53. Tuberculin skin tests, interferon-gamma release assays and beyond

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The specificity of a new skin test – Diaskintest (recombinant protein CFP10-ESAT6) in patients with sarcoidosis and non-tuberculous pulmonary diseases

Natalya Makarova[1], Ludmila Slogotskaya[1], Elena Kupavtseva[2], Sergey Borisov[1]. *[1]Diagnostic Clinical Research, Scientific and Clinical Anti-Tuberculosis Center, Moscow, Russian Federation; [2]Phthisiopulmonology Research Institute, I.M. Sechenovs Medical University, Moscow, Russian Federation*

Background: DIASKINTEST (DST) is a recombinant protein combination of CFP10-ESAT6 for intradermal injection and does not cause delayed-type hypersensitivity reactions in the BCG vaccinated.
Objectives and methods: We have used DST intradermally in a dose of 0.2 mg in 0.1 ml in 179 patients aged 18-69 yrs.: 62 patients with morphologically identified sarcoidosis, 11 active tuberculosis (TB) patients and 106 patients with other nonspecific inflammatory lung diseases. In 72 hours we measured the diameter of induration and hyperemia in mm. Positive response is evaluated as an any size induration, negative - no induration and hyperemia
Results: Among sarcoidosis patients we saw no reaction to DST – the negative results were in all 62 cases, and specificity of DST in this group was 100% [95%CI 99.9%-100%]. In 106 patients with nontuberculous inflammatory lung diseases we had 8 positive result (2 patients with asthma, 2 with nonspecific pneumonia, 2 with lung cancer, 2 with COPD); specificity of the method in this group was 92,5% [95%CI 87.4-97.5%]. 2 of 11 TB patients had negative response to DST (1 patient with TB and hepatitis C and 1 with TB and alcoholism), so sensitivity is 81,8% for TB cases [95%CI 58.9%-100%]. In our previous research we had similar results using IFN-g release assay (IGRA) in response of blood cells to ESAT-6 ex vivo, but in the clinical practice we see that the IGRA is more laborious method.
Conclusion: DST has high specificity in sarcoidosis patients and in patients with other nonspecific inflammatory lung diseases. DST may be used as an additional test for the differential diagnosis with TB in unclear cases.

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DIASKINTEST as a screening metod at the mass child health examination for tuberculosis in Russia

Valentina Aksenova. *Institute of Phthisiopulmonology, Moscow Medical Academy of I.M. Sechenov, Moscow, Russian Federation*

The Russian Federation has developed a new efficient method for the detection of initial tuberculosis presentation, DIASKINTEST, which is a combination of two antigens, present in the virulent strains of Koch's bacilli and absent in the BCG vaccine strain and strains of other nonpathogenic mycobacteria.
The purpose of research is the study of the efficient usage of current diagnostic program as an alternative to the open patch test with PPDL (PPD test with 2 TE) in conditions of screening programs for tuberculosis.
Children and teenagers, school and college students are divided into two groups by the method of total single-step survey. The first group comprises of children (aged 7-14) in the quantity of 816 individuals, the second group comprises of teenagers (15-17 years) in the quantity of 422 individuals. Over 44% of children and teenagers had a positive take to PPDL. All children (in the quantity of 1238 individuals) were examined via DIASKINTEST. Only 4% of them revealed positive reactions to it. 7 patients showed the activity of local tuberculous changes during the X-ray examination. Thus, detection of local tuberculosis at the examination of all schoolchildren and teenagers with the help of DIASKINTEST made 0,56%.
Conclusion: The implementation of a new method of tuberculosis diagnostics as a screening method of examination of children and teenagers in the medical practice, which possesses a high specificity owing to the use of secretory proteins ESAT-6 and CFP-10 and its easy test version will allow to enhance the efficiency of tuberculous infection diagnosis, reduce unnecessary expenses and improve the overall epidemic situation on tuberculosis.

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Differential diagnosis of outpatient pneumonia and infiltrative pulmonary tuberculosis by the Diaskintest®

Boris Borodulin, Elena Borodulina, Olga Kozlova, Ludmila Povalyaeva. *Phthisiology, Samara State Medical University, Samara, Russian Federation*

The purpose of this study was to investigate the possibility of differential diagnosis of infiltrative pulmonary tuberculosis and pneumonia with the use of traditional diagnostic set minimum and the Diaskintest in pulmonary center. The study involved 86 patients with suspected tuberculosis. Of these, 10 patients gave a positive result on the Diaskintest, and then activity of tuberculosis process was confirmed in a tuberculosis dispensary. The rest of the inclusion group and the of a comparison group with the classical outpatient pneumonia (52 patients) was negative result on the Diaskintest, antiphlogistic and antibacterial treatment had a positive effect. It is concluded that the Diaskintest may be a marker to identify active tuberculosis in the differential diagnosis of outpatient pneumonia.

