Saudi Journal of Medical and Pharmaceutical Sciences **ISSN 2413-4929 (Print)**
Scholars Middle East Publishers **ISSN 2413-4910 (Online)**
Dubai, United Arab Emirates
Website: https://saudijournals.com/ DOI: 10.36348/sjmps.2017.v03i04.005

Case Report

Visceral Leishmaniasis in Infants (<24 Month Old): A Series of 17 Cases

Sara Figuigui[1*], Nawal Bougrine[1], Amal Taghouti[1], Imane Bergui[1], Imane Benbella[1], Imane Tlamçani[1], Mounia Lakhdar Idrissi[2], Moustapha Hida[2], Er-rami Mohammed[3], Moncef Amrani Hassani[1]
[1]Laboratory of Medical Analysis, Department of Hematology, Hassan II Hospital of Fez, Morocco
[2]Pediatric Department, Hassan II Hospital of Fez, Morocco
[3]Parasitology Laboratory, Hospital Moulay Isamil of Meknes, Morocco

***Corresponding Author:**
Sara Figuigui
Email: figuiguisara@gmail.com

Abstract: The infantile visceral leishmaniose (IVL) is a systemic infection of the reticuloendothelial system due to a flagellate protozoan of the genus *Leishmania*. It is characterized by its geographical distribution most frequently around Mediterranean area, India, east Africa and South America. In recent years, we are witnessing a significant recrudescence preferentially in the very young child in Morocco . Its occurrence in the infant (<24 month old) remains rare, clinical signs are distinguished by more accentuated than in the child. The authors' work consists on a retrospective study of 17 cases of visceral leishmaniasis in infants admitted to the pediatric department at the University Hospital of Fez over a period from January 2013 till June 2016. The average age was 15.64 months, girls are more affected, The majority come from the regions of Fez, mainly Taounate. The main reasons are abdominal distension (70%), fever (100%) and pallor in 90% of cases. The clinical examination finds an anemia, a fever and a splenomegaly in all cases. The diagnosis is confirmed by the myelogram performed at the Hematology Laboratory at the University Hospital of Fez. Treatment is based on glucantim at the dose of 80 to 100 mg / kg / day for 21 to 30 days. The evolution was favorable in the majority of cases. We deplored a case of death that occurred in association with macrophage activation syndrome. IVL is the most frequent zoonotic disease in Morocco. Fez and its surroundings form a highly endemic focus. Its eradication must first of all be achieved through the improvement of socio-economic conditions and the fight against malnutrition which constitutes a risk factor.

Keywords: Infatile visceral leishmaniasis ;infant(<24 month old) ; macrophage activation syndrome (MAS)

INTRODUCTION

Visceral leishmaniasis is a parasitic disease mainly CAUSED BY Leishmania infantum, a parasite of the dog, it is transmitted from mammal to mammal by the bite of a diptera vector: a female sandfly.

It is endemic in the Indian subcontinent, east Africa and the Mediterranean region from Morocco to the Middle East. IVL is a problem of public health in Morocco [1].

The classic Mediterranean zoonotic visceral leishmaniasis in very young children is still observed and it due to the immaturity of the immune system [2] and to the frequent contact of the dog [3].

We have tried to describe the epidemiological, clinical-biological, therapeutic and evolutionary features of this age group.

PATIENTS AND METHODS

This retrospective study concerned 17 cases of infantile visceral leishmaniose at the University Hospital of Fez (CHU Hassan II) three years and six months (from January 2013 to June 2016). We included all infants (age inferior to 24-month-old)hospitalized in pediatric department and witch the diagnosis of VL was confirmed by the médullogramme.

For every patient, the authors collected geographical origin, age, sex, clinical data,and biologic data(numeration formulates red chalk, speed of sedimentation, protein in blood) the myelogram result ,the treatment and the evolution .

RESULTS

The average age of the 17 patients studied was 16 months (from 2 months to 23 months). The boys were less affected than the girls with a sex ratio of 0.7 (07 boys for 10 girls). The majority of patients lived in an endemic regions of VL, 65 % of them came from Taounate, Two cases from Taza, a case from sidi kacem, A case of Guercif, a case of Sefrou and another case from Fes.

The average time between onset of symptoms and hospitalization ranged from 12 to 180 days, with an average of 61 days. Most of the patients suffered from splenomegaly, fever and paleness;anemia was almost constant.

The most frequent laboratory abnormalities were hematological. The average hemoglobin Level reported in this serie of patients ranged from 3.5 to 8.5 g/dl, with an average of 6.3g/dl. The average platelet level was 59000/mm3, it varied between 2000 and 1138000/mm3. The rate of the leukocytes was normal at eight cases associated to a neutropénia at seven cases of them. The leucopenia associated to neutropenia was observed in 53 % of the cases. The hyperprotidemia (superior to 80g / l) was observed at 29 % of the cases with an extreme of 102 g/l. The markers of the inflammation were augmented at all the cases. The average of speed of sedimentation, was 79 mm in the first hour and the average C-reactive protein(CRP) was 108 mg / l.

