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^b Ataturk University School of Medicine, Pathology, Erzurum, Turkey

* Corresponding author.
E-mail address: mamelikoglu@gmail.com (M.A. Melikoglu).

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Ekin Basak Doganci,^a Rabia Demirtas,^b Meltem Alkan Melikoglu^{a,*}

^a Ataturk University School of Medicine, Physical Medicine and Rehabilitation, Rheumatology Division, Erzurum, Turkey

Osteoarticular tuberculosis mortality in Spain between 1997 and 2018



Mortalidad de la tuberculosis osteoarticular en España entre 1997 y 2018

Dear Editor,

Tuberculosis (TB) is a worldwide public health problem. Although the osteoarticular form represents from 3% to 5% of its manifestations, few data on the mortality caused by this type are available¹. To expand the recently published study on its incidence and evolution over time², we analysed mortality due to osteoarticular TB in Spain from a hospital perspective in the years from 1997 to 2018.

The mortality and lethality of osteoarticular TB (OA TB) over 22 years were estimated in an observational retrospective study based on the data gathered in the minimum basic set of hospital discharge data for patients with a main or secondary diagnosis (according to CIE-9 and CIE-10) of OA TB in Spain from 1997 to 2018. 336 deaths occurred in 5710 patients.

The average annual mortality of patients with OA TB was 0.35 cases per million inhabitants (CI 95% 0.31–0.38). The World Health Organization has detected a falling tendency in the estimated rates of mortality due to TB in all regions since 2000³. The study found

a significant difference between the annual average mortality per million inhabitants in the first period (1997–2007) with 0.12 deaths p.m., and the second period (2008–2018) with 0.07 deaths p.m. ($P < .001$).

It is striking that there was no mortality among the 31 babies and 133 children aged from 1 to 14 years with OA TB, when the average rate of lethality due to TB in children worldwide is about 24%, and that TB is one of the 10 main causes of death among children in the whole world⁴. Nevertheless, this may be explained by the fact that more than 96% of all deaths due to TB occur in children who received no treatment against TB⁵.

On the other hand, the incidence and mortality were higher among those aged above 75 years (0.25 deaths per million). The overall fatality rate was 5.9% (CI 95% 5.3–6.53). Mortality among the patients with OA TB as their main diagnosis at admission was 3.5 (CI 95% 2.85–4.20). A meta-analysis estimated that the combined percentage of patients with TB who died during treatment of the same was 18.8% in the patients infected with HIV and 3.5% in those not infected with HIV⁶.

The fatality rates for coinfection of OA TB with miliary TB or CNS TB were, respectively, 9.5% and 9.3%, while in two works in Spain that used methodology similar to ours, the fatality rates for miliary TB and CNS TB were 14% and 15.5%, respectively^{7,8}. The fatality rate of the osteoarticular form is lower than that of the other forms of TB, and this may be due to the fact that

Table 1
Bivariate and multivariate analysis of risk factors and comorbidities for death.

Bivariate and multivariate analysis of the risk factors associated with mortality						
Variables	Death in hospital with osteoarticular TB (n = 336)		Bivariate analysis		Multivariate analysis	
	Yes	No	P value	OR (CI 95%)	P value	OR (CI 95%)
	N (%)	N (%)				
Neurological deficit						
Yes	23 (11.4%)	179 (88.6%)	.001	2.133 (1.361–3.341) Control group	.001	2.403 (1.446–3.994) Control group
No	313 (5.7%)	5195 (94.3%)				
Cerebrovascular disease						
Yes	28 (24.1%)	88 (75.9%)	<.001	5.461 (3.515–8.483) Control group	<.001	3.385 (2.044–5.608) Control group
No	308 (5.5%)	5286 (94.5%)				
Diabetes mellitus						
Yes	57 (9.2%)	564 (90.8%)	<.001	1.742 (1.293–2.347) Control group	.529	0.896 (0.637–1.261) Control group
No	279 (5.5%)	4.810 (94.1%)				
Malign neoplasia						
Yes	38 (24.8%)	115 (75.2%)	<.001	5.831 (3.969–8.569) Control group	<.001	6.229 (4.025–9.639) Control group
No	298 (5.4%)	5.259 (94.6%)				
Chronic liver disease						
Yes	22 (17.7%)	102 (82.3%)	<.001	3.621 (2.253–5.821) Control group	<.001	3.503 (1.923–6.381) Control group
No	314 (5.6%)	5.272 (94.4%)				

