

MULTIFOCAL TUBERCULOSIS AMONG CHILDREN ABOUT 35 CASES

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Abstract – Multifocal childhood TB remains underestimated. It can occur at any age. Usually on a plot of immunosuppression especially HIV infection, but it can also occur in immunocompetent children.

This is a retrospective and prospective study over a period of 11 years between January 2004 and July 2015. During that period, 1 122 children are hospitalized Pneumo-pediatric department at the Moulay Youssef hospital in Rabat. Amongthem, 35 patients (3.11%) are achieved multifocal tuberculosis.

We show through this work the frequency of multifocal tuberculosis in immunocompetent children and the different reported damages while noting the difficulty of diagnosis in front of clinical polymorphism

Keywords: Multifocal tuberculosis; child

I. FULL TEXT:

Multifocal childhood TB remains underestimated. It can occur at any age and affect both sexes. Usually on a plot of immunosuppression especially HIV infection, but it can also occur in immunocompetent children.

A. Type of study

This is a study that is both retrospectively and prospectively on a period of 11 years between January 2004 and July 2015. During that period, 1 122 children were hospitalized in the pneumo-pediatric department at the Moulay Youssef hospital of Rabat. Among them 35 patients with multifocal tuberculosis.

B. Patients

The inclusion criteria are:

1) aged between 2 and 15 years.

2) The diagnosis of tuberculosis multifocal was chosen because of:

- The presence of at least two extra-pulmonary involvement associated or not with pulmonary involvement.

- The diagnosis of tuberculosis is retained:

- either on certain elements: a bacteriological or histological confirmation.

- Or On strong presumption elements: immunization status, the notion of recent TB contagion, the presence of suggestive clinical and radiological signs, TST, and not improvement in

non-specific antibiotic treatment, but after eliminating other diagnostics

C. Survey

We collected a set of clinical, para-clinical, therapeutic and evolutionary from the medical records archived in the pediatric pneumophthysiology service of Moulay Youssef hospital (Pavilion E), through a joint operating this plug that comprises:

1. The socio-demographic data.
2. Clinical data.
3. Clinical Data para.
4. The therapeutic management.
5. Changes.

D. Statistical analysis

The bio statistical study is carried out through the SPSS software version 17.0 when we considered $p < 0.05$ was statistically significant.

II. RESULTS

A. Patient characteristics and clinical presentation

The average age of patients was 9.4 +/- 2.5 years, with extremes of 4 and 14 years.

There was a female with 26 girls (74%) for nine boys (25%).

The BCG vaccination was noted on the medical records of all patients. The BCG scar was found in over half of cases (53%). The history of lymph node tuberculosis was noted in only one child already. The concept of contagion recent tuberculosis (<2 years) was found in 34.4% of cases. This is an essential criterion for diagnosis.

Two cases of recurrent respiratory infections. Two cases of trisomy 21. A case of rheumatic fever in Extencilline every 21 days. Typhoid fever a year before hospitalization in a girl of 10 years. Passive smoking was found in 14% of cases (5 children).

In our series, we found no family history of multifocal tuberculosis, or land of acquired or congenital immunodeficiency, or diabetes, or kidney disease, or long-term corticosteroid. 26 children (74%) consulted with more than a month of the start of symptoms. Only 9 children (25%) consulted during the first month (**Figure 1**)

Other:

- The tonic-clonic seizures are noted in a case involving localizations: lung, hepatosplenic and abdominal lymph node without brain damage.

- Headache associated with purulent otorrhea are found in cases with multifocal tuberculosis meningo-brain, ear, and miliary.

- A para-sternal swelling was found in a case with bone tuberculosis, pleural and pericardial.

- A skin swelling was found in cases with cutaneous tuberculosis, pulmonary, and peripheral lymph node.

- An acute sciatica is noted in cases with tuberculosis of the hip bone, lung and mediastinal lymph node.

- In one case, the reason for consultation was significant bone pain with left arm increased its volume with no history of trauma. The radiological assessment concluded a fracture on pathological bone with tuberculosis. This child has both localizations: bone, skin, and peripheral lymph node.

