weight loss. On examination; under nourishment, skin infection, are quite common. Radiologically bilateral involvement and atypical features are hallmarks of a dual infection.Sputum positivity is less common in seropositive patients. But sputum negativity does not exclude tuberculosis.

Furthermore, the reliability of Tuberculin testing in the management of Tuberculosis is debatable. However it cannot be excluded as a diagnostic parameter because in the few cases positive Mantoux test is seen, this positive test may help to clinch the diagnosis.

Clinical features, Radiological features and Tuberculin test are correlating well with immunological status of HIV in the present study.

Efficient cross referral between DOTS and ICTC is recommended for early diagnosis of HIV-TB co infection. As TB is the most common opportunistic infection in HIV patients, High index of suspicion of TB is needed in all HIV patients.

Hence, taking all these into consideration clinicians should maintain a high index of suspicion and it is imperative to have a thorough understanding of the interaction between these two diseases.

Due to financial constraints, investigations like culture for AFB and DST could not be done, which would have improved the efficacy in diagnosis of Tuberculosis in the study and also to rule out drug resistant Tuberculosis. Further cross sectional studies with more number of patients are needed to understand the varied clinical and pathological manifestations of Tuberculosis in HIV patients with different levels of CD4 counts which may help in early diagnosis and management of this deadly duo of TB and HIV.

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Appendix.

Patient ID Number	AGE	SEX	SYMPTOMS	SIGNS	HIV TYPE	RADIOLOGY	SPUTUM	CD4	TUBERCULIN TEST
01	25	M	C,B,F,WL	OT	1	Diffuse infiltrates(atypical)	Negative	198	6mm
02	50	M	B,WL,AL	SI,P	1	Rtpl effusion(atypical)	Negative	150	4mm
03	35	M	B,WL,AL	SI,P	1	Rtpl effusion(atypical)	Negative	145	3mm
04	40	M	B,F,C	LN	1	Diffuse infiltrates(atypical)	Negative	62	0mm
05	35	M	C,B,F,WL	OT	1	Lt pl effusion(atypical)	Negative	104	4mm
06	29	M	B,F,CP	P	1	Lt pl effusion(atypical)	Negative	114	4mm
07	40	M	B,F,CP	SI,P	1	Bilpl effusion(atypical)	Negative	38	0mm
08	45	M	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Negative	188	7mm
09	35	M	C,B,F,WL	SI,P	1	Bil UL cavities(typical)	Positive	270	8mm
10	50	M	B,F,CP	P	1	Rtpl effusion(atypical)	Negative	257	6mm
11	35	M	B,F,CP,WL	OT	1	Lt pl effusion(atypical)	Negative	220	5mm
12	38	M	WL,AL,F	P	1	Bilinf,Lt UZ cavity(typical)	Positive	390	12mm
13	45	M	B,CP,WL	SI,P	1 and 2	Lt pl effusion(atypical)	Negative	320	10mm
14	38	M	C,B,F,WL	P	1	Bilinf,Lt UZ cavity(typical)	Positive	365	14mm
15	38	M	B,CP,WL		1	Rtpl effusion(atypical)	Negative	280	8mm
16	30	M	C,B,F,WL	SI,P	1	Miliary mottling(atypical)	Negative	54	0mm
17	35	M	C,B,F,WL	OT	1	Bil LZ Consolidation (atypical)	Negative	156	0mm
18	35	F	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Negative	100	0mm
19	40	F	B,CP,WL	P,SI	1	Lt pl effusion(atypical)	Negative	34	0mm
20	48	M	C,B,F,WL	P	1	Bil UZ Cavities(typical)	Positive	410	15mm
21	45	F	C,B,F,WL	P	1	Lt pl effusion(atypical)	Negative	200	0mm
22	37	M	B,CP,WL		1	Rtpl effusion(atypical)	Negative	172	12mm
23	51	M	B,CP,WL	SI,P	1	Lt pl effusion(atypical)	Negative	165	5mm
24	35	M	B,CP,WL	SI,P	1	Bilpl effusion(atypical)	Negative	25	0mm

