LEPTOSPIROSIS IN ALBANIA

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LEPTOSPIROSIS

- There are a wide variety of pathogens that can cause diseases in humans. The most predominant pathogens that can be propagated and transmitted by domestic animals or wildlife animals, and that cause infection to humans are bacteria *Leptospira spp*.
- Leptospirosis is a disease that has a significant health impact in various regions of the world and that affect people from different socioeconomic levels.
- Leptospirosis is a complex disease with multiple modes of transmission, broad host range, a multitude of infecting serovars, nonspecific clinical manifestation, and difficult diagnosis. The burden of leptospirosis appears to be mainly determined by the interaction of poverty, geography, and climate changes.
- Even though the bacterial burden is globally significant inadequate diagnosis has affected the awareness of the disease among the medical community.
- Millions of people are infected each year, but information and treatment can be limited, especially in the developed world where cases are considered 'rare‘.
- The spectrum of human disease caused by leptospirosis is extremely wide, ranging from subclinical infection to a severe syndrome of multiorgans infection with high mortality.

SITUATION IN ALBANIA

- Leptosipirosis is one of the most common zoonosis in Albania and is classified as an endemic disease. Albania has adopted legislations in infection diseases control in accordance with the EU legislations, but diagnostic and epidemiologic capabilities of Albanian for leptospirosis are rather low, and need significant development. Leptospirosis is in the list of notifiable diseases and is estimated to represent 2% of all reported zoonotic disease in Albania.
- Climate change with heavy rainfall, flooding and extreme weather conditions have been discussed as factors to increase disease. The incidence and magnitude of Leptospirosis outbreaks during the years incidence within 2005 – 2011 has been 2.8 cases /100.000. During the years 2010-2020 the estimated prevalence ranges between 23% to 50% of all suspected cases,
- In Albania, Leptospirosis is a disease under diagnosed & under reported. This is due to lack of many reasons, including difficulty in distinguishing clinical signs from those other endemic diseases, lack of epidemiologic information about the presence of different type of serovars and a lack of appropriate diagnostic laboratory services.
- There are to reference institute in Albania (Institute of Public Health and that are focused on analysed and evaluate the situation of lepteospirosis in humans and animals. But, in Albania there is very limited data on the prevalence and incidence of Leptospirosis. Mostly generated data comes from laboratory surveillance and epidemiological unit. Furthermore, data about serovar and their geographic distribution stopped being generated since the 90's.

SITUATION IN ALBANIA

- Before the 90th years, the laboratory capacity in diagnosis of Leptospirosis were in a very good condition. IPH, should be the reference laboratory for the diagnosis of Leptospirosis, but after a prolonged transition for more than 3 decades the diagnostic methods are not at the level to justify this role.
- During the 94 until to 2007 years the data of prevalence and incidence of Leptospirosis are missing due to lack of attention to this disease by the Veterinary and Public Health Service. In both institute the tests for the diagnosis of leptospirosis were not applied for a long period.
- The laboratory structure is in collapse, most of equipment and infrastructure for diagnosis of different types of serovars are were old and not suitable for applying testing.
- So even at the moment the diagnostic specific test for determination of Leptospira spp we are talking about is not applied in Albania.
- In 2008, on my own initiative, the diagnostic test for suspected cases of leptospirosis was re-introduced, firstly with a rapid test and after the first year we apply the ELISA method. Nowadays the only test that is applied is the evaluation of IgM and IgG antibodies with the ELISA test.
- The aim study is to evaluate the prevalence and incidence of leptospirosis during last decade, and to examine the relationship between disease and other variables of interest.

METHODS

- This is a retrospective study conducted from 2010-September 2020 based to laboratory and surveillance systems in Institute of Public Health.
- A total of 720 samples were analysed from patients attending a reference Albanian`s hospital.
- The conventional ELISA test were performed for estimation of IgM and IgG antibodies in all cases.

RESULTS

Over all 720 sera from hospitalized patients, the prevalence of acute Leptospirosis cases resulted 37.2% and the incidence Rate = 9.58 per 100.000 pop.

Male were 595 (82.64%) of them and female were 125 (17.36%).

The prevalence of Leptospirosis in men resulted 78.6% and to female 21.4%. Our study demonstrates that men are more affected than women by this infection, due to occupational exposure for CI 95% odds ratio [1.07-2.34] p value 0.02.