B. B. Diagnostic strategy

Diagnosis of tuberculosis is multifocal retained on histological evidence in 4 cases (11%), bacteriological in 6 cases (17%), both histological and bacteriological in 3 cases (8.5%), or the combination of arguments epidemiological, clinical, radiological and immunological correlate with therapeutic evidence in 22 cases (63%).

1. Bacteriological Diagnosis:

Bacteriology allowed to retain the diagnosis of tuberculosis in 9 cases (25%). It is :

- Five cases of BK + sputum on direct examination.
- Two cases of BK + culture; 1 case in sputum and other in pus PREVENTING ear.

- A case of BK + direct examination of pus taken from a cervical lymphadenopathy.

- A case of BK + in urine on direct examination.

2. histological diagnosis

Histological study of biopsy confirmed the tuberculous in 7 (20%). She objectified an epithelial cell and giganto granuloma with caseous necrosis. It's about :

- Cervical Biopsy in 4 cases.

- Liver biopsy in 1 case.

- pleural biopsy in 1 case

- Bone biopsy in 1 case.

3. Diagnosis retained on strong presumption of elements:

(Table 2)

In 22 cases (63%), diagnosis of tuberculosis is retained on a set of arguments:

- Epidemiological: the notion of recent TB contagion.

- Clinics: physical signs suggestive and generals, and not improved by a nonspecific antibiotic therapy.

- Radiological: suggestive radiological aspects of tuberculosis.

- Immunological: in particular tuberculin conversion.

Multifocal forms of tuberculosis

Multifocal tuberculosis is defined by achieving two extrapulmonary sites associated or not with pulmonary disease, tuberculous localizations in our series are as follows (**Figure 3**).

C. Therapeutic care

1) Anti bacillary Treatment

Therapeutic diets are prescribed according to the national guidelines for TB control, and after discussion at the staff of the hospital Moulay Youssef

a. Before 2011:

- Eleven patients are put under two SRHZ / 4RH (34.4%), it is a multifocal tuberculosis patients with Met: pulmonary, and / or lymph node and / or pleural and / or digestive.

- Two patients with multifocal tuberculosis involving bone involvement are brought under RHZE 2/10 HR after decision of the hospital staff.

- Two tuberculosis patients with multifocal bone involvement associating received SRHZ 2/10 HR after decision of the hospital staff.

- A patient with multifocal tuberculosis meningoencephalitis received 2 SRHZE / 7 HR.

- One patient received relapse treatment: 2 SRHZE / 1 RHZE / 5 RHE.

b. After 2011:

- Fourteen patients are put under RHZE 2/4 HR (43.7%). it is a multifocal tuberculosis patients with Met: pulmonary, and / or lymph node and / or pleural and / or digestive.

- A patient with multifocal tuberculosis with brain injury is turned RHZE 2/7 HR.

2) Corticosteroids

It is prescribed in affected: pericardial, meningeal and miliary associated with dyspnea. In our series 7 children are put under oral corticosteroids (20%).

The prescribed dose is 0.5 to 1 mg / kg / day for 6 to 8 weeks with degression at the 15th day.

3) Related treatments

Local treatments are made of cold abscess in 4 cases.

Paracentesis (ascites, pleural effusion) is made in 6 children.

The puncture-drainage of soft tissue abscess is made with 2 children.

The Depakine is associated with anti bacillary treatment in a child with tuberculous meningoencephalitis.

Chest physiotherapy and rehabilitation is made respectively in 6 and 1 case.

4) Side effects of anti bacillary treatment

Generally, treatment is well tolerated in patients. We have found no case of major side effects.

Only 3 children (9.4%) had vomiting, liver function tests is normal income. Vomiting disappeared after symptomatic treatment.

D. Evolution

Short-term monitoring of our patients is performed during the hospitalization Moulay Youssef hospital clinical monitoring (weight gain, and general regression of clinical signs), biological (ESR, CRP), Radiological and Ultrasound (abdominal or Transthoracic).

The average follow-up was three months. Only a minority of patients are seen beyond the first month of the start of the anti bacillary treatment.

At the end, all the patients were directed to CDTMR region.

