EVALUATION OF THE APPLICATIONS MADE TO TUBERCULOSIS CONTROL DISPENSARY BETWEEN THE YEARS 2010-2014 IN THE SOUTHWEST REGION OF TURKEY

METIN PICAKCIEFE[*], SERDAR KALEMCI[**], SELMIN DIRGEN CAYLAK[***], HAMDI SOZEN[***], YUSUF CAYLAK[****], VOLKAN AKKAYA[*], ERKAN ERBAS[*], BEKIR BAYAT[****], DERYA TETIKER[****]

[*]Department of Public Health, Faculty of Medicine, Mugla Sitki Kocman University, Turkey - [**]Department of Chest Diseases, Faculty of Medicine, Muğla Sitki Kocman University - [***]Department of Infectious Diseases and Clinical Microbiology, Faculty of Medicine, Muğla Sitki Koçman University - [****]Mugla Provincial Directorate of Public Health, Turkey

ABSTRACT

Introduction*: As a major public health problem in the world and our country, tuberculosis (TB) constitutes 25% of the mortalities in developing countries which can be prevented. Identification and effective treatment of TB patients in the community are important to control TB. In our country, the task of ensuring TB control was given to Tuberculosis Control Dispensaries (TCD). The purpose of this study is to evaluate the applications made to TCD Southwestern Turkey between the years of 2010-2014.*

Materials and methods*: The target population of the descriptive and retrospective study where TB surveillance data was analyzed was constituted by 394 people who applied to Tuberculosis Control Dispensary in the Southwest region of Turkey between the years of 2010 and 2014.*

Result*s: 66.2% of the applicants were male, 37.3% were in the 40-59 age group, 68.7% were married and 9.5% did not have any social insurance. Considering the reasons of application, 93.6% of the subjects applied personally and 6.4% applied with the contact history. New patients formed 78.0% of the cases, while 15.1% of the applicants were the ones who were transferred, 5.1% had recurrent disease, 1.0% were those who returned from discontinuation of the therapy and 0.8% were the patients who applied due to treatment failure. According to the records, 0.3% of the applicants were diagnosed with HIV, 9.6% used alcohol and 20.8% smoked. 66.9% of the patients had pulmonary involvement and 44.9% had contact with at least one person. Sputum examinations were performed in 65.0% of the applicants and 55.1% were determined to be positive. 71.8% of the patients were determined to have radiological findings compatible with the disease. 45.9% of the patients were found positive as a result of the bacteriological smear. Treatments of 35.0% of the registered patients were started in TCD and the length of treatment period lasted 0-6 months. According to the results of treatment, 70.5% of the patients completed the treatment and 3.6% died. All patients were implemented directly observed treatment.*

Conclusion*: Dominant male gender among those who apply to TCD, being in 40-59 age group, applications due to personal reasons, new cases, pulmonary involvements, performing of sputum examinations, positive results, implementing the treatment in a hospital and completion of treatments are the most important results of the study. In conclusion, the first-line tuberculosis control takes an important place in the tuberculosis control in our country. For a successful TB control, Tuberculosis Control Dispensaries and Community and Family Health Centers must work coordinately.*

.

Keywords*: Tuberculosis control dispensary (TCD), tuberculosis (TB), Turkey.*

DOI: 10.19193/0393-6384_2017_1_011

Received *September 30, 2016;* ***Accepted*** *November 02, 2016*

Introduction

Tuberculosis (TB) is a major public health problem in the world and our country and constitutes 25% of the mortalities in developing countries which can be prevented[1,2]. According to the estimations of World Health Organization (WHO), approximately 1/3 of the world population is still infected with TB bacillary. Every year, 8.6 million new active TB happen and 1.3 million people die of TB[3]. Identification and effective treatment of TB patients in the community are important to control the disease. The TB incidence and drug resistance ratios are two necessary parameters to ensure its control[4]. The TB control becomes more difficult with increasing drug-resistance[5,6]. Although mak-

ing the diagnosis of TB and follow-up of the treatment are the duties of primary care physicians, the mission of ensuring TB control was given to Tuberculosis Control Dispensaries (TCD). TCDs continue this mission successfully[7-9]. Countries collect data regularly to measure their adequacy in TB control and determine their strategies in TB control according to this data. In Turkey, TCDs collect the TB data throughout the country and publish them regularly every year[9,10]. In this region, there is no study that evaluates the TB cases. The results of this study will contribute to the development of the healthcare services and protective measures for TB. This study was aimed to evaluate the applications made to TCD in north-western Turkey between the years of 2010-2014.