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The role of two stage tuberculin skin test in screening of household contacts

Rashid Rifat, Claire Peplow, Khan Sadiqullah, Heinke Kunst. *Respiratory Medicine, Heart of England NHS Trust, Birmingham, United Kingdom Respiratory Medicine, Heart of England NHS Trust, Heart of England NHS Trust, United Kingdom Respiratory Medicine, Heart of England NHS Trust, Birmingham, United Kingdom Respiratory Medicine, Heart of England NHS Trust, Birmingham, United States*

Rationale: The role of two stage tuberculin skin test (TST) of persons who have had close contact with a case of smear-or culture positive pulmonary tuberculosis TB (PTB) is unclear. A booster phenomenon with TST may occur and therefore screening with TST in a two stage approach may not be ideal [1].
Methods: We conducted a prospective study including consecutive household contacts of patients with active PTB between Jan 2010 and Jan 2011. All contacts below the age of 35 years of age were interviewed and screened by TST. If the TST was below 6mm, contacts were asked to return for a second TST six weeks later. TST conversion was defined as a TST of greater than 6mm or a 5mm increase of the initial TST. Interferon Gamma Recptor Assay (IGRA), (T-spot test) was performed on those that had TST conversion to evaluate the booster phenomenon.
Results: Out of 589 adult and peadiatric contacts screened who had an initial TST of less than 6 mm, 189 contacts did not attend for a second TST. A total of 406 had TST performed. 344 contacts attended and did not show TST conversion and were therefore discharged. 68 contacts underwent TST conversion of whom 43 had an IGRA. Out of 43 contacts, 6 had a positive IGRA, 7 out of 43 were indeterminate and 30 were negative. Indeterminate and negative IGRA results were more common in children than in adults.
Conclusion: A two stage approach of TST may cause a booster effect and therefore should be confirmed by IGRA.
Reference:

[1] Menzies D. Interpretation of repeated tuberculin tests. Boosting, conversion, and reversion. *Am.J.Respir.Crit Care Med.* 1999;159:15-21.

P298

Variables responsible for tuberculin positivity of household contacts of sputum positive TB cases

Anishkumar Khan, Tushar Sahasrabudhe. *Department of Pulmonary Medicine, Padmashree Dr. D.Y.Patil Medical College, Pune, Maharashtra, India*

In high TB endemic countries such as India, chemoprophylaxis is routinely offered only to contacts below 6 years of age. The possibility however remains that the index case may have transmitted the infection to other family members before the diagnosis of the disease. We evaluated this in the context of Indian patients. We did a cross sectional study of household contacts of the sputum positive TB patients diagnosed from our center that had no other index case at home in present or in the past. The contacts were tested for tuberculosis infection using 5 TU PPD (Purified Protein Derivative) immediately after the diagnosis of the index case. An induration of more than 10 mm was taken as a positive result. A total of 179 household contacts of 50 index cases were evaluated. 85/179 (47.48%) were tuberculin positive. 6/23 (26.08%) contacts below 6 years of age were infected. 31/44 spouses (70.45%) were tuberculin positive as against 39/87 (44.82%) first degree relatives and 15/48 (31.25%) second degree relatives. 61/112 (54.46%) contacts sharing same bedroom were infected as against 24/67 (35.82%) not sharing the bedroom. The prevalence of infection of contacts correlated with the grade of sputum positivity of the index case. The variables that did not show any statistically significant correlation were presence of lung cavity, hemoptysis, literacy level and gender. This study suggests the need for offering chemoprophylaxis to the contacts sharing bedroom including spouses in addition to contact children below 6 years of age.