E. To 1 month

All patients are seen at one month. There was a clinical improvement in all cases. 77.1% of children (30 cases) received a biological control that was favorable in all cases. 35 patients underwent chest radiography with an improvement in 33 cases (96.8%), and stability in one case. Abdominal ultrasound was performed in 6 patients with regression of the volume of deep lymph node in 5 cases, and stability in a case.

F. Three months

Five patients (42%) are seen at 3 months. There was in them a good clinical and radiographic evolution. Biological control is in 7 children (20%) is favorable.

G. At 6 months

Only 3 patients (8.5%) are seen at 6 months of treatment, with a good clinical course, biological, radiographic and ultrasound.

H. Twelve months and more

Six patients (17%) are seen at 12 months or more. There was a total regression of clinical symptoms. Chest radiography made in 5 patients showed a total cleaning of the lesions.

III. DISCUSSION

Diffuse or multifocal attacks represent 9-10% of cases of extrapulmonary tuberculosis [1,2]. These forms are rare in immunocompetent individuals [1]. They occur most often in immunocompromised patients, mainly with HIV [1,2]. The mortality and morbidity remain high, especially since the field of onset often worsens the prognosis. This mortality is estimated between 16% to 25% [3]. It is especially described in the infection with HIV (HIV).

In Morocco, there are no epidemiological data on the incidence of pediatric multifocal tuberculosis. We have found a few sporadic cases of multifocal tuberculosis published in the literature. No national study on multifocal tuberculosis has been made to date. We have statistics that some forms of pulmonary tuberculosis and isolated extrapulmonary (**table 4 and 5**).

We divided our series into 2 categories: the first category with > 3 TB localizations. the 2nd category: ≤ 3 with TB localizations.

We tried to see if there is a risk factors that influence the number of locations of the multifocal tuberculosis in children.

The risk of infection in children exposed is modulated by various factors related to the infectiousness of the index case, exposure conditions and the child himself. The knowledge of these factors and standardization of their collection are very important elements for improving the effectiveness of screening. This allows evaluation of the level of risk for each child and to guide therapeutic indications. Once the infected child, other factors are likely to favor the immediate progression to the disease (**Table 6**).

No risk factors were found in our series apart the trisomy 21 in 2 cases associated with multifocal tuberculosis, there are two girls without family ties, aged respectively 11 and 13 years, who presented both the same tuberculous localizations: lung, and cervical mediastinal lymph node.

Diagnosis of multifocal tuberculosis is retained in front of the presence of an interference of at least two of extrapulmonary sites with or without associated lung damage. The inflammatory balance is high in all cases, the same result was reported by several authors published in sporadic cases of multifocal TB in children [4,5].

Because of the low normal bacillary concentrations in samples taken from children with tuberculosis, a positive smear is observed in up to 20% of children's diseases, tuberculosis [6, 7,8]. A positive culture is found in only about 50% of children's pulmonary tuberculosis [59]. In our study on 32 children, only 7 (21.8%) have a positive bacteriological examination. Genomic amplification systems are capable of detecting small amounts of genetic material of *M. tuberculosis*. The level of sensitivity of polymerase chain reaction test (PCR) can be very interesting in childhood TB usually pauci bacillary. Few pediatric studies are available, but all show equal sensitivity or greater than that of cultures in tuberculosis [9-10-11]. If these genomic amplification techniques have no systematic indication in tuberculosis of the child, they can still be useful in situations where the diagnosis is difficult in children as newborns and immunocompromised, in whom false negative tuberculin test are common. In our series, no cases of tuberculosis is diagnosed by recent methods.

IV. CONCLUSION

Early diagnosis of childhood tuberculosis improves the prognosis by shortening the time of diagnosis, and secondly to detect and treat adult contaminant into the environment. It is therefore necessary to educate parents about the value to check the persistence of symptoms and improvement in non nonspecific antibiotic therapy.