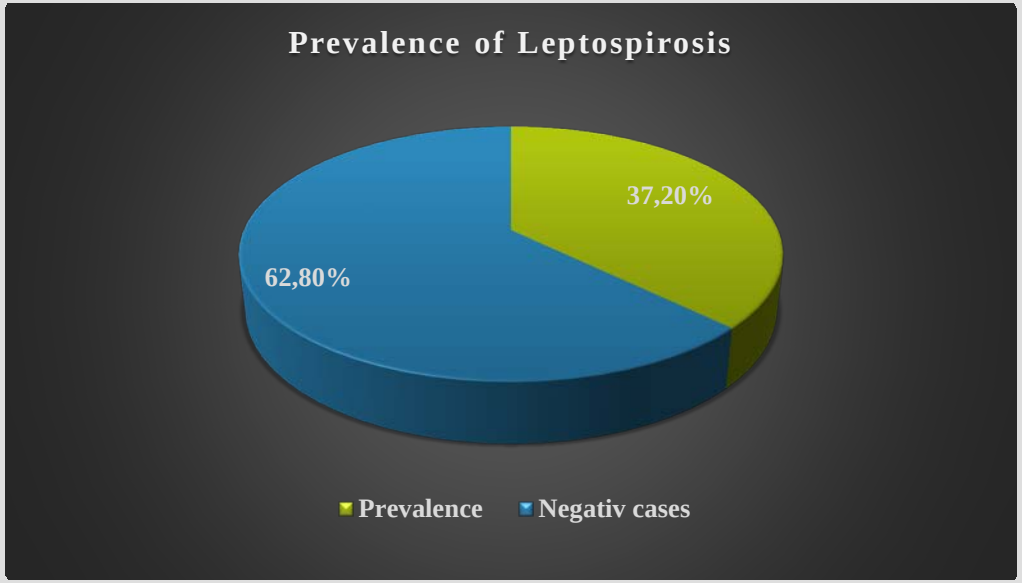

Figure 1. The prevalence of Leptospirosis

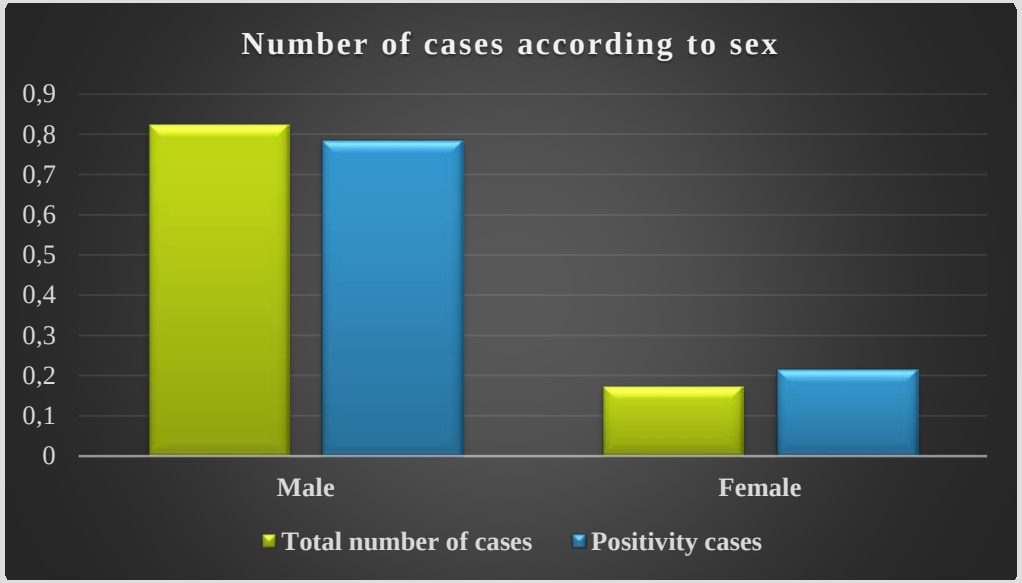

Figure 2. The distribution of Leptospirosis cases according to sex

RESULTS

The average age was 51.36±13.81 with min 19 and max 85 years old. The most predominant age groups were 41-50 years and 51+ years old.

Over ten years the average of cases resulted 29.1 cases/year (ranges of cases/years was 10 to 41).

