

Clinical manifestations of infectious mononucleosis among adult patients in Albania

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Abstract

Aim: Infectious mononucleosis, caused by Epstein-Barr virus, affects virtually all human beings at some point in their lives. The aim of this paper is to provide an epidemiological-clinical picture of an unusual group of 31 hospitalized patients diagnosed with EBV, in Tirana, the capital of Albania.

Methods: This cross-sectional study was carried out during September 2011 – September 2013 including 31 patients with confirmed diagnosis of EBV infectious mononucleosis and hospitalized at the Infectious Diseases Ward of the University Hospital Center “Mother Teresa”, in Tirana. All patients were older than 14 years at the time of the survey. Besides basic socio-demographic and socioeconomic information, we also recorded any signs and symptoms that might be associated with the disease.

Results: Around half (51.6%) of patients were females whereas 48.4% were 15-20 years old at the time of the survey. One third of the cases occurred in winter and summer time (35.5% vs. 38.7%, respectively). The most common sign was fever (present in 96.8% of the cases), followed by fatigue (87.1%), enlarged general lymph nodes (74.2%), enlarged liver and spleen (64.5%), and enlarged neck lymph nodes (51.6%).

Conclusions: Our findings indicate that, in Albania, the epidemiology of Epstein-Barr virus infectious mononucleosis is similar to international reports.

Keywords: Albania, epidemiology, Epstein-Barr virus, infectious mononucleosis.

Introduction

Infectious mononucleosis is a clinical syndrome that is most commonly associated with primary Epstein–Barr virus (EBV) infection, a member of the herpes virus family (1). Natural EBV infection occurs in humans only and results in a lifelong infection. EBV is present in virtually all human populations and the infection occurs typically during early childhood in developing countries or up to adolescence in developed countries (2).

Although the overwhelming majority of cases of infectious mononucleosis occur during primary EBV infection, infectious mononucleosis syndromes have also been reported in chronically infected persons after T-lymphocyte depletion with monoclonal antibodies against CD3 (3,4). By the time that most people reach adulthood, an antibody against EBV can be detected in their blood (5). The antibody titers follow a U-shape pattern with extreme highs in infancy and over 50 years of age (2). This U-shape distribution of antibody titers probably reflects the primary infection in infancy and the re-activation of the virus during late adulthood due to the deterioration of the immune system (2).

EBV infection during childhood usually presents with a poor clinical picture with no obvious signs and symptoms (2). Approximately, only one in ten EBV infected children will develop the disease (6). Earlier infections most likely result in lifelong immunity and this why adults who have been in contact with EBV during childhood do not typically develop the illness. The illness is more frequent in individuals aged 15 to 24 years old (6). Conversely, primary infection occurring during adolescence often produces the clinical disease in over half of individuals (2).

Mononucleosis is typically known as the “kissing disease” because the virus spreads through saliva. This is the main route of transmission in adolescents and adults whereas in younger children the virus spreads through saliva found on toys or fingers (2). Also, “glandular fever” and “mono” are

other terms frequently used for this infectious disease. The characteristic symptoms of EBV infection include fever, lymphadenopathy, fatigue, malaise, pharyngitis and sore throat (2,7). The disease typically causes an increase of lymphocytes relative to other white blood cells, from which phenomenon the term “mononucleosis” has derived (3,4). EBV infection usually does not require hospitalization (2).

The incidence of infectious mononucleosis varies between 60 and 100 cases per 100,000 person-years (8). The variation of incidence rates is probably due to socioeconomic factors which determine in large parts the age at primary infection (9). In children, no sex difference of EBV seroprevalence has been reported (2). However, later in life antibody titers are usually higher among females (2). Commonly, poor socioeconomic conditions favor early exposure to EBV virus whereas high socioeconomic conditions more often favor late primary EBV infection (2).