Table 1 (Continued)

Bivariate and multivariate analysis of the risk factors associated with mortality						
Variables	Death in hospital with osteoarticular TB (n = 336)		Bivariate analysis		Multivariate analysis	
	Yes	No	P value	OR (CI 95%)	P value	OR (CI 95%)
	N (%)	N (%)				
<i>Chronic kidney disease</i>						
Yes	43 (16.5%)	217 (83.5%)	<.001	3.488 (2.463–4.938) Control group	.027	1.626 (1.057–2.501) Control group
No	293 (5.4%)	5.157 (94.6%)				
<i>Malnutrition</i>						
Yes	11 (15.1%)	62 (84.9%)	.001	2.9 (1.512–5.56) Control group	.180	1.698 (0.782–3.687) Control group
No	325 (5.8%)	5.312 (94.2%)				
<i>Acute respiratory failure</i>						
Yes	85 (25.5%)	248 (74.5%)	<.001	7 (5.306–9.234) Control group	<.001	5.285 (3.861–7.234) Control group
No	251 (4.7%)	5.126 (95.3%)				
<i>Cardiovascular dysfunction</i>						
Yes	37 (68.5%)	17 (31.5%)	<.001	38.994 (21.703–70.062) Control group	<.001	26.514 (13.412–52.415) Control group
No	299 (5.3%)	5357 (94.7%)				
<i>Liver dysfunction</i>						
Yes		26 (25.2%)	<.001	5.770 (3.646–9.131) Control group	<.001	3.963 (2.172–7.232) Control group
No		310 (5.5%)				
<i>Kidney dysfunction</i>						
Yes		57 (31.1%)	<.001	8.509 (6.086–11.898) Control group	<.001	3.641 (2.407–5.508) Control group
No		279 (5%)				
<i>Nervous system TB</i>						
Yes		14 (9.3%)	.069	1.675 (.955–2.936) Control group	.003	2.655 (1.403–5.024) Control group
No		322 (5.8%)				
<i>Miliar TB</i>						
Yes		22 (9.5%)	.017	1.723 (1.094–2.712) Control group	.079	1.634 (0.945–2.826) Control group
No		314 (5.7%)				
<i>Transplantation</i>						
Yes		12 (12.4%)	.006	2.305 (1.246–4.262) Control group	.005	2.678 (1.353–5.302) Control group
No		324 (5.8%)				
<i>Sex</i>						
Man		137 (4.1%)	.060	.788 (.615–1.011) Control group	.726	1.046 (.812–1.348) Control group
Woman		124 (5.2%)				
<i>Young adult</i>						
Yes		24 (1.4%)	<.001	.168 (.11–0.255) Control group	<.001	.235 (.141–0.394) Control group
No		312 (7.8%)				
<i>Adult</i>						
Yes		43 (3.4%)	<.001	.490 (.353–.679) Control group	<.001	.429 (.278–0.663) Control group
No		293 (5.9%)				
<i>Elderly</i>						
Yes		197 (13.3%)	<.001	4.524 (3.609–5.671) Control group	<.001	1.977 (1.446–2.702) Control group
No		139 (3.3%)				

it is a more localized infection that does not compromise vital organs.

Bivariate and multivariate analysis was performed on the different factors involved, to discover their relationship with death rates (Table 1). The patients with cardiovascular dysfunction were at 26.5 times higher risk of dying than the others, those who had malign neoplasia were at 6.2 times higher risk and those with respiratory failure were at 5.3 times higher risk of dying (Table 1).

The average age of the patients who died in our study (73.19 years) was higher than that of the patients who did not die (55.24 years) ($P < .001$). On the other hand, those over the age of 74 years were twice as likely to die. On the contrary, those under the age of 45 years had almost 7 times higher probability of survival (Table 1).

To conclude, our studies show that the mortality due to OA TB in Spain is falling, and this may be due to the reduction in its incidence. The zero rate of mortality among children stands out, as does the fact that mortality is associated with age above 74 years and certain comorbidities, especially cardiovascular dysfunction, malign neoplasia and acute respiratory failure.

Conflict of interests

The authors have no conflict of interests to declare.

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Isabel León Rubio,* Antonio Guerrero Espejo

Grupo de Investigación de Enfermedades Infecciosas, Facultad de Medicina y Odontología, Universidad Católica de Valencia «San Vicente Mártir», Valencia, Spain

* Corresponding author.

E-mail address: isabel.leon.rubio@hotmail.com (I. León Rubio).

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