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Tuberculin skin test size and risk of tuberculosis: A 12-year follow-up of contacts of TB cases

Onofre Morán-Mendoza[1], Mark FitzGerald[2], Kevin Elwood[2], David Patrick[2]. *[1]Medicine, Queen's University, Kingston, ON, Canada; [2]Medicine, University of British Columbia, Vancouver, BC, Canada*

Background: There are no long-term cohort studies assessing the risk of developing active TB according to the tuberculin skin test size in contacts of TB cases who did not receive treatment for latent TB infection (LTBI).
Objective: To assess the risk of TB – according to the tuberculin skin test (TST) size in contacts of active TB cases who did not receive LTBI treatment.
Methods: This is a population-based retrospective cohort study of contacts of active TB cases recorded in British Columbia, Canada. We estimated the up to 12-year risk of developing TB for infected and non-infected contacts, -according to tuberculin skin test size- using incidence rates. Contacts with HIV infection or with previous TB were excluded.
Results: Among 26,542 contacts, 180 individuals developed TB (tuberculosis rate 678/100,000). Non-infected Household contacts (tuberculin skin test size 0-4 mm) had a TB rate of 1,014/100,000; those with a TST of 5-9 mm a TB rate of 2,162/100,000; and those with 10-14 mm a rate of 4,478/100,000.
Non-infected Close non-household contacts had a TB rate of 222/100,000; those with a TST of 5-9 mm a TB rate of 296/100,000 and those with 10-14 mm a rate of 1,821/100,000.
Non-infected Casual contacts had a TB rate of 83/100,000; those with a TST of 5-9 mm a TB rate of 204/100,000 and those with 10-14 mm a rate of 860/100,000.
Conclusion: The risk of TB increases with TST size in all contacts; especially with close contacts. TB risk is high for all household contacts, including those considered non-infected. The risk of TB in non-household contacts is significant only when the TST is >10 mm.

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Comparative study of the usefulness of TST and three interferon-gamma release assays (IGRAs) for the differential diagnosis of pulmonary tuberculosis

Yoshihiro Kobashi, Masaaki Abe, Keiji Mouri, Yasushi Obase,
Naoyuki Miyashita, Mikio Oka. *Division of Respiratory Diseases, Department of Medicine, Kawasaki Medical School, Kurashiki, Okayama, Japan*

Objective: We compared the usefulness of tuberculin skin test (TST) and three interferon-gamma release assays (IGRAs) (QuantiFERON-TB Gold (QFT-2G), QuantiFERON-TB Gold In-tube (QFT-3G), T-SPOT.TB) as the supportive method of diagnosing pulmonary tuberculosis (TB).
Methods: The subjects were 70 patients who required the differentiation of pulmonary TB clinically. The final clinical diagnosis of pulmonary TB in 22 patients and non-pulmonary TB disease in 48 patients was established by clinical specimens.
Results: In 22 patients with pulmonary TB, the positive response rate was 60% on TST, 80% on QFT-2G, 85% on QFT-3G and 95% on T-SPOT.TB. In 48 patients with non-pulmonary TB disease, the positive response rate was 47% on TST, 9% on QFT-2G, 9% on QFT-3G, 13% on T-SPOT.TB. Indeterminate results on three IGRAs were recognized in one patient each on QFT-2G and QFT-3G among patients with pulmonary TB in three patients on QFT-2G and two patients on QFT-3G among patients with non-pulmonary TB disease. However, there were no indeterminate results on T-SPOT.TB in either patient group. Patients with false-negative or indeterminate results on IGRAs had severe underlying diseases or were receiving immunosuppressive treatments.
Conclusions: T-SPOT.TB provided the best positive response rate for patients with pulmonary TB among three IGRAs, although T-SPOT.TB may have problems in the specificity of diagnosing TB disease. Therefore, we think it is important to perform T-SPOT.TB in combination with QFT to elevate the sensitivity of the diagnosis of TB disease based on the findings in this study.

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Comparison between tuberculin skin testing and QuantiFERON Gold-In Tube for detection of latent tuberculosis in rheumatoid arthritis patients in a TB endemic population

Adriana Socaci[1], Gheorghe Nini[2], Erdin Borgazi[3], Voicu Tudorache[1]. *[1]Dept. of Pneumology, Clinical Hospital "Dr.V Babes", Timisoara, Romania; [2]Dept. of Pneumology, West University "Dr.V Babes", Arad, Romania; [3]Dept. of Pneumology, Clinical Hospital Pneumophtysiology, Constanta, Romania*