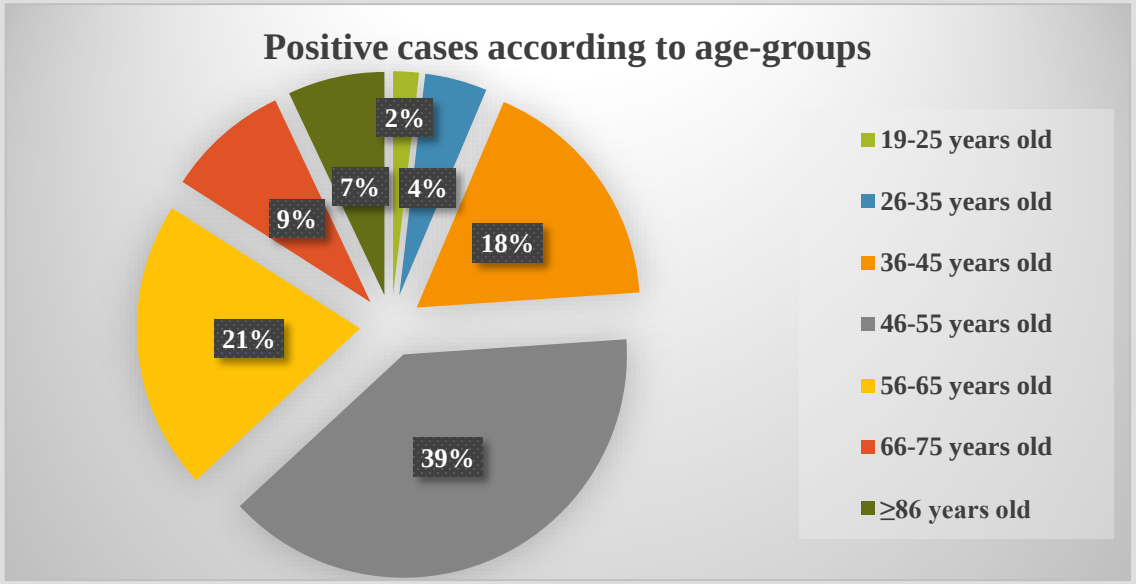

Figure 3. Positive cases according to age-groups

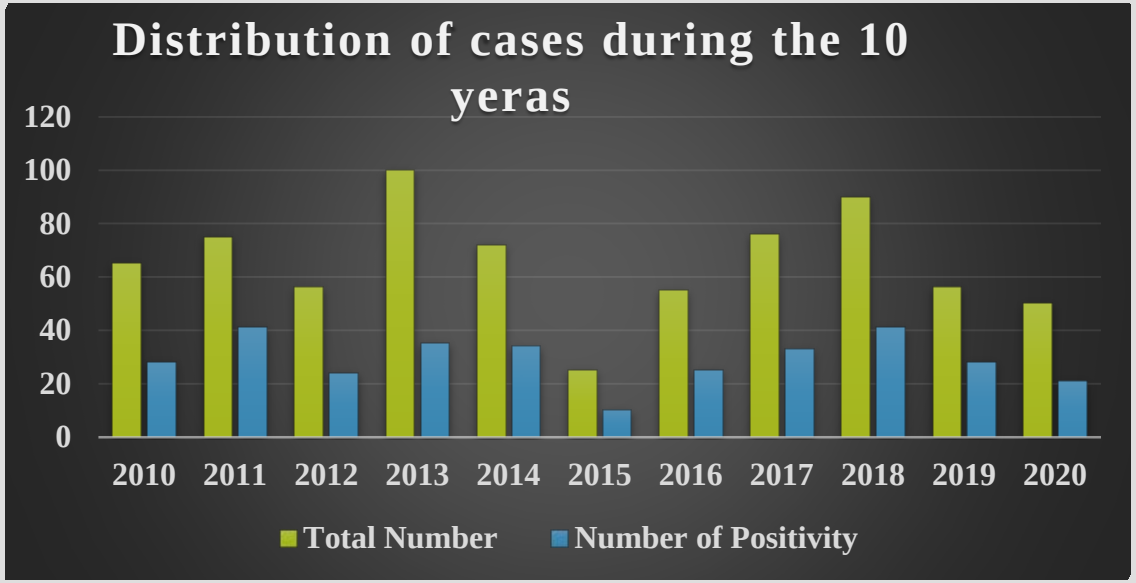

Figure 4. The distribution of Leptospirosis during ten 10 years

RESULTS

The incidence during 10 years in Albania, presents a variation of values from 0.34 in the year 2015 until to 1.42 in year 2018, with an average of 0.958.

During the last 2 years (2019-2020) there is a decrease in the number of cases tested, which has led to a decrease in the annual prevalence and incidence.

Based on our analyzed, this decrease has come as a result of the emergency situation of Covid 19 that affected worldwide, and all of this made other infectious diseases to be excluded in a second background.