Although the epidemiology and clinical features of EBV infection are rather extensively studied and reported, little is known in this regard for Albania. One recent abstract described the epidemiology of infectious mononucleosis among 98 children aged 1-14 years old hospitalized in the pediatric infectious disease ward in Tirana during 2006-2011 (10). However, the present study tries to present an epidemiological-clinical picture of an unusual group of 31 patients diagnosed with EBV, thus contributing to the study of this disease in other Albanian population groups.

Methods

This was a cross-sectional study carried out between September 2011 and September 2013.

We included 31 patients with a confirmed EBV infectious mononucleosis diagnosis. The patients were hospitalized in the Infectious Diseases Ward of the University Hospital Center “Mother Teresa”, in Tirana, Albania. All patients were over 14 years old at the time of the survey.

In all cases the infectious mononucleosis diagnosis was confirmed through clinical assessment, biochemical and serological tests, including leucocyte formula, mononucleosis test, testing of M immunoglobulins (IgM) and G immunoglobulins (IgG), and testing for EBV antibodies.

All signs and symptoms present among study subjects were recorded. This included fever, sore throat, muscle pain, fatigue, enlarged neck lymph nodes, enlarged lymph nodes in general, skin eruptions and enlarged liver and/or spleen.

In addition, basic socio-demographic and socio-economic information for the participating subjects was retrieved as well, including sex, age, season of occurrence of the infection and employment status.

Absolute numbers and respective percentages were calculated and reported in order to describe the distribution of patients according to study variables. Microsoft Excel 2007 ® was used for the data analysis.

Results

Table 1 presents the basic socio-demographic and socioeconomic characteristics of the study participants.

About 48.4% of participants were males whereas just less than half were 15-20 years old, 16.1% belonged to the 21-25 years old age-group, 25.8% were 26-35 years old at the time of the survey and the remaining 9.7% were 45 years old or older (Table 1). About one third of cases occurred in winter and spring (35.5% and 38.7%, respectively), followed by 19.3% of cases occurring in autumn whereas in summer it was reported the lowest proportion (6.5%). No clear trend was noticed in the proportion of subjects according to employment status (Table 1) with pupils, unemployed and students over represented (35.5%, 19.4% and 19.4%, respectively) compared to other employment statuses (Table 1).

Table 1. General characteristics of study participants

Variable	Absolute number	Percentage (%)
Sex		
Male	15	48.4
Female	16	51.6
Age-group		
15-20 years	15	48.4
21-25 years	5	16.1
26-35 years	8	25.8
36-45 years	0	0.0
45-60 years	2	6.5
>60 years	1	3.2
Season		
Winter	11	35.5
Spring	12	38.7
Summer	2	6.5
Autumn	6	19.3
Employment status		
IT specialist	1	3.2
Medical doctor	1	3.2
Clerk	1	3.2
Pupil	11	35.5
Tax operator	1	3.2
Unemployed	6	19.4
Pensioner	1	3.2
Self-employed	1	3.2
Worker	1	3.2
Student	6	19.4
Sportsman	1	3.2

Table 2 presents the information about the signs and symptoms of infectious mononucleosis affecting the study participants. The most common sign was fever with 96.8% of patients manifesting it, followed by fatigue and enlarged general lymph nodes which were noticed in 87.1% and 74.2% of study patients,

respectively (Table 2). Enlarged liver and spleen was present in almost two-thirds of study patients (64.5%) whereas approximately one in two patients (51.6%) had their neck lymph nodes enlarged (Table 2). Muscle pain and skin eruptions were present only in about a quarter and a tenth of patients, respectively.

Table 2. Signs and symptoms present among study subjects

Symptoms and signs	Absolute number	Percentage (%)
High body temperature (fever)	30	96.8
Sore throat	10	32.3
Muscle pain	8	25.8
Fatigue	27	87.1
Neck lymph nodes enlarged	16	51.6
General lymph nodes enlarged	23	74.2
Skin eruption	4	12.8
Liver & spleen enlarged	20	64.5

Discussion

The present study is amongst the few ones reporting epidemiological data about patients affected by EBV infectious mononucleosis in Albania, a small country in the Western Balkans. We suggest that, in patients aged over 14 years old, the disease is not sex specific and it is more common among younger patients with almost 90% of them being 35 years old or less. The most common signs and symptoms included fever, fatigue, enlarged general and neck lymph nodes and enlarged liver and spleen.