Introduction: The purified protein derivative (PPD) skin test is the only widely used method which detects latent tuberculosis infection (LTBI) and is dependent on a normal T cell function. In rheumatoid arthritis (RA) the T cell function is altered, which may result in an inability to develop an adequate PPD reaction. Interferon gamma release tests (IGRA) are now available alternatives to tuberculin skin test (TST) to detect LTBI.
Aims: This study compared QuantiFERON-TB Gold In-Tube (QFT-IT) with the TST for the detection of latent tuberculosis infection among patients with RA in an area with a high prevalence of tuberculosis (138%000), where BCG vaccination is mandatory.
Methods: A prospective study of patients with received the TST and an IGRA, the QFT-IT, at Pneumophtysiology Ambulatory, Clinical Hospital "Dr.V Babes", Timisoara, from July 2009-December 2010.
Results: Of 194 patients who underwent TST and QFT-IT testing, 101 (52%) had RA. Significantly fewer controls than RA patients had positive TST results (26.7% vs. 65.6%, p <0.001), whereas the percentage of positive QFT-IT results was comparable for both groups (44.5% vs. 59.1%, p 0.054). Indeterminate QFT-IT results were found in two (1.9%) RA patients. QFT-IT has 2-times greater sensitivity than TST, but positive QFT results in older RA patients compared with controls was reduced (40% vs 71%).
Conclusion: In a TB endemic population, the QFT-IT assay seemed to be a more accurate test for detection of LTBI in RA patients compared with the TST, and may potentially improve the targeting of prophylactic therapy before treatment with anti-TNF agents.

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IGRA and TST predictive value in immunocompetent close contacts

Teresa Gomes[1,2], Sérgio Campainha[1,3], Aurora Carvalho[1,3], Raquel Duarte[1,3,4]. *[1]Pulmonary Diagnostic Center, Vila Nova de Gaia, Portugal; [2]Pulmonology, Centro Hospitalar de Trás-os-Montes e Alto Douro, Vila Real, Portugal; [3]Pulmonology, Centro Hospitalar de Vila Nova de Gaia/Espinho, EPE, Vila Nova de Gaia, Portugal; [4]Epidemiology Department, Medicine Faculty of Oporto University, Oporto, Portugal*

Background: Limited data is available on the predictive values of Interferon-g release assays (IGRAs) and tuberculin skin test (TST) for progression to active tuberculosis (TB).
Aim: To access the positive and negative predictive values (PPV and NPV) of IGRA and TST for progression to TB disease, in recently exposed immunocompetents of positive smear sputum TB patients who did not do preventive treatment.
Methodology: Retrospective cohort of close contacts of smear-positive TB cases screened for TB from January 2007 to December 2009 – follow up until February 2011. Screening included: symptom inquiry, TST and IGRA (to confirm a positive TST ≥ 10 mm), chest radiography – negative results were re-evaluated 8-12 weeks later.
Results: 106 contacts were studied. Considering only those who did not do preventive therapy (79) - 70 tested positive for TST and 19 tested positive for IGRA (54 were already positive for TST and 16 were positive for IGRA in the first evaluation). Three contacts developed active TB: one positive for TST and IGRA at first evaluation (refused preventive treatment) and two (TST+/IGRA-) missed revaluation.
In the first evaluation, TST presented a PPV of 5.7% and a NPV of 100%; IGRA presented a PPV of 5.3% and a NPV of 96.1%. In the second evaluation, both TST and IGRA had a PPV of 0% and a NPV of 100%.
Conclusions: TST and IGRA had a better PPV for progression to TB in the initial evaluation (after index case diagnosis). A negative IGRA in the first evaluation could not exclude progression to TB.

P303

QFT-GIT vs TST in diagnosis of latent tuberculosis infection (LTBI) in Poland

Katarzyna Kruczak, Marek Sanak, Ewa Nizankowska-Mogilnicka. *Department of Pulmonary Diseases, Jagiellonian Unversity School of Medicine, Cracow, Poland*

Introduction: Poland is characterized by medium prevalence of tuberculosis (21,6/100 000) in 2009. The diagnosis of LTBI is difficult due to obligatory multiple revaccination in the past as well as low specificity of tuberculin skin test. So far IGRA tests were rarely done in Poland.

Aim: To asses the prevalence of LTBI in the risk groups: 1. homeless, 2. close contacts, 3. casual contacts, 4. nursing home pensioners, 5. random population subjects from Krakow (controls) by QFT-GIT and TST, to compare the agreement and kappa of these tests at 5, 10, 15 mm of TST cut-off and to establish the best TST cut-off for the diagnosis of LTBI.
Material and methods: From July 2007 to October 2009 QFT-GIT test was performed in 785 subjects: in group 1 (n = 150); 2 (n = 171); 3 (n = 163); 4 (n = 152); 5 (n = 149) and TST was carried out in: 129, 156, 147, 148 and 121 subjects respectively. In each group the agreement and kappa coefficient between QFT-GIT and TST at 5, 10, 15 mm of TST diameter was analyzed.
Results: We observed high prevalence of LTBI in relevant studied groups: 37%, 27%, 25%, 21% and 23% by QFT-GIT and by TST: 56%, 47%, 48%, 43%, 48% respectively. Agreement and kappa at 5, 10, 15 mm of TST cut-off in each group were: in group *1:* 58,7% (0,26); 60,7% (0,34); 75,4% (0,45); *2:* 55,8% (0,20); 73,0% (0,29); 73,4% (0,32); *3:* 53,7% (0,19); 75,0% (0,30); 76,1% (0,40); *4:* 64,0% (0,29); 78,8% (0,36); 79,0% (0,45); and in group *5:* 55,8% (0,20); 60,9% (0,24); 70,0% (0,23).
Conclusions: TST was characterized by lower diagnostic value in Polish population vaccinated and revaccinated with BCG but TST cut-off 15 mm and more should be considered for diagnosis of LTBI bacause of highest agreement with QFT-GIT.