25	40	F	C,B,F,WL	P	1	Rtpl effusion(atypical)	Negative	68	0mm
26	65	M	C,B,F,WL	OT	1	Bil MZ, LZ infiltrates (atypical)	Negative	233	0mm
27	45	F	B,CP,WL	P	1	Lt pl effusion(atypical)	Negative	68	0mm
28	45	F	C,B,F,WL	P	1	Bil UZ infiltrates(typical)	Negative	638	15mm
29	25	F	C,B,F,WL	P	1	Bil LZ infiltrates(atypical)	Negative	150	6mm
30	50	M	B,CP,WL		1	Lt UZ infiltrates(typical)	Positive	400	12mm
31	40	F	C,B,F,WL	P	1	Lt pl effusion ,infil(atypical)	Positive	180	8mm
32	32	F	B,CP,WL	SI,P	1	Lt pl effusion(atypical)	Negative	328	12mm
33	40	F	C,B,F,WL	OT	1	Rtpleffusion, infil(atypical)	Negative	18	0mm
34	24	F	C,B,F,WL	P	1	Bil LZ Consolidation (atypical)	Negative	51	0mm
35	33	F	C,B,F,WL	SI,P	1	Rtpl effusion(atypical)	Negative	119	5mm
36	39	F	C,B,F,WL	P	1	Rt LZ Consolidation (atypical)	Positive	193	5mm
37	34	M	C,B,F,WL		1	Rt LZ Consolidation (atypical)	Negative	206	7mm
38	30	F	C,B,F,WL	SI,P	1	Bil UZ Consolidation (typical)	Positive	360	12mm
39	22	F	C,B,F,WL	P	1	Bil UZ cavities,infil(typical)	Positive	410	18mm
40	27	F	B,CP,WL	P	1	Lt pl effusion(atypical)	Negative	237	12mm
41	30	F	C,B,F,WL	SI,P	1	Bil LZ infiltrates(atypical)	Negative	154	5mm
42	20	M	B,CP,WL		1	Lt pl effusion(atypical)	Negative	87	0mm
43	53	F	C,B,F,WL	P,OT	2	Bil LZ infiltrates(atypical)	Negative	54	0mm
44	36	M	B,WL,AL	P	1	Diffuse infiltrates(atypical)	Negative	36	0mm
45	25	F	C,B,F,WL	P	1	Lt LZ consolidation (atypical)	Negative	80	0mm
46	30	M	B,CP,WL	OT,P	1	Lt pl effusion(atypical)	Negative	215	12mm
47	30	F	C,B,F,WL	p	1	Bil UZ infiltrates(typical)	Positive	360	15mm
48	25	F	B,CP,WL	P	1	Rtpl effusion(atypical)	Negative	323	10mm
49	39	M	C,B,F,WL	P	1	Bil UZ cavities,infil(typical)	Positive	494	20mm
50	32	M	B,CP,WL	P	1	Rt UZ infiltrates(typical)	Negative	475	18mm
51	28	M	C,B,F,WL		1	Bil UZ infiladenopathy (atypical)	Positive	399	20mm
52	52	M	C,B,F,WL	P	1	Bil LZ Consolidation(atypical)	Negative	217	18mm
53	35	M	C,B,F,WL	P	1	Rtpl effusion(atypical)	Negative	30	0mm
54	40	M	B,CP,WL	SI,P	1	Rtpl effusion(atypical)	Negative	240	15mm
55	40	M	C,B,F,WL	OT,SI	1	Bil LZ Consolidation (atypical)	Negative	38	0mm
56	28	F	B,CP,WL	P	1	Lt pl effusion(atypical)	Negative	161	10mm
57	35	F	C,B,F,WL	P,SI	1	Rtpl effusion ,infil(atypical)	Negative	118	7mm
58	36	M	C,B,F,WL	p	1	Bil UZ infiltrates(typical)	Negative	358	12mm
59	45	M	B,CP,WL	SI,P	1	Lt pl effusion(atypical)	Negative	320	10mm
60	35	M	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Positive	77	0mm
61	36	F	C,B,F,WL	SI,P	1	Bil LZ infiltrates(atypical)	Negative	139	10mm
62	25	M	C,B,F,WL		1	Bil MZ LZ infiltrates (atypical)	Positive	344	15mm