For this reason, the attention in identification of cases and in the diagnosis and treatment of patients with leptospirosis have lost during the time.

In Albania, the case fatality among confirmed with Leptospirosis resulted from 0 to1.8% of patients during the years. The incidence of case fatality for 10 years resulted 0.041.

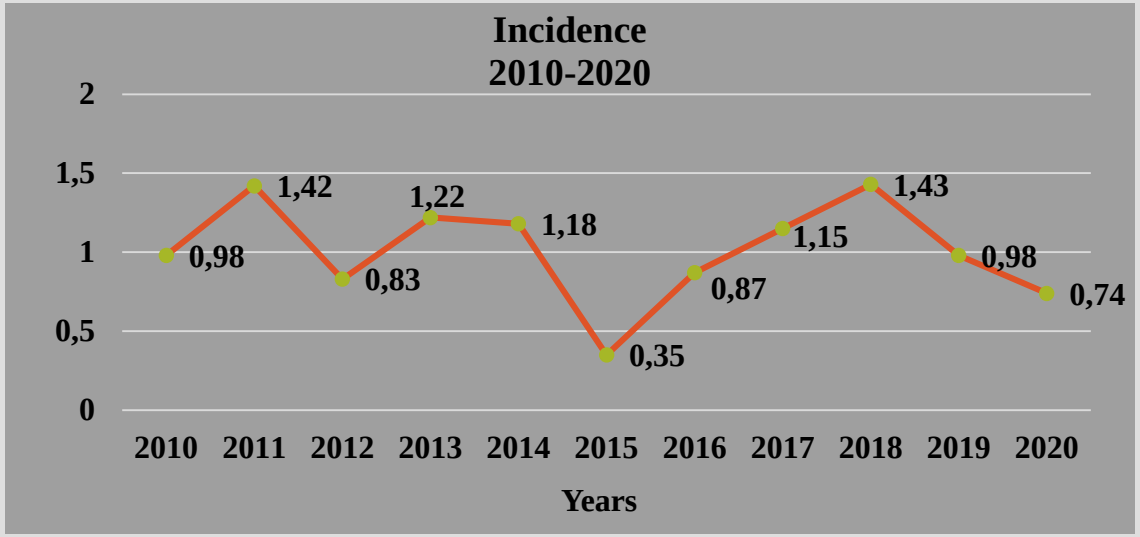

Figure 5. Incidence of Leptospirosis during ten 10 years

RESULTS

Confirmed Leptospirosis patients from rural areas have higher Leptospirosis positivity compared to patients from urban areas with percentage 61.2% for rural area and 38.8% for urban area.

The number of leptospirosis cases peaked during the rainy season and a significantly associated were seen between the heavy rainfall and number of hospitalized cases (CI 95%; $p<0.05$).

