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Research Article

Hepatitis C as A Health Problem in Poland

Lidia Sierpińska*¹

¹Military Hospital with Polyclinics, Independent Public Health Facility, Poland

*Corresponding author: Dr. Lidia Sierpińska, Military Hospital with Polyclinics, Independent Public Health Facility, Poland,

Tel: +48507810339; Email: sierpinska1@wp.pl

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Abstract

Introduction

Hepatitis C is an important clinical, diagnostic, epidemiological, economic and social problem in Poland and worldwide. The etiologic factor of this inflammation is hepatitis C virus (HCV), which is transmitted through blood and blood preparations.

Objective

Evaluation of hepatitis C virus infection as a health problem in the Polish population.

Material and method

Analysis of epidemiological data concerning the occurrence of hepatitis C in the Polish population based on published results of scientific studies and statistical data.

Results and Discussion

Hepatitis C is an important medical and social problem in Poland (approx. 730000 people infected – 1.9% of the total population) and worldwide (approx. 170 million people – 3.0% of the world population). It is difficult to determine the number of individuals infected with HCV in Poland, because screening tests are not performed. According to estimates from 2009, the incidence has been increasing (in 2009 – 2168; in 2013– 2632). In Poland, hepatitis C is significantly more often registered as a hospital- acquired infection than other infections (approx. 33.0% of infections), which are among the most frequent causes of claims for financial compensations by patients and their families (approx. 33.0% of legal cases). Studies show that HCV infection is a frequent cause of occupational infections in Polish hospitals – 0.80-1.42% of staff examined. A high rate of vertical transmission is observed in newborns of mothers infected with HCV (16.2%). From 1997, an increase has been noted in the number of deaths due to HCV (1997 – 23; 2010 –160).

Conclusions

The rate of HCV infections in Poland is high (1.9%) and is often registered as a hospital-acquired infection (1/3 of all infections), infection of medical staff (0.80–1.42%), and a vertically transmitted infection in newborns (16.2% of babies of infected mothers). A progression of deaths due to hepatitis C is also observed (approx. 160 cases annually).

Keywords: Hepatitis C; HCV; Epidemiological data; Polish population

Introduction

The etiologic factor of hepatitis C is hepatitis C virus (HCV). The incubation period is 45 days, on average. HCV virus is heat resistant. It dies only in the sterilization process at temperature exceeding 1400C, and may survive outside the organism up to 3 weeks. It is sensitive to chlorine and ethanol-based disinfectants. The only reservoir of HCV and source of infection are humans, transmitted through blood, and proliferates mainly in hepatocytes (replication); however, it also occurs in other organs and peripheral blood mononuclear cells [1].

The routes of HCV infection are various types of tears (ruptures) in tissues. Hazards are: blood transfusion and other contact with blood; performance of a tattoo, acupuncture, procedures at a hairdresser and beautician; intravenous administration of narcotics, delivery, performance of dialysotherapy, transplantation of an organ from an infected donor, medical equipment infected with HCV; sexual contact with an infected partner [2, 3].

In Poland and in other countries worldwide, HCV infection may be caused by:

- Transfusion of blood or blood preparations before 1992 (in Poland, since 1992 blood from donors started to be examined for the presence of HCV within screening tests; determination of anti-HCV antibodies started to be performed);

- Haemophilia – 95% of those born before 1990 (in the USA – 96%, in Holland – 68% in the beginning of the 90s) [4];
- Several hospitalizations;

- Minor surgical procedures performed (e.g. removal of moles, tooth), dialyses, endoscopic examination;

- Diagnosis of HBV;

- Taking drugs by intravenous route – approximately 70% drug addicts are chronically infected with HCV virus (approximately 75% in highly developed countries) [5];

- Using tattoo, beauty parlour;

- Sexual contacts;

- Common use of cosmetic tools/toothbrushes;

- Employment in health care facilities, mainly physicians and nurses.

Objective

Evaluation of hepatitis C virus infection as a health problem in

the Polish population.

Material and method

Analysis of epidemiological data concerning hepatitis C in the Polish population according to published results of scientific studies and statistical data.

Results and Discussion

Epidemiological data concerning hepatitis C in Poland

Estimated data by the WHO indicate that over 170 million people worldwide, i.e. approximately 3.0% of the total population, are infected with HCV, and about 3–4 million people are infected annually [6].

In Poland, hepatitis C is registered by the National Department for Hygiene (PZH) as an independent disease since 1997. Officially, approximately 800 – 3000 cases were registered annually. Planned screening tests are still not performed. Screening tests for anti- HCV antibodies have been conducted exclusively in blood donors by blood stations since 1997, whereas HCV-RNA examination by the PCR method has been performed in all donors since 2002. In 1998, the incidence of HCV infections was 4.04/100,000 inhabitants, while in 2004 – 5.4/100,000 population. In Poland, approximately 730000 people are infected, and these data are based primarily on the determination of anti-HCV antibodies, and not the genetic material of the virus (HCV-RNA) [7].