Materials and methods

This study was performed in Mugla, the city located in the Southwest region of Turkey. The city is a rich area for energy production and tourism. The population of the city (as per a 2011 estimate) is 838,324. The target population of the descriptive and retrospective study where TB surveillance data was analyzed was constituted by 394 people who applied to TCD in Mugla between the years of 2010 and 2014. No sample was selected. The registration forms and files of all 394 people were examined by the researchers between March 23 and May 31, 2015. The variables of the study, sociodemographic attributes and reasons of application, case definitions, medical histories and complaints and properties related to diagnosis and treatment methods were analyzed in subtitles.

Percentage, mean and standard deviation from descriptive statistics were used in the evaluation of the data. The data obtained was analyzed through Statistical Package for the Social Sciences (SPSS) 20.0.

The study was conducted pursuant to ethical rules. Necessary written permissions from the necessary institutions were taken. The approvals of Mugla Province Sıtkı Koçman University Scientific Researches Ethics Committee and Mugla Provincial Directorate of Public Health were received before the study.

Results

Variables related to socio-demographic attributes

In this study, the records of 393 patients who applied to Muğla Province Central TCD between the years of 2010 and 2014 were analyzed. 56 patients registered to the dispensary in 2010, 54 patients in 2011, 113 patients in 2012, 89 patients in 2013 and 81 patients in 2014. 16.0% of the patients applied in winter, 24.1% in spring, 37.3% in summer and 22.6% in fall seasons. When the registries are analyzed, it was seen that 66.2% of the patients were male and 33.8% were female. Considering the age distribution of the patients, 6.6% of the patients were between the ages of 0-19, 31.2% were between the ages of 20-39, 37.3% were between the ages of 40-59 and 24.9% were over the age of 60. During the registrations, it was seen that 68.7% of the patients were married and 31.3% were single. 48.4% of the applicants were under the health insurance by Social Insurance Institution (SII), 22.1% by Bagkur (Social Security Organization for Artisans and the Self-employed), 11.6% by Retirement Fund, 6.1% from Green Card, 2.0% by Social Security Institution (SSI) and 0.3% by private health insurance and 9.5% did not have any health insurance. According to the registries, 24.1% of the patients were housewives, 23.5% were retired, 22.2% were workers, 13.3% were freelancers, 3.8% were students, 2.5% were teachers, 2.5% were healthcare professionals and 8.1% were the members of other occupational groups (such as engineers, soldiers, technicians, graphic designers, accountants and advertisers). Finally, 1.6% of the patients were prisoners. It was seen that 10 patients in our research were foreign nationals (Table 1).

Variables related to reasons application and case definitions

Considering the reasons of applications, 93.6% of the patients applied personally and 6.4% applied with contact histories. New patients formed 78.0% of the cases, while 15.1% of the applicants were the ones who were transferred, 5.1% had recurrent disease, 1.0% were those who returned from discontinuation of the therapy and 0.8% were the patients who applied due to treatment failure (Table 2).

Attributes	Number (n)	%*
Date of admission (year) (n:393)		
2010	56	14.2
2011	54	13.7
2012	113	28.7
2013	89	22.7
2014	81	20.7
Period of admission (season) (n:394)		
Winter	63	16.0
Spring	95	24.1
Summer	147	37.3
Fall	89	22.6
Age (n:394)		
0-19	26	6.6
20-39	123	31.2
40-59	147	37.3
60 and over	98	24.9
Gender (n:394)		
Female	133	33.8
Male	261	66.2
Marital status (n:393)		
Married	270	68.7
Unmarried	123	31.3
Health insurance (n:380)		
Absent	36	9.5
SSI	8	2.0
SII	184	48.4
Retirement Fund	44	11.6
Bagkur	84	22.1
Green Card	23	6.1
Private	1	0.3
Profession (n:300)		
Housewife	73	24.1
Retired	71	23.5
Freelancer	40	13.3
Worker	67	22.2
Healthcare professional	7	2.5
Teacher	7	2.5
Student	11	3.8
Other (such as engineers, technicians, graphic designers, accountants, advertisers)	24	8.1
Birth place (country) (n:394)		
Turkey	384	97.5
Outside Turkey	10	2.5