P304
Indeterminate IGRA results in routine practice
Peter Kewin[1], Teresa Inkster[2], Brian Choo-Kang[3]. *[1]Respiratory Medicine, Southern General Hospital, [2]Microbiology, Western Infirmary, [3]Respiratory Medicine, Glasgow Royal Infirmary, Glasgow, United Kingdom*

Introduction: Interferon γ release assays (IGRAs) are used in the diagnosis of latent TB, but up to 6.1% yield an indeterminate test result (ITR; Diel Chest 2009). IGRAs are not currently used for diagnosis of active TB (Sester ERJ 2011). We determined the indications for T-Spot.TB and frequency of ITRs in our routine practice.
Methods: Patient records were reviewed for all T-Spot.TB tests performed in Glasgow (May 07 - June 08). Data was collected on patient demographics, clinical assessment, reasons for request and final diagnosis.
Results: T-Spot.TB was performed on 303 patients (see table 1). The rate of ITRs on first testing was 55/303 (18.2%). Almost half were performed for active TB (45%), and symptoms suggestive of active TB increased the likelihood of ITRs. Frequency of ITRs varied between hospital (2-34%) and specialty (0-40%) (data not shown). Female sex, Asian race, ex or non-smoking status, excess alcohol and age >75 favoured an ITR. Immunosuppressive drugs had no effect, although patients with ITR had a slightly lower lymphocyte count. Of the 26 tests repeated, 14 were negative, 6 positive and 6 ITR. Overall 35/303 (11.5%) of patients had an ITR. On follow up 31/35 had no TB, and 4/35 latent, presumed clinical or confirmed TB.
Conclusions: ITRs were more common than in other studies, and may be influenced by patient factors and system failures. Inappropriate testing was common and may be minimised by further educating staff requesting and performing tests.

Table 1

		Indeterminate	Negative	Positive	Total
Total		55	181	67	303
Indication	None given	11	28	4	43 (14%)
	Latent TB	18	85	20	123 (41%)
	Active TB	27	68	42	137 (45%)
Symptoms	No	16	80	23	119
	Yes	39	101	44	184
Radiology	None	1	9	3	13
	Normal	18	89	22	129
	TB mentioned	9	22	29	60
	Other	27	61	13	101
Age	Mean ± SEM	61.3 ± 2.4	54.8 ± 1.11	59.7 ± 2.48	
	<75	40	166	50	256
	>75	15	15	17	47
Sex	Male	18	75	38	131
	Female	37	106	29	172
Race	White	47	169	47	263
	Asian	8	10	12	30
	Black	0	1	8	9
	DK	0	1	0	1
Smoking	Current	5	41	17	63
	Ex	8	21	10	39
	Never	19	56	22	97
	DK	23	63	18	104
Alcohol	XS	6	8	5	19
	Social	9	52	15	76
	None	11	36	26	73
	DK	28	85	21	132
Immunosuppression	Condition	0	3	0	3
	Drugs	24	88	23	135
	None	31	90	44	165
Lymphocyte counts	Mean ± SEM	1.43 ± 0.11	1.87 ± 0.07	1.64 ± 0.11	
Initial Results	Total	55	181	67	303
Initial Outcome	No TB	48	21	174	243
	Latent TB	3	23	3	29
	Clinical TB	3	11	4	18
	Culture TB	0	12	0	12
	Histological TB	1	0	0	1
Repeat	No repeat	29			
	Indeterminate	6			
	Negative	14			
	Positive	6			
Final results	Total	35	195	73	303
Final Outcome	No TB	31	185	27	250
	Latent TB	2	4	23	29
	Clinical TB	1	6	11	11
	Culture TB	0	0	12	12
	Histological TB	1	0	0	1