Leptospirosis was certainly recognized as an occupational hazard

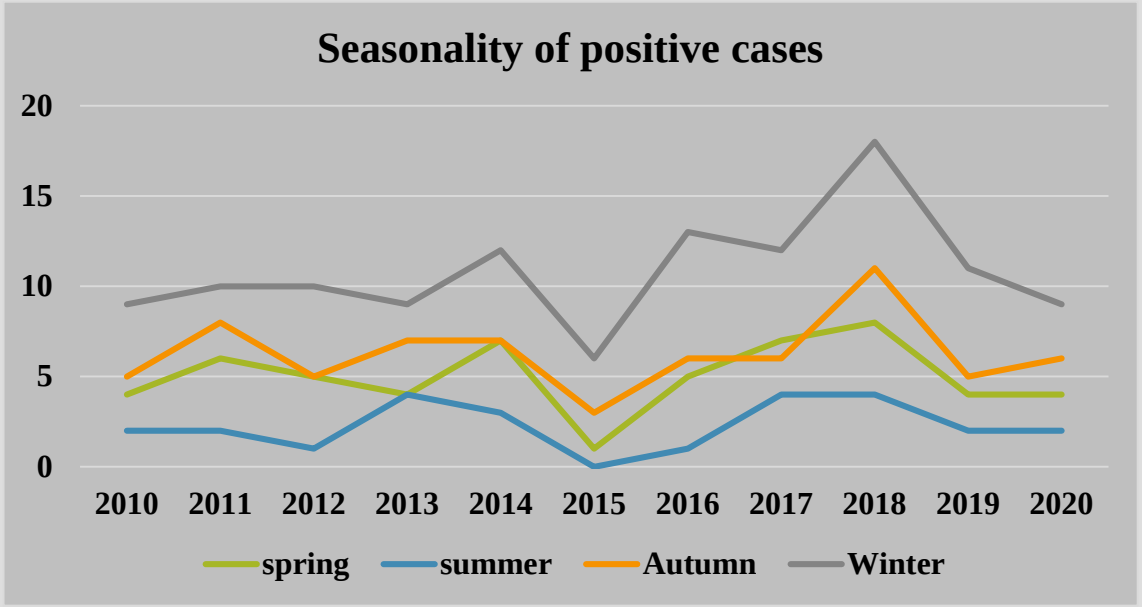

Figure 5. Seasonality of positive cases for ten 10 years

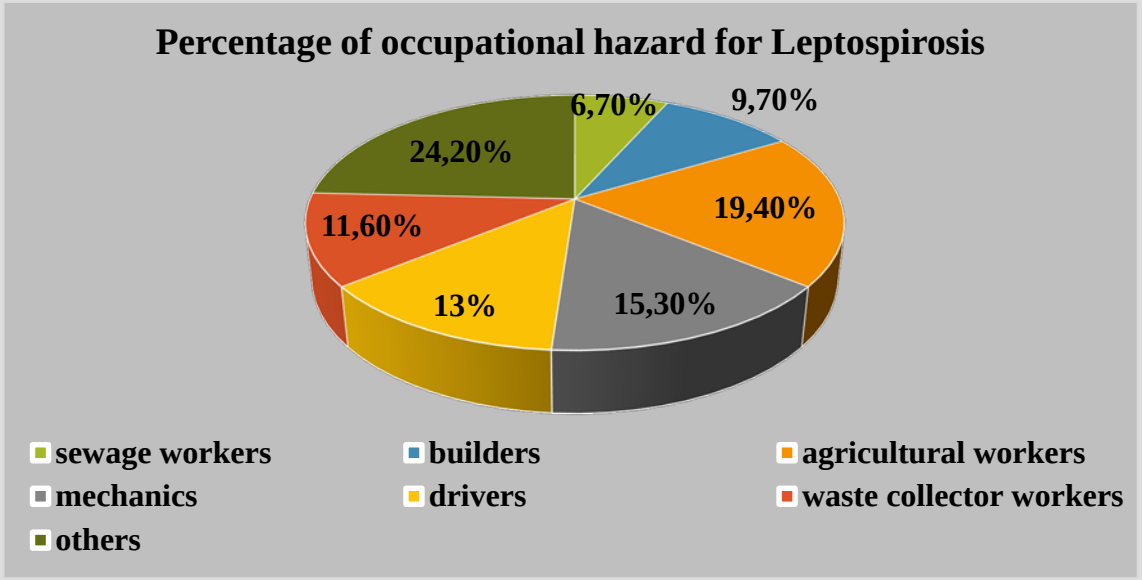

Figure 6. Leptospirosis as an occupational hazard

POSITIVITY OF LEPTOSPIROSIS CASES

The distribution of positivity cases in Albania.

Leptospirosis as an endemic disease in Albania, was more prevalent in the lowlands and coastal areas, but during this decade we see a wider range of cases that affecting areas that have not previously have been infected with this bacterium.

The capital city of Albania, has the most predominant positive cases and after that the Shkodra, Durrës and Fier cities have been presented the most high positive cases.

CONCLUSIONS

- This retrospective study reveals a marked increase of cases during those ten years. Men resulted as the most predominate sex in this study.
- The source of infection in humans is usually either direct or indirect contact with the urine of an infected animal. A lot of occupations are in hazard for this zoonotic infection (such as sewage workers, builders, agricultural workers, drivers, mechanics, waste collector workers etc). The positivity of Leptospirosis is high among such groups due to lack of awareness of the problem and non wearing of protective clothing.
- Flooding and heavy rainfall have been associated with an increase of leptospirosis in Albania, so nowadays Leptospirosis should receive the attention of the stakeholders for prevention and evaluation of situation.
- It is urgent to increase awareness of the public health impact of this disease and necessity for prevention programs to identify geographical areas that are most likely to be at risk of an increase in leptospirosis disease burden and to improve capacity to promptly diagnose and manage cases.
- We need to implement and to increase the access to more sensitive and specific diagnostic methods needed to complete a final confirmed diagnose and provide information about circulating serovars in Albania.
- Strengthening diagnostic capacity and implementation of molecular epidemiology for pathogen *Leptospira spp* is our goal as institutes.


THANK YOU!