

# Visceral leishmaniasis in Shkodër, Albania

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## 1 Introduction

Leishmaniasis is a world widespread anthroponosis. In the Mediterranean basin, domestic dogs and wild canines are the disease’s main reservoir. The female of different species of sandflies is the vector of the protozoan to humans. In human beings *visceral leishmaniasis (VL)*, also known as Kala-azar, is the generalized and most serious form of infection, usually fatal if left untreated. Its spread is encouraged and made possible by a combination of poor environmental and social-economical conditions. As a consequence the presence and rate of increase of the disease can be very different in different areas [1, 2].

According to WHO [3] 12 million people are affected by leishmaniasis in 88 countries, 72 of which are developing countries. The overall annual incidence is about 2 million, with 1.5 million cases of cutaneous leishmaniasis and 500.000 of visceral leishmaniasis and an estimate of 40,000 to 80,000 deaths a year. In southern Italy *VL* is currently endemic with a very low paediatric incidence, ranging from 0.14 new cases per year per 100,000 children in the region of Puglia to 2.12 in Calabria. In Italy most of the recent *VL* cases are among young adults with AIDS. The incidence in other European countries of the Mediterranean area is comparable to that of southern Italy (see Table). In 1998 69 cases of *VL* have been reported in Albania over a general population of 3.5 millions inhabitants, with an incidence of 2 new cases per 100,000 per year, that follows the trend of the other European countries.

In 1999, following the Kosovo crisis, an international cooperation was started between the “A. Meyer” Children’s Hospital of Florence (Italy) and the Paediatric Hospital of Shkodër (Albania) and within the framework of this cooperation an epidemiological survey on *VL* in children was carried out. The results showed that the levels of incidence in Shkodër, which is one of the biggest towns in Albania, were much higher than expected. These results are presented and discussed in this paper. Possible causes of such high incidence as well as prevention and control strategies are considered.

## 2 Methods and Results

All the clinical notes of *VL* cases admitted to the Paediatric Hospital of Shkodër from the 1st January 1997 to the 31st December 1998 were examined and the cases in which the diagnosis was confirmed by the identification of the parasite in the bone marrow smear were selected. Upon admission all patients presented with asthenia, malaise, weight loss and fever which lasted for more than 1-2 months and unsettled after common treatments. Most of them (70.5%) on examination were pale with hepatosplenomegaly and lymphadenopathy. The blood tests showed anemia with leucopenia (severe neutropenia). Platelets count and proteins or immunoglobulins levels were not available. The bone marrow aspirates for the detection of parasites were sent to the University Hospital of Tirana. In all the above cases the clinical diagnosis was confirmed by the direct finding of the amastigotes with Giemsa stain. It is important to consider that none of the children were affected by AIDS. A single 20 days course of meglumine antimoniate (Glucantime) i.v., with a dose of 20 mg/kg/die elemental antimony, led to complete recovery in 70% of cases. In the remaining 30% of children, despite an initial clinical response a further admission for a second course treatment was necessary.

The Paediatric Hospital cover all the district of Shkodër, which also includes other towns and small mountain villages. The required demographic data were obtained from the General Registry Office. Population data divided according to the ages were available for the main town only; since there are no substantial differences in the birth rates in the different areas, we calculated the paediatric population of the whole district by considering the percentage of the children in the main town (24.2%) and extending it to the district population (238,000). The resulting paediatric population in the district of Shkodër is 57,596.

In a period of two years (1997-98) 78 new cases of *VL* under 15 years of age were identified, 43 females and 35 males. 38 patients were admitted during 1997 and 40 in 1998. The mean age of the affected children was 2 years and 8 months (min 4 months - max 11 years and 6 months). Over a population of 57,596 children, this corresponds to an incidence of **67.7** new cases per 100,000 children per year. It has to be pointed out that these data might be an underestimate, since diseases are not regularly notified and often ill children are not taken to hospitals, especially in remote mountain villages. These problems are present in any areas where an official diseases surveillance does not exist and notifications are not compulsory. These are also the main reasons why the data presented in literature are often incomplete.

### 3 Discussion

Shkodër is located in northern Albania, on the south bank of the homonymous lake which is surrounded by a wide marshland. To the west it faces the Adriatic sea and to the north-east it is close to mountains chains that are not easy to go across. The territory surrounding the town is therefore relatively isolated. The well known political events of the last decades had determined, by the time the survey was carried out, a gradual decline of the public services and the hygienic and medical infrastructures of local towns. The same happened for the social-economic conditions of the population, in particular in suburban and mountain areas. The declining hygienic conditions, the presence of the marshy and humid areas, the uncontrolled accumulation of rubbish and above all the infantile malnutrition constituted the basis for the spread of *VL*, a zoonosis that elsewhere (e.g. in the Florence area) is limited almost exclusively to dogs. These conditions, with the lack of education were among the causes of such high incidence in Shkodër.