Table 1: Distribution of the patients applied to TCD according to their sociodemographic attributes.
: Column percentage, **: Social Security Institution (SSI), *: Social Insurance Institution (SII)*

Reasons of application and case defibitions	Number (n)	%*
Reason of application (n:393)		
Personal	368	93.6
Contact	25	6.4
Case definition (n: 392)		
New	306	78.0
Recurrent	20	5.1
Turning from giving up the treatment	4	1.0
Those who come due to treatment failure	3	0.8
Transferred	59	15.1

Table 2: The reasons of applications to TCD and their distribution according to case definitions.
**: Column percentage*

Variables related to medical history and complaints

22.4% of the patients had coughing, 14.7% had sputum, 3.3% had hemoptysis, 18.0% had weakness, 16.2% had weight loss, 14.5% had night sweating, 1.7% had fever, 2.4% had dyspnea, 1.9% had swelling in the neck and 4.9% had other complaints (back pain, chest pain, loss of appetite, skin abscesses etc.) According to the records, 0.3% of the patients were diagnosed with HIV, 9.6% used alcohol and 20.8% smoked. It was seen that 70.3% of the patients who applied to dispensary were suffering from chronic diseases. 20.6% of the patients with chronic diseases had diabetes mellitus, 20.0% had hypertension, 8.5% had urinary disease, 6.6% had malignity, 5.5% had cardiovascular disease, 2.4% had chronic obstructive pulmonary disease (COPD) and 36.4% had other chronic diseases (such as rheumatic diseases, epilepsy, cirrhosis, Crohn's disease, thalassemia). Old TB cases were found in 5.1% of the patients. BCG vaccination scars were found in 82.5% of the patients. Pulmonary involvements were determined in 66.9%, extrapulmonary involvements were determined in 29.4% and both types of involvements were determined in 3.7% of the patients. Pleura tuberculosis was found extrapulmonary most frequently at a rate of 38.0%. This was followed by lymph at a rate of 33.3%, skin at a rate of 5.4%, bone and joint at a rate of 3.2%, miliary tuberculosis at a rate of 3.2% and other organ involvements (such as larynx, meningitis, peritonitis, urinary, intestinal) at a rate of 17.1%. When the possible contact histories of the applicants were examined, it was seen that 55.1% patients had no contact history. It was determined that 44.9% of the patients had contact at least with one person. 11.4% of the patients were found to have 1, 9.4% have 2, 9.1% have 3, 6.2% have 4 and 8.9% have 5 and more contacts (Table 3).

Medical history and complaints	Number (n)	%*
Symptoms in the diagnosis (n:1049)		
Coughing	235	22.4
Sputum	155	14.7
Haemoptysis	35	3.3
Weakness	189	18.0
Weight loss	169	16.2
Night sweating	152	14.5
Fever	18	1.7
Dyspnoea	25	2.4
Swelling in the neck	19	1.9
Other (Such as Low back pain, chest pain, loss of appetite, skin abscess)	52	4.9
HIV (n:394)		
Negative	393	99.7
Positive	1	0.3
Alcohol (n:394)		
Uses	38	9.6
Doesn't use	356	90.4
Cigarette (n:394)		
Smokes	82	20.8
Doesn't smoke	312	79.2
Chronic disease (n:394)		
Absent	277	70.3
Present	117	29.7
Type of chronic disease (n:165)		
Diabetes Mellitus	34	20.6
Hypertension	33	20.0
Cardiovascular disease	9	5.5
Urinary disease	14	8.5
Malignity	11	6.6
COPD	4	2.4
Other (Such as Rheumatic diseases, epilepsy, cirrhosis, Crohn's disease, and Thalassemia)	60	36.4
Old case of tuberculosis (n:394)		
Absent	374	94.9
Present	20	5.1
BCG scar (n:337)		
Absent	59	17.5
Present	278	82.5
Place of involvement (n:394)		
Pulmonary	263	66.9
Extrapulmonary	116	29.4
Pulmonary and Extrapulmonary	14	3.7
Extrapulmonary involvement (n:130)		
Pleura	49	38
Lymph	43	33.3
Skin	7	5.4
Bone & joint	4	3.2
Miliary	4	3.2
Other (such as larynx, meningitis, peritonitis, urinary, intestinal)	23	17.1
Possible contact with the patient (n:394)		
Absent	217	55.1
Present	177	44.9
Number of possible contacts with the patient (n:177)		
1 person	45	11.4
2 persons	37	9.4
3 persons	36	9.1
4 persons	24	6.2
5 and more persons	35	8.9