In general, the body's immune system produces antibodies to attack and help destroy invading viruses and bacteria. These specific antibodies can be detected in the blood of people who have been infected with certain antigens. As mentioned earlier in this report, the EBV that causes infectious mononucleosis is spread virtually in all part of the world. In this context, an EBV antibody can be detected in almost all people by the time they enter adulthood (2,6,11), implying an EBV exposure and subsequent infection sometimes in a human's life (11). The differential diagnosis of EBV mononucleosis with other diseases manifesting themselves with

similar signs and symptoms is sometimes necessary. In this regards, it is important to distinguish between EBV mononucleosis and infection caused by cytomegalovirus, for example, which produced similar clinical features associated with an increase in blood lymphocytes as well (12). However, the infection and the clinical picture derived by EBV is much more common than the earlier condition (12).

Our results are in line with international estimations which suggest no sex difference among persons affected by EBV (2). Also, the finding that the clinical picture of mononucleosis is usually present among young adults (2,7) is also evident in our sample of patients as well. Contrary to reports from literature that generally suggest no seasonal pattern of infectious mononucleosis, we found the disease to be more common in winter and spring whereas a study carried out in Israel noticed that the peak disease incidence occurred in summer (13). However, the Israel study was performed among defense forces (13) and therefore the two studies are not directly comparable. However, splenomegaly and lymphadenopathy in our study

was present in 64.5% and 74% of patients, being approximately comparable with the Israel study where these conditions were present in 53% of cases (13). In another study, splenomegaly was present in all (100%) of cases (14), compared to 64.5% reported in our study subjects. The frequency of fever, fatigue and muscle pain in our study was approximately similar to those reported in the Israel study (13), although with some variations. However, as mentioned earlier, the later study included only persons aged 18-23 years old (13), where the disease is very common compared to other age-groups. The high frequency of signs and symptoms among our study subject could be explained different age-groups included (those aged 25-35 years old present the peak of signs and symptoms of the disease) and the potential role of socioeconomic conditions which are very different in the two countries under analysis. For example, other studies have suggested that the rate of affection of lymph nodes is at least 90% (15,16). As mentioned earlier, the EBV can infect any person (17), and the peak incidence is observed among people aged 15-17 years old (17). Because the disease is less severe in children and with no specific signs or symptoms, then it is usually under-detected in this age-group (12,18-20). In our study we noted that the age group 15-20 years old had the highest percentage of infection of MI, but this infection can also largely affect the persons aged above 60 years also. These uncommon age-group

infected by EBV are associated with no clinical feature of classical clinic of mononucleosis. However, in our study it was found that other elements related to the epidemiology of mononucleosis are similar to what is described in the literature.

This study has several limitations including the limited number of subjects involved in the study and its cross-sectional nature. The small sample of subjects engaged here does not ensure the generalization of results had more patients included in the study. Therefore, these findings will ideally apply only to EBV infected persons aged more than 14 years old and hospitalized in a tertiary hospital in Albania. On the other hand, the cross-sectional nature of this study does not allow drawing any conclusions about the temporality of events. Moreover, findings related to seasonality of the disease should be interpreted with caution as they are closely rooted, linked and affected by the very limited number of subjects under study.

Conclusion

Infectious mononucleosis is usually a self-limited, although sometimes prolonged, and often uncomfortable illness. Infectious mononucleosis is a disease observed virtually at any age-group. Clinical and biological symptoms in older adults are different compared to the clinical picture present in younger individuals. In Albania, the epidemiology of infectious mononucleosis is similar to international reports.

Conflicts of interest: None declared.

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