P305
Detection of IFN-γ responses for diagnosis of tuberculosis infection in chronic inflammatory disease patients
Irene Latorre[1,5,6], Sonia Minguez[2], Marta Vilavella[3], Jessica Diez[1], Jose Manuel Carrascosa[3,5], Cristina Prat[1,5,6], Lourdes Mateo[2], Eugeni Domenech[4,7], Vicente Ausina[1,5,6], Carlos Ferrandiz[3,5], Jose Dominguez[1,5,6]. *[1]Servei Microbiologia, Hospital Universitari Germans Trias i Pujol, Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Badalona, Barcelona, Spain; [2]Servei Reumatologia, Hospital Universitari Germans Trias i Pujol, Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Badalona, Barcelona, Spain; [3]Servei Dermatologia, Hospital Universitari Germans Trias i Pujol, Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Badalona, Barcelona, Spain; [4]Servei Digestiu, Hospital Universitari Germans Trias i Pujol, Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Badalona, Barcelona, Spain; [5]Universitat Autonoma de Barcelona, Bellaterra, Spain; [6]CIBER Enfermedades Respiratorias, Instituto de Salud Carlos III, Badalona, Barcelona, Spain; [7]CIBER Enfermedades Hepáticas y Digestivas, Instituto de Salud Carlos III, Badalona, Barcelona, Spain*

Objective: Determine IFN-γ responses for latent tuberculosis infection (LTBI) diagnosis in chronic inflammatory disease patients.
Material and methods: 89 chronic inflammatory disease patients were classified in 3 groups. *Group 1:* 53 patients with rheumatic diseases scheduled for anti-TNF-α treatment. *Group 2:* 23 psoriasis patients, 39.1% were receiving biologic treatments, and 43.5% classic systemic treatments. *Group 3:* 13 patients with Crohn disease, treated with immunosuppressors. TST was done in all cases. We determined IFN-γ production with Quantiferon-TB Gold In Tube (QFN) and T-SPOT.TB (TS.TB).
Results: *Group 1:* TS.TB, QFN and TST were positive in 20.8%, 17% and 13.2% respectively. We obtained 4 QFN indeterminate results (7.5%) and 2 for TS.TB (3.8%), in all cases TST was negative and corresponded with patients receiving corticoids. Concordance (κ) between TS.TB and QFN was 0.562. *Group 2:* TS.TB and QFN were positive in 17.14% of the cases. In contrast, TST was positive in 21.74%. Five patients were documented with a previous positive TST. Therefore, when we analyzed patients with IFN-γ assays and TST performed simultaneously, TS.TB and QFN were positive in 5.6% and TST negative in all cases. Concordance between TS.TB and QFN was 100% *Group 3:* The three assays were negative in all cases. We observed one TS.TB indeterminate result (7.7%) and 2 for QFN (15.4%), corresponding with patients receiving azathioprine.
Conclusions: Concordance between both IFN-γ assays was good.
Indeterminate results were higher in those patients with Crohn disease.
IFN-γ assays, in combination with TST, are useful for the diagnosis of LTBI in patients with inflammatory diseases.

P306
Screening of HIV positive TB contacts with an interferon-gamma release assay in a congregate setting in Singapore
Suay Hong Gan[1], Sugunavalli Bhoopalan[1], Kyi Win KhinMar[1], Timorthy M. Barkham[2], Cynthia Bin Eng Chee[1], Yee Tang Wang[1]. *[1]Singapore Tuberculosis Control Unit, Tan Tock Seng Hospital, Singapore, Singapore; [2]Department of Laboratory Medicine, Tan Tock Seng Hospital, Singapore, Singapore*

We used the T-SPOT.TB assay in screening HIV positive contacts of infectious TB cases in the prison setting. The test is believed, on presumptive evidence, to be more sensitive than the tuberculin skin test and QuantiFERON-TB Gold In-Tube assay in detecting latent TB infection.
We report the screening of 47 HIV positive contacts around 3 infectious TB cases in the prison from 2008 to 2010. Exposure of the contacts occurred during the 1-hour daily activities. Identified contacts were screened for symptoms and examined for signs of active disease. Sputum tests for AFB smears and cultures, chest xray and

T-TSPOT.TB assay were done. Diagnosis of latent TB infection was based on the T-TSPOT.TB assay, after excluding active disease. Window prophylaxis was offered if the initial test was negative and stopped if the repeat T-SPOT.TB assay done after 8-10 weeks of last exposure was negative.
36 (76.6%) the contacts were tested negative by the T-SPOT.TB assay. Their median CD 4 count was 343 cells/ul and 44.4% of them were on anti-retroviral therapy. 8 contacts had positive T-SPOT.TB assay result, 2 of whom had active TB (yield of 4.3%). The indeterminate rate was 2.1%. 3 contacts completed preventive treatment while 14 contacts had window prophylaxis. During the mean follow up of 19 months (median of 21.5 months, range of 10 to 25 months), one of the T-TSPOT.TB assay negative contacts, whose CD4 count was 4 cells/ul, developed active TB 11 months after completing screening.
Except in cases with extremely low CD4 count, the T-SPOT.TB assay appears to have a good negative predictive value for progression to active disease in HIV positive TB contacts in Singapore.