Table 3: Medical histories of the patients applied to TCD and their distribution according to their complaints.**: Column percentage*

Variables related to diagnosis and treatment methods

Histological, bacteriological and radiological diagnosis methods were used as the diagnosis methods. Sputum examinations were performed in 65.0% of the patients and 55.1% were determined to be positive. 71.8% of the patients were determined to have radiological findings compatible with the disease. Histological diagnosis is used only in extrapulmonary involvements and lymphoid tissue was used as the histology diagnostic tool in 31.6%, pleural fluid in 30.4%, pulmonary wedge biopsy in 6.3% and skin and abscess material in 6.3% of patients with extrapulmonary involvement. When the bacteriological smear results were examined, it was seen that the results were positive in 45.9%, negative in 20.8%, the results were not checked in 1.0% and there was no information in 32.2% of the patients. The treatments of 65.0% of the patients were started in a hospital (public or private) and 35.0% of the patients in a TCB (inside or outside Mugla), and the treatment periods lasted 0-6 months in 56.5%, 7-12 months in 42.4% and 13 months and over in 1% of the patients. According to the treatment results, 70.5% of the patients completed the treatment, 16.5% cured, 5.1% gave up the treatment, 3.8% were transferred, 3.6% died and 0.5% had treatment failure. All patients (100%) were implemented directly observed treatment and 99.0% of the patients were clinically followed up (Table 4).

Diagnosis and Treatment Methods	Number (n)	%*
Diagnosis Methods		
Bacteriological smear (n:394)		
Positive	181	45.9
Negative	82	20.8
Could not be checked	4	1.0
No information in the file	127	32.3
Sputum examination (n: 394)		
Absent	138	35.0
Present	256	65.0
Sputum examination result (n:394)		
Positive	217	55.1
Negative	177	44.9
Radiological finding (n:394)		
Absent	111	28.2
Present	283	71.8
Material used for the tissue diagnosis (n:79)		
Lymphoid tissue	25	31.6
Pleural fluid	24	30.4
Pulmonary wedge biopsy	5	6.3
Skin and abscess material	5	6.3
Other (such as bone, bronchus, forceps biopsy, BOS)	20	25.4
Treatment		
Institution where the treatment started (n:394)		
Hospital (Public or Private)	138	35.0
Tuberculosis Control Dispensary	256	65.0
Treatment period (n: 394)		
0-6 months	223	56.6
7-12 months	167	42.4
13 months and over	4	1.0
Treatment result (n:393)		
Cured	65	16.5
Completion of treatment	277	70.5
Giving up the treatment	20	5.1
Treatment failure	2	0.5
Death	14	3.6
Transferred	15	3.8
Directly observed treatment (n:394)		
Implemented	394	100.0
Not implemented	0	0
Clinical follow up (n:394)		
Done	390	99.0
Not done	4	1.0

Table 4:Distribution of the patients applied to TCD according their diagnosis and treatment methods.

**: Column percentage*

Discussion

In this study, the files of 394 patients who applied to TCD in Mugla Province between the years of 2010 and 2014 were examined.

As a result of the study, it was determined that:

(a) the great part of applications were made in summer months,

(b) married men between the ages of 40-59 constituted the more risky group,

(c) most of the diagnosed patients had bacillary positive sputum,

(d) treatment periods lasted 0-12 months,

(e) 70% of the patients could complete the treatment,

(f) all patients were implemented directly observed treatment,

(h) the disease most frequently involved the pulmonary and extrapulmonary lymphoid tissue and pleura,

(i) 71% of the patients were radiological positive,

(j) the most frequent complaints were coughing, weakness, sputum and weight loss,

(k) 20% of the patients smoked, (l) 70% had chronic diseases (m) 78% were the new cases and only 5% were recurrent, (n) 82% had BCG scar and (o) 55% had contract with another patient.

It is hard to be protected from TB due to it being an air-borne disease. Low socio-economic level, high population, indoor and crowded living spaces increase the infectiousness of this air-borne disease[2,11]. The city where we performed the study is specifically and risky in terms of TB control due to its negative socio-demographic attributes like crowded population and family structure, and increasing urbanization during the recent years.