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Figure 1 : Delay between the start of symptoms and diagnosis

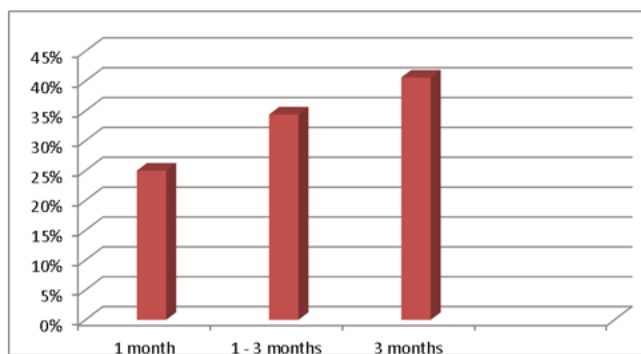


Table 2: Other patient characteristics

		N		%	
Functional signs	General signs	Fever	34	97	
		night sweats	27	77	
		Anorexia	29	82	
		Emaciation	29	82	
	Respiratory signs	Cough	19	54	
		chest pain	8	23	
		Dyspnoea	7	20	
		hemoptysis	3	8,5	
		abdominal pain	7	20	
		disorder transit	5	14	
Extra-respiratory signs	vomiting	4	11		
	polyarthralgia	3	8,5		
	tuméfaction sous cutanée	2	6		
Physical signs	para sternal abscess	1	3		
	lameness	1	3		
	purulent otorrhea	1	3		
	fluid effusion syndrome	6	17		
	pericardial friction	3	8,5		
	ascites	3	8,5		
	hepatomegaly	4	11		
	splenomegaly	5	14		
	Peripheral lymphadenopathy	14	40		

Figure 3: Tuberculosis Forms

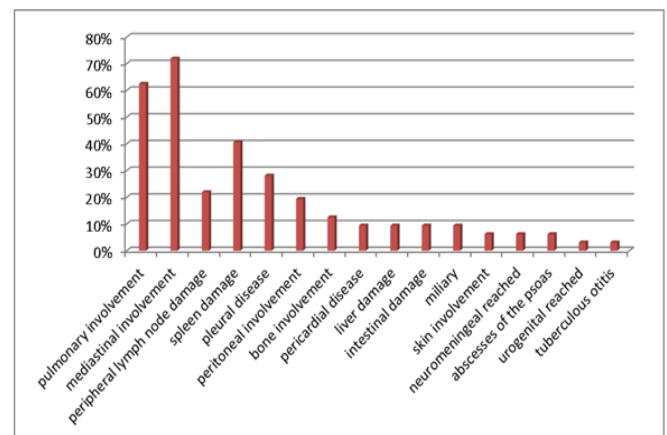


Table 4: Incidence of pulmonary tuberculosis in children in Morocco

	2008		2009		2010		2011		2012		2013	
	M	F	M	F	M	F	M	F	M	F	M	F
TPM+	51	124	63	132	51	117	79	100	54	77	51	106
TPM0c+	1	1	2	0	2	1	2	2	1	0	0	1
TPM0C0	44	57	63	58	39	68	42	53	36	41	42	36
TPM0c-							3	9	8	15	11	21
PIT	226	224	225	208	203	172	219	179	174	163	209	235
TEP	764	697	767	746	746	760	785	769	689	742	653	686
TTF	1086	1103	1120	1144	1041	1118	1130	1112	962	1038	966	1085

Table 5: Incidence of extrapulmonary tuberculosis in children in Morocco

	Pleural		GANGLIONIC		MILIAR		MENINGITIS	
	man	woman	man	woman	man	woman	man	woman
2012	134	113	457	463	8	2	24	20
2011	145	109	506	528	10	12	27	13
2010	150	100	408	193	5	9	41	43
2009	465	449	155	126	96	80	138	112
2008	150	109	435	434	139	119	79	80

Table 6 : Other factors are likely to favor the immediate progression to the disease.

	Factors increasing the risk of infection	Factors increasing the risk of progression to disease if infected
Factors related to the contaminant	<ul style="list-style-type: none"> - Increasing number of bacilli direct examination - Presence in caves - Chestradiograph - Active smoking 	<ul style="list-style-type: none"> - Presence of caves in chest radiograph
Factors related to child exposed	<ul style="list-style-type: none"> - Poor socio-economic conditions - Born in a country with high TB incidence - Family connection with the first degree of contaminant - Passive smoking 	<ul style="list-style-type: none"> - Age less than 5 years - Immunosuppression - Renal failure - Diabetes
Factors related to exposure conditions	<ul style="list-style-type: none"> - Exposure time - Exhibition Repeat - Containment upon exposure 	