Once the causes have been identified, it is important to consider the possible strategies for the prevention and control of the disease. A key objective set by the WHO in its strategy to reduce the incidence of *VL* [3] is the control of the sandfly population through residual insecticide spraying of houses and through the use of insecticide-impregnated bed nets. In countries like Siria, Sudan and Nepal the use of mosquito nets impregnated with permethrin has considerably reduced the incidence of *VL* at low cost [4]. This method has been proven to be safe, reliable and easy to implement. Residual insecticides on house walls and curtains have also been proven quite effective, yet in some occasions not as much as mosquito nets. The importance of the informative campaigns aimed at the local population (also indicated in the WHO programme) has been confirmed in two investigations carried out in India and Tunisia. The knowledge of the disease and its symptoms as well as the awareness of the risks led to a substantial reduction of the latency between the initial symptoms and the hospitalization. This made possible earlier interventions and led to a decrease in morbidity and mortality rate for *VL*. Simple, cheap and non-invasive diagnostic tools are recommended for an effective use in developing countries. Among the methods that are already available DAT (Direct Agglutination Test) has shown high sensitivity and specificity. It cannot be used as an exclusive diagnostic due to the possibility of false positive, but it can indeed contribute to speed up the diagnosis. The described cases have been treated with pentavalent antimonials, that remain the first choice treatment in developing countries. It is hoped that amphotericin B liposomal will soon be used since it has been proven to be more effective, in particular in cases of relapses or resistance to the antimony [5]. Such drug has been too expensive for the Local Health Service so far and a strategy for the reduction of its cost is expected in a not too distant future in order to make it affordable for patients from developing countries.

However, it is essential to point out that a single universal control strategy is not feasible, due to the great diversity of the involved factors, such as: (1) the characteristics of different sandfly vectors - distribution, abundance, longevity, flight range, feeding habits; (2) the parasite biology and the variation of the virulence in a given species; (3) the animal reservoirs - variable distribution, ecology, proximity to human settlements; (4) human and social effects - individual immunity status, occupation, population density, unplanned urbanization; (5) ecology of the areas where transmission occurs, e.g. temperature (which determines the time it takes for *VL* to develop in a sandfly), rainfall and humidity (which increase the longevity of some sandflies species). For all these reasons, a preliminary survey on the field must be carried out to determine the importance and the role of every single factor in the transmission cycle before choosing a method of control [2].

### 4 Conclusions

The level of incidence of *VL* in the Shkodër area as it emerges from this study is unmatched over the whole of the Mediterranean area.

This epidemiological survey is the first one that has been carried out in this area of Albania. It gives a realistic picture of the situation but a wider epidemiological investigation is advisable. It should be carried out in all the areas of the

country over a longer period of time and it should be in perspective rather than retrospective, with diagnostic methods well supported by more complete laboratory data. A full confirmation of this data might well constitute the starting point for future interventions of the European health organizations.

It needs to be pointed out that the basis of the epidemiological phenomenon is constituted by the high number of children that are affected by serious forms of malnutrition, given the essential role that it plays in the development of the diseases in man [6]. The importance of malnutrition as well as the poor environmental and living conditions is confirmed by the fact that in the last 5 years a general improvement both of health and social condition in the province has had positive effects on the incidence of VL.

As a final remark we consider of utmost importance that the Health Services of western European countries take into account the possibility that many immigrants could be affected by this condition when they reach our regions. The migratory flow has become more intense in recent years and as a consequence we will have to deal more and more often with this disease, as well as with many others that had been strongly decreasing in recent times and that were being considered very rare.

COUNTRIES	PERIOD	TOT. POPULATION	POP. 0 - 14	NEW CASES/YEAR	INCIDENCE
Malta	1980-95	369,451		2-16	0.54-4.33
Nice (France)	1985-92	342,439		10	2.92
Marseille (France)	1985-92	880,550		20	2.27
Tunisia	1992-93	8,735,885		130	1.49
Athens (Greece)	1962-92	3,096,775		27	0.87
Algeria	1985-95	27,256,252		200	0.73
Portugal	1987-92	9,868,000		200	0.73
Spain	< 1987	38,748,000		100	0.26
<b>Albania</b>	<b>1998</b>	<b>3,500,000</b>		<b>69</b>	<b>1.97</b>
<b>Shkodër</b>	<b>1997-98</b>		<b>57,596</b>	<b>39</b>	<b>67.71</b>
<b>Italy</b>	1997		8,382,507	45	0.54
Calabria	1997		377,911	8	2.12
Sicily	1997		946,923	14	1.48
Campania	1997		1,154,040	15	1.30
Lazio	1997		742,919	5	0.67
Puglia	1997		730,140	1	0.14

Sources: Total population: Enciclopedia Microsoft Encarta 98

Population 0-14 (Italy): Popolazione e movimento anagrafico dei comuni, Anno 1997, ISTAT

Confirmed cases (Mediterranean): WHO Bulletin, 1995; **73**: 191-197

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