A corticosteroid therapy was added at two cases complicated with a syndrome of activation macrophagique.
We regretted the death of a three-month-old infant among these sick.

The N-methylglucamine (Glucantime®) was the drug of choice for all patients at a dose of 80-100 mg / kg / day for 21-30 days.

Additional clinical support was indicated for almost of children, especially the use of blood and antimicrobial therapy for febrile neutropenic patients. The evolution was favorable for the 70% of the cases, with a progressive improvement of the clinical and then biological parameters.

Epistaxis haemorrhagic complications of medium abundance were observed in four patients, transient hepatic cytolysis secondary to meglumine antimonate was reported in one case.

The duration of treatment was extended in a single patient who had speed sedimentation and a persistent splenomegaly and we suspected spleen infarction.

Corticotherapy was added in two complicated cases of macrophage activation syndrome. The death of a three-month-old infant among these patients has been reported.

Clinical complications during treatment were observed in 6 patients.Hemorrhagic complications (4-24%) Two patients had liver failure,and one case had heart failure.

Corticosteroid therapy was added at two cases complicated with macrophage activation syndrome. Only one patient aged 3-month old who died during the follow-up period was admitted to the intensive unity care.

DISCUSSION

In Morocco, VL is due to the species of *Leishmania infantum*: zymodème Mon-1 [2, 4]. the most important endemic focus are situated in the North of the country in particular in the regions of Nador, al-Hossima, Tetouan, Taza, Taounate, Sidi-Kacem, Meknes, and Fes. All our patients come from these regions.

VL is a parasitic disease common in children. The cases found at adults arise generally in a context of immunosuppression.

In univariate analysis age <18 months,was associated with unsatisfactory evolution. Other authors observed an increased risk of poor progression in younger children, under 12- months old [5, 6] Or less than six months old [7]. The case of death that we had in our series was only three months old.

A male predominance was noted in all series [1], paradoxically; in our work we find a female predominance.

Incubation is about 3 to 6 months but can reach several years, there are also same cases that developed this disease 10 days after arrival in endemic zone [8] In our series, the diagnosis was retained in an infant Aged 2 months, which means that an incubation period was less than 2 months in this patient. The hypothesis of congenital transmission seems also to be a possible eventuality, especially since these infant is supposed to be well covered and protected and not exposed to gnats outside. Congenital transmission of visceral leishmaniasis appears to be very rare (11 cases reported in the literature). In most cases, the mother presented VL during pregnancy, but cases of transmission in asymptomatic infected mothers have been reported. Symptoms occurred in infants aged 1 to 18 months (on average 8 months) after birth [9].

The typical visceral leishmaniasis is represented by a classic triad of anarchic fever, anemia and splenomegaly. This triad is almost constant in the child, unlike the adult. In our series, it was present in all patients.

In Hematological Changes Seen in VL, anemia is frequent , and hemoglobin levels are often between 7 and 10 g / dl. Lower hemoglobin levels were found in some series. Children had a lower rate of hemoglobin than adults [10, 11]. Anemia is mainly related to spleen

sequestration and haemolysis. All our cases had anemia, it was severe for the majority.

Leukopenia is regularly observed and has been found in approximately 75% of cases of VL [10, 12]. Thrombocytopenia is a common hematological manifestation during VL. It was found in 55 to 65% of cases. [12, 13]. Platelet inferior to 85,000 / mm3 has been reported as a poor prognostic factor in the child [14, 15]. Hypersplenism seems to be the main mechanism of thrombocytopenia [16].

VL is accompanied by an inflammatory syndrome with a fast accelerated rate of sedimentation, high CRP, hyperglobulinemia with hyperprotidemia [17].

A macrophage activation syndrome (MAS) may be associated with an IVL, it is due to immune dysregulation favored by hyperproduction of cytokines by an infectious agent [18,19], the associated infection being most often viral (' Epstein-Barr virus, cytomegalovirus). It can also be parasitic; visceral leishmaniasis is also a common cause of MAS in children. Sometimes it can represent a real vital threat and justify a specific treatment. Indeed in our series 5 of our patients presented a MAS of which only two cases benefited from corticosteroid therapy associated with meglumine antimoniate (Glucantime *).

The molecule of choice for the treatment of VL remains amphotericin B. The liposomal form (Ambisome®) reduces the undesirable effects of this molecule but its high price limits its use in patients in the developing countries. The development of a generic drug (Fungisome®) accorded by World Health Organization(WHO), at a much lower cost ($ 18 per ampoule) in India where there is resistance, has allowed access to this drug. Conventional amphotericin B in the form of oxycholate, available at affordable prices in these countries, has the disadvantage of causing significant adverse effects. Its effectiveness is lower than that of the liposomal form but remains a solution to [5] Pentavalent antimonates, such as meglumine antimoniate (Glucantime®) or sodium stibogluconate (Pentostam®), are available in excellent efficacy but require a higher number of injections(28) and are associated with a higher number of adverse events and chemoresistance.