From 2009 in Poland, all laboratory-confirmed cases of HCV are registered, not only symptomatic cases or those confirmed by an elevated level of transaminases and presence of antibodies [8]. In 2009, epidemiological data showed that, similar to previous years, the incidence of hepatitis C was higher in urban than rural areas (6.06% and 4.55%, respectively) more often concerning males than females. In recent years, an upward tendency has been observed in the number of cases of hepatitis C (2009 – 2168; 2010 – 2178; 2011 – 2189; 2012 – 2265; 2013 – 2632). In Poland, the percentage of the population who had contact with HCV virus reaches 1.9% (in Northern and Central Europe the frequency occurrence of infections with HCV is within 0.2% (Holland) and 1.2% (France), and in the Mediterranean countries – from 2.5% - 3.5% [9]. Data published in 2013 by the Chief Sanitary Inspectorate indicate that due to the hidden character of the disease approximately 95% of Poles infected with HCV are unaware of the infection. Thus, they are unaware of the consequences, e.g. cirrhosis or hepatocellular carcinoma, and the risk of infecting others [10]. Hepatocellular carcinoma affects annually 1–4% of patients with cirrhosis caused by HCV infection, and in 2010 was diagnosed in 1416 Poles.

HCV has an extremely high mutation rate and occurs in 6 various genotypes, each one divided into 50 subtypes. The major difference between subtypes and genotypes is response to treatment (susceptibility to anti-viral drugs). If the response to treatment is poor, the infection takes a chronic form (more than 50% of those infected). Unfortunately, in Poland, the infection with subtype b genotype 1 is most frequently noted (70% of infections), and most poorly responds to treatment with interferon [11]. Data shows that the effectiveness of treatment in type 1 b is approximately 57% of the total number of patients. In 2010 in Poland, 1198 patients were hospitalized due to hepatitis C - 59.3% of the total number of patients registered. In recent years, the percentage of patients hospitalized due to HCV infection remained on a similar level [8].

HCV infection as a hospital-acquired infection

During 2010–2011, Polish scientists examined 4822 patients hospitalized in surgical wards for the presence of anti-HCV antibodies, which were detected in 92 (1.91%) of the total number of patients [12]. In other groups of patients treated in surgical wards in 2008–2009, the presence of anti-HCV antibodies was observed in 0.9% of the total number of patients [13].

During 2001–2005, studies were carried out among 2857 deceased, potential organ donors, of whom 2.6% were infected with HCV – only kidneys were used for transplantations (78) [14]. Analysis of epidemiological data concerning the occurrence of selected infectious diseases in Poland in 2005–2012 shows that hepatitis C was significantly more frequently registered as a hospital-acquired infection, compared to other causes (2005 – 2993; 2006–3025; 2007 – 2811; 2008 – 2391; 2009 – 2891; 2010 – 2178; 2011 – 2189; 2012 – 2265) [15].

In 1993–2000 in Poland, 345 civil cases were brought to court by former patients, against treatment facilities, for financial compensations for health loss, related with infection acquired during diagnosing, treatment or nursing. At this time, the number of cases due to HCV infection was 91 (26.4%). Most frequently, hospital-acquired infections due to this cause occurred in surgical wards (87), gynaecological (34), and orthopaedic wards (39), confirming a high risk of HCV infection in surgical wards [16]. Other studies show that during 2007–2014, the percentage of claims for compensations by patients afflicted with hospital-acquired infections due to hepatitis C was 33.0% [17].

Hepatitis C as an occupational infection

Annual reports by the J. Nofer Institute of Occupational Medicine in Łódź (Poland) show that hepatitis B virus (HBV) and hepatitis C virus (HCV) cause the majority of occupational infections in Polish hospitals [18]. Studies in Poland among 520 medical staff confirmed the presence of anti-HCV antibodies in

0.8% of the total number of patients [19]. Other researchers proved that the rate of anti-HCV antibodies in Polish population was 1.9%, while among health care staff – 1.42% (among their patients – 1.92%) [20]. In 2009, in a study among 362 nurses and 65 physicians, anti-HCV antibodies were found in 1.4% of respondents [21].

Hepatitis C as a vertically transmitted infection

According to the literature, there is a risk of infection with HCV by vertical transmission (6.0%–9.0%), i.e. related with the transmission of the virus from mother to baby (intrauterine and perinatal) [22, 23]. Studies conducted during 2001–2005 among newborns of mothers infected with HCV confirmed that the rate of vertical transmission of infection was 16.2% - higher than the above-quoted data. This indicates the necessity to examine all infants of mothers infected with HCV [24]. Studies of 554 pregnant Polish women confirmed that in this group the frequency of occurrence of anti-HCV antibodies was 2.02% - higher among urban than rural inhabitants. Moreover, a considerable part of pregnant women (44.0%) were unaware of their HCV infection [25].

Mortality in Poland due to hepatitis C

Based on data published in the report by the National Department of Hygiene (PZH) it was found that during 1997–2010, mortality due to acute or chronic hepatitis C remained on a high level and showed a growing tendency: 1997(23), 1998(34), 1999(41), 2000(52), 2001(73), 2002(91), 2003(116) 2004(124), 2007(132), 2010(167) [26, 27, 28]. Simultaneously, it was discovered that the highest incidence of hepatitis C was noted among adults aged 40–60 living in urban areas (higher among males than females) [29].

Conclusions

1. Currently, hepatitis C virus (HCV) infection is among the leading clinical, epidemiological, economic and social problems in Poland (approximately 2.0% of the population are infected).
2. In Poland, HCV is one of the main causes (approx. 33%) of hospital-acquired infections.
3. Considering late diagnosis, the number of deaths due to hepatitis C in Poland remains on a high level, showing an upward tendency, which indicates the need for improvement in the effectiveness of diagnostics and treatment of this disease.
4. In order to determine the needs for treatment, rehabilitation, health promotion and prophylaxis, long-term screening tests should be performed.

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