Turkey is a country with moderate TB incidence, which is over 20 per hundred thousand. In their study that involves the data of 9179 patients, Ozkara et al. found the TB incidence as 36.4 per hundred thousand and the new case rate as 91.1%[12]. In the current study, the new case rate was determined as 78%. This seems lower than the literature data. It is reached to a rate of 93% after adding the 15% patient group, who were transferred, to the new cases and this rate is consistent with the literature. Another remarkable result of the study is the implementation of directly observed treatment to all patients. The reasons of this success can be the disciplined first-line TB control works

and good coordination among the TCBs and community and family health centers.

Although microbiological examination and culture are the gold standards in the diagnosis of TB, receiving the culture results barely in 2 weeks may delay the diagnosis[13]. Sputum smear and TB culture are important examinations used in the follow up period and the sputum smear must certainly be checked for every patient suspected to have pulmonary TB. Drug sensitivity test must certainly be performed in every material with bacillary reproducing cultures[13,14]. Ramos et al. emphasized that the sputum smear was a method that can easily be used particularly for children under the age of 12 living in the rural regions[15]. In the present study, it was determined that the methods of sputum smear, radiology and tissue biopsy were used for the TB diagnosis. 55% positive results were obtained following the sputum smear. 25 (31.6%) of 79 patients who underwent biopsy had involvement in the lymphoid tissue and 24 (30.4%) in the pleural fluid. The use of sputum smear method rather in the TCDs located in the rural regions was found in tune with the literature[15]. The sputum smear ratio was determined as 65.0% for TB cases in the study and this ratio was significantly lower than the country average (88.3%)[12]. The rate of smear positivity in patients examined with the sputum smear method was found as 45.9% and this rate was also found lower than the country average (62.2%)[7]. Miller et al. researched the HIV and TB in their study they performed in Russia. They determined a high correlation between TB and HIV as a result of their study[16]. In the present study, HIV was determined only in 1 patient. While 117 (29.7%) patients had chronic diseases, there was no chronic disease in 227 (70.3%) patients.

Drugs must be used under surveillance every day to prevent the drug resistance and taking the disease under control. Objective criteria such as treatment success, treatment failure, giving up the treatment and mortality are used in the evaluation of the treatment results. Treatment success covers all patients who completed the treatment and recovered. Duan et al. emphasized that the resistance against the drugs used to treat TB in China was an important public health problem. With the healthcare policies that newly started in China and the treatment protocols started after 2008, a decrease was determined in the number of multi-drug resistance cases[17]. No research was conducted related to drug resistance in the present study.

Ebru et al. reported that 3 (4.7%) of 64 patients in their study had died[18]. In the present study, 14 (3.6%) died, while the treatments of 277 (70.5%) patients were successful. The study was found in tune with the literature.

Kurt et al. determined that there was no BCG scar in 23%, and there was single scar in 72% and double scars in 5% of the TB patients in the study they performed[19]. In the present study, there was BCG scar in 278 (82.5%) patients, while there was no BCG scar in 59 (17.5%) patients. These rates can be a sign for the success of the vaccination works we did in the Province.

In the studies performed in our country coughing, night sweating, loss of appetite, weight loss were reported as the most frequent symptoms. Findings like coughing, night sweating and loss appetite are given as the most frequent complaints in various studies[20,21]. In the present study, the most frequent complaints were coughing, fever, loss of appetite, sweating and weakness in tune with the literature. In the presence of these complaints, the tuberculosis possibility must be considered.

Conclusion

Dominant male gender among those who apply to dispensaries, being in 40-59 age group, applications due to personal reasons, new cases, pulmonary involvements, performing of sputum examinations, positive results, implementing the treatment in a hospital and completion of treatments are the most important results of the study. Besides, the implementation of directly observed treatment to all patients and the presence of healthcare professionals among the applicants take part among the most remarkable results. In conclusion, the first-line tuberculosis control takes an important place in the tuberculosis control in our country. For a successful TB control, TCD and Community Health Centers (CHC) and Family Health Centers (FHC) must work coordinately. In addition, studies must be performed about the medical conditions of health professionals.

Limitation

Firstly, the study was conducted retrospectively. Secondly, study was carried out in one center only. Multicenter study should be done with more strains.