CONCLUSION

VL is a very common parasitic disease in Morocco.. The incidence is still in net rprogress Its occurrence in young infants(<24 months) has rarely been described that why this work is particular. This parasitosis can be fatal in severe complications such as MAS.

The prevention of VL is a multifactorial problem involving socio-economic, epidemiological and health factor.

REFERENCES

1. Lakhdar Idrissi, M., El Ouardi, M., Atmani, S., Elarqam, L., Bouharrou, A., & Hida, M. (2007). La leishmaniose viscérale infantile: à propos de 209 cas. *J PédPuéricult, 20*, 136-41.
2. Agoumi, A., Rouichi, & Laherch, M. T. (1991). Mise au point sur le profil épidémiologique de la leishmaniose humaine au Maroc(1957–1989). *Maroc Med, XIII, 1,* 5-10.
3. Mikou, N., Balafrej, A., Benhamou, B., Mikou, S., & Baroudi, A. (1991). Leishmaniose viscérale infantile au Maroc. *Ann Pediatr (Paris), 38*(7),4 97-502.
4. Besbes, A., Pousse, H., Ben Said, Kharrat, H., & Ghenimi, L. (1994). Leishmanioses viscérales infantiles du centre tunisien au centre tunisien. (221 cas). *Med Mal Infect, 24*, 628–34.
5. Santos, M. A., Marques, R. C., Farias, C. A., Vasconcelos, D. M., Stewart, J. M., Costa D. L., & Costa, C. H. (2002). Predictors of an unsatisfactory response to pentavalent antimony in the treatment of American visceral leishmaniasis. *Rev Soc Bras Med Trop, 35*(6), 629-633.
6. Rey, L. (2000). Leishmaniose visceral (calazar). In: Tonelli, E., & Freire, L., editors. Doenças infecciosas na infância e adolescência. *Rio de Janeiro: Medsi, p.*1239-1250.
7. Ministério da Saúde. Secretaria de Vigilância em Saúde. (2006). Leishmaniose Visceral Grave: Normas e Condutas. Brasília: Ministério da Saúde.
8. Dedet, J. P. (2001). Leishmanies, leishmanioses. Biologie, clinique et thérapeutique. *EncyclMédChir Maladies infectieuses, 8*-506-A-10,11 p.
9. Chappuis, F., Pittet, A., & Bottineau, M. C. (2012). Trypanosomes et leishmaniose viscérale : des maladies tropicales négligées. Pédiatrie tropicale et des voyages, 32, chapitre 14.
10. Cartwright, G. E., Chung, H. L., Chang, A. N. (1948). Studies on pancytopenia in kala-azar. Blood, 3, 249–275.
11. Aikat, B. K., Mohanty, D., Pathania, A. G., Bhattacharya, P. K., Jain, S., Chari,N. C., Kumar, S., Sahaya, S., & Prasad, L.S.(1979) Hematological investigations in kala azar in Bihar. *Indian J Med Res, 70*, 571–582.
12. Marwaha, N., Sarode, R., Gupta, R. K., Garewal, G., & Dash. (1991). Clinico-hematological characteristics in patients with kala-azar, a study from North-West India. *Trop Geogr Med, 43*,357–362.
13. Al-Jurrayan, A. M., Al-Nasser, M. N., Al-Fawaz, I. M., Al-Ayed, I. H., Al-Herbish, A., Al-Mazrou, A. M., & Al-Sohailbani, M. O. (1995). The haematological manifestations of visceral

leishmaniasis in infancy and childhood. *J Trop Paediatr, 41,* 143–148.
14. Ministério da Saúde. Secretaria de Vigilância em Saúde. (2006). Manual de Vigilância e Controle da Leishmaniose Visceral. Brasília: Ministério da Saúde.
15. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde.(2011). Leishmaniose visceral: recomendações clínicas para redução da letalidade. Brasília: Ministério da Saúde.
16. Varma, N., & Naseem, S. (2010). Hematologic Changes in Visceral Leishmaniasis/Kala Azar. *Indian J Hematol Blood Transfus, 26*(3),78–82.
17. Marty, P., Pomares-Estra, C., Hasseine, L., Delaunay, P., Haas, H., & Rosenthal, E. (2009). Actualités sur les leishmanioses en France. *Archives de Pédiatrie, 16,* S96-S100.
18. Nadrid, A., Pousse, H., Laradi-Chebil, S., Khelif, A., Bejaoui, M., Besbes, A., Radhouane, M., & Guediche, M.N. (1996). La leishmaniose viscérale infantile : un cas difficile en cas d'hémophagocytose associée. *Arch Pediatr, 3*(9), 881–3.
19. Thabet, F., Tabarki, B., Fahem, R., Yacoub, M., Selmi, H., & Essoussi, A.S.(1999). Syndrome d'activation inappropriée des macrophages associé à une LVI. *Tunisie Med, 77*(12), 648-650 .
20. Association Française des Enseignants de Parasitologie et Mycologie (ANOFEL) (2014).