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P308

QuantiFERON testing in British army recruits

Rachel Mackley, David Spence. *Respiratory Medicine, Friarage Hospital, Northallerton, North Yorkshire, United Kingdom*

Our hospital has links with an Army base and investigates recruits for Tuberculosis (TB). Many come from high prevalence areas. Recruits are screened with a Mantoux test. Those with a Mantoux reaction ≥15mm and no previous BCG vaccination are referred for QuantiFERON Gold testing. If positive they are treated for latent TB.
We reviewed referrals over a 2 year period (April 2008 - April 2010) to assess compliance with Army policy and investigate whether referral based on Mantoux reaction alone is warranted.
Demographic data were gathered from Army records. The relationship between a positive QuantiFERON test and a Mantoux reaction of ≥15mm was assessed using a Chi-squared test.
153 cases were identified, 28 were excluded due to insufficient data, leaving a sample of 125. All cases were male. Median age was 21.5 years (range 17-33). For analysis recruits were divided into 4 areas (see table 1).
89 recruits (79%) had a positive QuantiFERON test. There was no significant relationship between QuantiFERON positivity and Mantoux size ≥ 15mm (p=0.0923). Large numbers of recruits are referred based on their Mantoux results, including many with reactions of 6-14 mm. As there was no significant relationship between the rate of QuantiFERON positivity and Mantoux reaction size ≥ 15mm, referral decisions should not be made on this basis alone.
Further research is warranted to assess the current referral guidelines.

QuantiFERON and Mantoux results by Nationality

Nationality	Number	QuantiFERON results		Median Mantoux reaction mm (range)
		Positive (%)	Negative (%)	
Nepali	44	32 (73)	12 (27)	11 (6–21)
African	65	47 (72)	18 (28)	12 (6–22)
British	10	6 (60)	4 (40)	10.5 (6–15)
Other	6	4 (66)	2 (33)	10.5 (6–15)
Total	125	89 (71)	36 (29)	

P309

Evaluating the use of the interferon-γ response to mycobacterium tuberculosis (MTB) specific antigens to diagnose latent tuberculosis infection in patients with chronic inflammatory joint and skin diseases

Claire Martyn-Simmons[1], John Mee[1], Richard Groves[1], Heather Milburn[2]. *[1]St John's Institute of Dermatology, Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom; [2]Department of Respiratory Medicine, Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom*

Introduction: The treatment of chronic inflammatory diseases has been transformed with targeted biologic therapies. Patients receiving this treatment are at increased risk of reactivating latent tuberculosis infection (LTBI). Tuberculin skin test (TST) has been the gold standard for detecting latent LTBI, but may be difficult to interpret in patients receiving immunosuppressive therapies. In vitro interferon-gamma-release assays (IGRA) are an alternative.
Aim: Evaluate and compare the effectiveness of IGRA (QFR-TB Gold *In Tube* assay [QFR] and T-SPOT.TB [TSTB]) against TST in a cohort of patients due to commence biological therapies.
Methods: A prospective cross sectional study was conducted at an inner London tertiary referral centre. Patients were screened for LTBI and a TST was performed. Venous blood samples were obtained for QFR and TSTB.
Results: 102 patients were included, aged between 18 and 83 years. A total of 42 patients were receiving at least one immunosuppressive therapy. A TST result was available in 84 patients. The overall agreement between the QFR vs TSTB excluding the indeterminate results was 69 out 78 (k=0.572), between QFR vs TST was 62 out of 79 (k=0.241) and between TSTB vs TST was 58 out of 72 (k=0.304). 13 patients received chemoprophylaxis for presumed LTBI.
Conclusion: Our study showed variation in results obtained from TST and IGRA's when used in our population, some of whom where immune compromised. For patients where interpretation of the results may prove challenging, LTBI screening tests may be best used in combination

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Use of an IGRA test for prescribing latent TB infection therapy in 374 immigrants applying to night shelters in Milan, Italy