References

1) World Health Organization. Global Comparative Assessment in the Health Sector. Geneva, WHO; 2013.
2) San Pedro A, Oliveira RM. Tuberculosis and socioeconomic indicators: systematic review of the literature. Rev Panam Salud Publica 2013; 33: 294-301.
3) Raviglione MC, Snider DE, Kochi A. Global epidemiology of tuberculosis. Morbidity and mortality of a worldwide epidemic. JAMA 1995; 273: 220-226.
4) Heym B, Honoré N, Truffot-Pernot C, et al. Implications of multidrug resistance for the future of short-course chemotherapy of tuberculosis: a molecular study. Lancet 1994; 344(8918): 293-8.
5) Jain A, Mondal R. Extensively drug-resistant tuberculosis: current challenges and threats. FEMS Immunol Med Microbial 2008; 53(2): 145-50.3.
6) Abebe G, Abdissa K, Abdissa A, et al. Relatively low primary drug resistant tuberculosis in south-western Ethiopia. BMC Res Notes 2012; 5: 225.
7) Buzgan T, Torunoğlu MA. editörler. National Tuberculosis Control Program Report of Turkey, 2012. Public Health Institution of Turkey. Publication No: 884. Anıl Press. Ankara; 2013.
8) Baddeley A, Dean A, Dias HM, et al. Tuberculosis country profiles. Global tuberculosis report 2013. World Health Organization. France; 2013.
9) Aydemir Y. Knowledge level of family physicians about tuberculosis and their attitudes and views regarding their willingness to work at a tuberculosis dispensary. Turk Toraks Derg 2015; 16: 166-71.
10) Zellweger JP. Current issues in the management of tuberculosis in Europe. Panminerva Med 2013; 55: 145-55.
11) Murray M, Oxlade O, Lin HH. Modeling social, environmental and biological determinants of tuberculosis. Int J Tuberc Lung Dis 2011; 15 (Suppl 2): 64-70.
12) Ozkara S, Kılıcaslan Z, Oztürk F, et al. Tuberculosis in Turkey With Regional Data. Turkish Thoracic Journal 2002; 3: 178-187.
13) Ghodbane R, Raoult D, Drancourt M. Dramatic reduction of culture time of Mycobacterium tuberculosis. Sci Rep 2014 Feb 28; 4: 4236.
14) Geldenhuys HD, Whitelaw A, Tameris MD, Van As D, Luabeya KK, Mahomed H, Hussey G, Hanekom WA, Hatherill M. A controlled trial of sputum induction and routine collection methods for TB diagnosis in a South African community. Eur J Clin Microbiol Infect Dis 2014 Dec; 33(12): 2259-66.
15) Ramos JM, Pérez-Butragueño M, Tisiano G, Yohannes T, Reyes F, Górgolas M. Evaluation of Ziehl-Neelsen smear for diagnosis of pulmonary tuberculosis in childhood in a rural hospital in Ethiopia. Int J Mycobacteriol 2013 Sep; 2(3): 171-3.
16) Miller AC, Nelson AK, Livchits V, Greenfield SF, Yanova G, Yanov S, Connery HS, Atwood S, Lastimoso CS, Shin SS. Tomsk Tuberculosis Alcohol Working Group. Understanding HIV risk behavior among tuberculosis patients with alcohol use disorders in Tomsk. Russian Federation. PLoS One 2016 Feb 12; 11(2): e0148910.
17) Duan Q, Chen Z, Chen C, Zhang Z, Lu Z, Yang Y, Zhang L. The prevalence of drug-resistant tuberculosis in Mainland China: An updated systematic review and meta-analysis. PLoS One. 2016 Feb 9; 11(2): e0148041.
18) Unsal E, Güler M, Ofluoglu R, Capan N, Cimen F. Factors associated with treatment outcome in 64 HIV negative patients with multidrug resistant tuberculosis. J Thorac Dis. 2013 Aug; 5(4): 435-9.
19) Kurt A, Poyrazoglu G, Turgut M, et al. Clinical and laboratory features of the patients with diagnosis of tuberculosis. Fırat Med J 2006; 11: 55-57.
20) Cosar H, Onay H, Bayram N, Ferda Özkınay F. The evaluation of the epidemiological and clinical findings and the prognosis of the 44 pediatric tuberculosis patients. J Pediatr Inf 2008; 2: 1-6.
21) Uyan AP. Problems of diagnosis in childhood tuberculosis. J Current Pediatr 2008; 6: 26-30.

Corresponding author
METIN PICAKCIEFE, M.D., PhD., Assoc. Professor, Dr.
Head of Department of Public Health, Faculty of Medicine, Mugla Sitki Kocman University, Mugla
(Turkey)