63	35	M	B,CP,WL	p	1	Lt pl effusion(atypical)	Negative	511	25mm
64	40	M	B,CP,WL	P	1	Bil MZ, LZ consolidation (atypical)	Negative	53	0mm
65	28	F	C,B,F,WL	P,SI	1	Rtpl effusion(atypical)	Negative	308	17mm
66	27	F	C,B,F,WL	P,SI	1	Lt pl effusion(atypical)	Negative	415	20mm
67	38	M	C,B,F,WL	OT	1	Rt LZ Consolidation (atypical)	Negative	193	10mm
68	38	F	C,B,F,WL	P	1	Miliarymottling,LN (atypical)	Negative	295	17mm
69	20	M	B,CP,WL	P	1	Lt pl effusion(atypical)	Negative	368	12mm
70	32	F	C,B,F,WL	SI,P	1	Lt pl effusion(atypical)	Negative	416	17mm
71	40	F	C,B,F,WL	SI,P	1	Rtplefusion(atypical)	Negative	309	25mm
72	24	M	B,CP,WL	OT	1	Bilpl effusion(atypical)	Negative	261	15mm
73	32	F	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Negative	167	10mm
74	46	F	C,B,F,WL	P	1	Lt LZ consolidation (atypical)	Negative	138	14mm
75	29	M	B,CP,WL	P	1	Lt pl effusion (atypical)	Negative	224	25mm
76	30	F	C,B,F,WL	P,SI	1	Rt MZ,LZ Consolidation(atypical)	Positive	169	12mm
77	39	F	C,B,F,WL	P	1	Bil MZ,LZ infiltrates (atypical)	Negative	224	12mm
78	27	M	C,B,F,WL	P	1	Bil UZ infiltrates(typical)	Positive	504	20mm
79	37	M	B,CP,WL		1	Rtpl effusion(atypical)	Negative	286	10mm
80	30	F	B,CP,WL	OT	1	Bilpl effusion(atypical)	Negative	22	0mm
81	55	F	C,B,F,WL	SI,P	1 and 2	Bil LZ infiltrates(atypical)	Positive	108	8mm
82	40	F	C,B,F,WL	P	1	Bil LZ Consolidation (atypical)	Negative	16	0mm
83	30	M	C,B,F,WL	SI,P	1	Miliary mottling(atypical)	Positive	68	0mm
84	40	M	C,B,F,WL	P	1	Bil LZ infiltrates(atypical)	Positive	312	20mm
85	44	M	C,B,F,WL	P	1	Rtpl effusion ,infil(atypical)	Positive	380	22mm
86	26	F	B,CP,WL	P	1	Lt pl effusion(atypical)	Negative	486	20mm
87	45	M	C,B,F,WL	SI,P	1	Rt LZ Consolidation (atypical)	Negative	172	8mm
88	35	M	B,LA,WL		1	Rt UZ cavity ,Bilinfil (typical)	Positive	332	14mm
89	36	M	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Positive	220	8mm
90	40	F	C,B,F,WL	P,OT	1	Lt pleffusion,infil(atypical)	Negative	280	0mm
91	40	M	C,B,F,WL	SI,P	1	RtUlcavity ,infiltrates(typical)	Positive	804	25mm
92	25	M	C,B,F,WL	P	1	Miliary mottling(atypical)	Positive	180	8mm

93	35	M	C,B,F,WL	P	1	Lt pl effusion(atypical)	Negative	230	10mm
94	40	M	C,B,F,WL	SI,P	1	Bil LZ infiltrates(atypical)	Negative	42	0mm
95	50	M	C,B,F,WL	0T	1	Bil UZ Cavities(typical)	Positive	215	12mm
96	55	M	B,CP,WL		1	Lt pl effusion(atypical)	Negative	64	0mm
97	37	M	C,B,F,WL	P	1	Diffuse infiltrates(atypical)	Positive	372	14mm
98	29	M	C,B,F,WL	SI,P	1	Bil LZ Consolidation (atypical)	Negative	173	8mm
99	39	M	C,B,F,WL		1	RtUz infiltrates(typical)	Positive	291	15mm
100	38	M	C,B,F,WL	P,OT	1	Bil LZ infiltrates(atypical)	Negative	132	8mm