Alice Repossi[1], Monica Delmastro[1], Maurizio Ferrarese[1], Giovanni Ferrara[2], Nicola Murgia[3], Luigi Codecasa[1]. *[1]TB Reference Centre- Villa Marelli Institute, Niguarda Hosp, Milan, Italy; [2]Respiratory Medicine Inst., University of Perugia and Terni, Terni, Italy; [3]Occupational Medicine, Respiratory Diseases and Toxicology Dept, University of Perugia and Terni, Perugia, Italy*

The IFN-gamma tests for latent TB (IGRA) can aim preventive therapy (PT) to selected groups, reducing costs and resources. Homeless subjects (HS) have high risk for TB and for defaulting treatment. We evaluated the impact of Quantiferon TB Gold IT (QFT) in HS immigrants applying for night-shelter in Milan who, according to local TB guidelines based on TST ≥10 mm, normal Chest Xray and age ≤ 35 yrs, were candidate for PT. From Nov 2009 to Dec 2010, 1420 HS were referred to our Centre: 374 (37 F, 337 M, mean age 30 yrs) were eligible to PT and were offered IGRA testing with QFT. Twelve M refused; of the remaining: 187 were QFT+ (51.6%, M166, F 21), and 175 were QFT- (M159, F 16,), mean TST respectively 19.6 and 13.9 mm (P<0.0001).
Highest % of QFT+ were in Moroccans (75%), East-africans (67%), Rumanians (65%) Nigerians (60%) and Afghans 57% while lowest level were in other East-europeans (14%), other North-africans (24%) or West-africans (37%). Compared to other studies, our population shows a very high% of QFT+(>50%), especially in

QFT results by nationality

	QFT+	QFT–		QFT+	QFT–
East Europe	20	30	Africa	145	111
Rumania	15	8	Somalia	41	20
Kosovo	1	7	Erithrea	25	18
Bulgaria	1	5	Ethiopia	7	0
Others	3	10	Kenia	6	1
Latin America	0	4	Morocco	15	5
Asia	22	30	Nigeria	9	6
Afghanistan	20	15	Egypt	6	19
Iran	0	5	Tunisia	2	6
Pakistan	0	4	Others	34	36
Others	2	6			

some nationalities and in Pts with TST>15 mm, partly decreasing the economic advantage of its use to reduce PTs. Better information on QFT role could be obtained extending this program to HS with TST ≤9 mm or age≥36 yrs but QFT technicalities and health-care budget cuts do not allow this wider on-field application.

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Practical use of quantiferon test in Norway's largest TB-clinic

Saeed Vahedi, Cathrine Brunborg, Anne-Marte Bakken Kran. *Department of Pulmonary Medicine, Oslo University Hospital, Oslo, Norway Unit of Epidemiology and Biostatics, Oslo University Hospital, Oslo, Norway Department of Microbiology, Oslo University Hospital, Oslo, Norway*

Introduction: Since November2008, Norway's largest TB-clince (Diagnosestasjonen, Oslo University Hospital, Ullevål) has implemented Quantiferon-TB GOLD In-Tube test (QFT) as a supplement to tuberculin skin test (TST)
Aim& objectives: The aim of our study was to evaluate clinical use and consequenses of QFT results for the patient.
Methodes & design: Patients with conclusive QFT result between November 2008 and December 2009, were included in this retrospective cross-sectional study.
Results: 415 patients were included and categorized by reason for referral: Immigrants (31,1%), School children (49.6%), Immunmodulation (7.5%), TB-Contacts (10.6%), Other (1.2%). Only 14 (3,4%) patients had negative TST (Mantoux<6mm). 124 (29,9%) patients had positive Quantiferon test. While 70 (56,9%) Immigrants had positive QFT; 33 (16%) of the School Children had positive QFT result. A multivariateanalysis showed that the independent risk factors of a positive QFT test were higher age, reported TB-exposure, high-incidence TB region of birth and immigrants. QFT positivity was associated with age group>35 (OR 3.5) compared to age group<14, reported TB-exposure (OR 4.5), and high-incidence TB region of birth (OR 3.84). QFTresult was the single most important factor for determining clinical outcome: 116 patients (94.3%) of patients with positive QFT tests were selected for either preventive therapy or follow-up, versus 11 (3.8%) of patients with negative tests.
Conclusions: QFT result was the single most influencing factor on the clinicians decisionmaking. Though QFT has reduced numbers of patients given treatment and follow-up, it is important to keep in mind the limited sensitivity of QFT in certain patient groups when interpreting the QFT results.