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Occurrence of infectious diseases in dialysed patients

Chronic renal insufficiency, as well as hemodialyses themselves lead to function disorders of many organs and systems. We can observe lowering of defensive abilities of the body. Dialysed patients are exposed to repeated contact with medical equipment, they need numerous examinations. All these factors, including dialysis itself, increase the risk of occurrence of different bacterial as well as viral infections (10). A clinical course of these diseases is much faster but at the same time without strong general symptoms. Hemodialyses, the necessity of dialysis fistulas incision, immunological disorders, anaemia may be the cause of frequency increase of infections in these patients. The aim of this paper was to try to identify the type and frequency of occurrence of infectious diseases in dialysed patients.

MATERIAL AND METHODS

The research was done with the use of a survey, which was conducted among 50 patients (30 men and 20 women at the age of 26 to 76) of The Dialysis Centre of the City Hospital in Chełm. The research was done in 2002. The survey included 37 questions divided into four categories. The first one referred to personal data, the second to family and job situation, the third to dialysotherapy and the fourth to epidemiological data.

RESULTS

In the examined group of patients the time of dialysotherapy was taken into account. The most numerous group consisted of patients dialysed for a period from one to five years (20 people, which made 40% of the examined people), the second group consisted of people dialysed for 5–10 years (14 people – 28%). The third group consisted of patients for less than one year (13 people – 26%) and the least numerous group consisted of patients dialysed for over 10 years (3 cases – 6% of the examined people) (Fig. 1). In the whole group, 5 cases (10% of the surveyed people) had a renal transplantation done, but they came back to the centre because of graft rejection.

Among the examined people, 35 had at least one episode of infection in the last year. The most often occurring infectious diseases were urinary tract infections, bronchitis, influenza, ear inflammation (Fig. 2). Among the examined people, 30 (60% of the surveyed) had diseases concurrent with the main disease. Among the people with infections, 22 had a burden of additional disease, which was making the time of infections longer, and 13 did not have any concurrent disease. The most frequent additional disease was coronary disease, the second most frequent disease was diabetes, as well as the chronic gastric and duodenal ulcer disease and arterial hypertension (Fig. 3). Three hundred and five of the

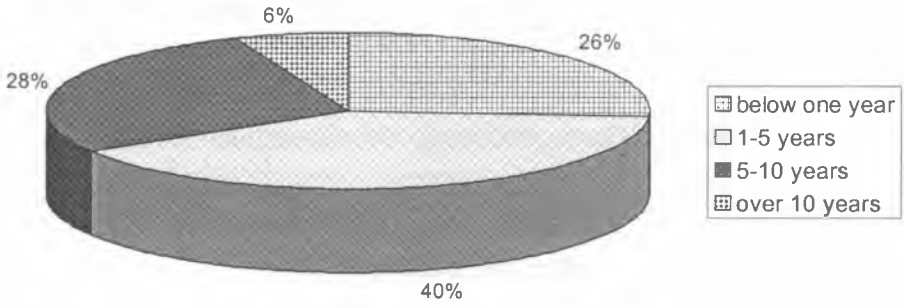

Fig. 1. The length of time of hemodialyses in the examined group

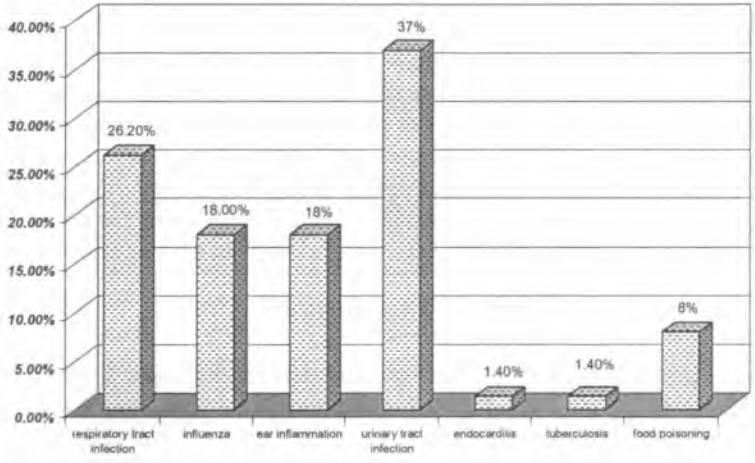

Fig. 2. The occurrence of infectious diseases in the examined group in the last 12 months

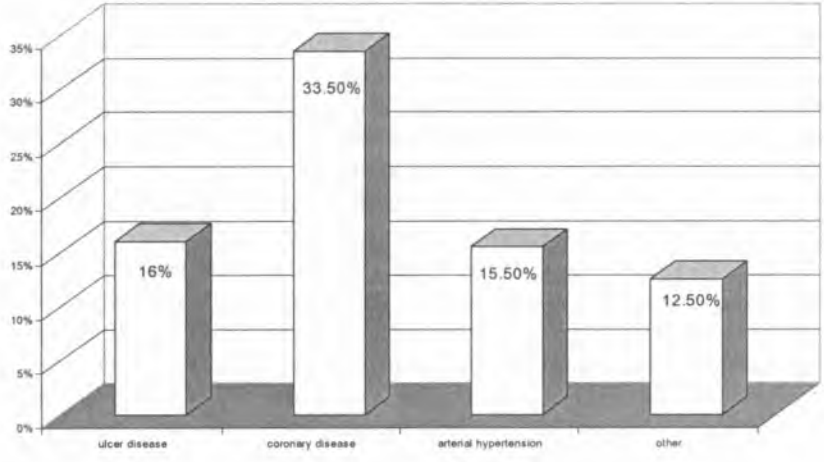

Fig. 3. The most frequent diseases concurrent with renal insufficiency

examined people had inflammatory or thrombotic changes in the region of dialysis fistula in the last year. 22% of the examined were the carriers of HBV, whereas 36% had antiHCV antybodies (Fig. 4). Factors that did not exert a direct influence upon the frequency of occurrence of infectious diseases among the people in the examined group were financial situation and living conditions.

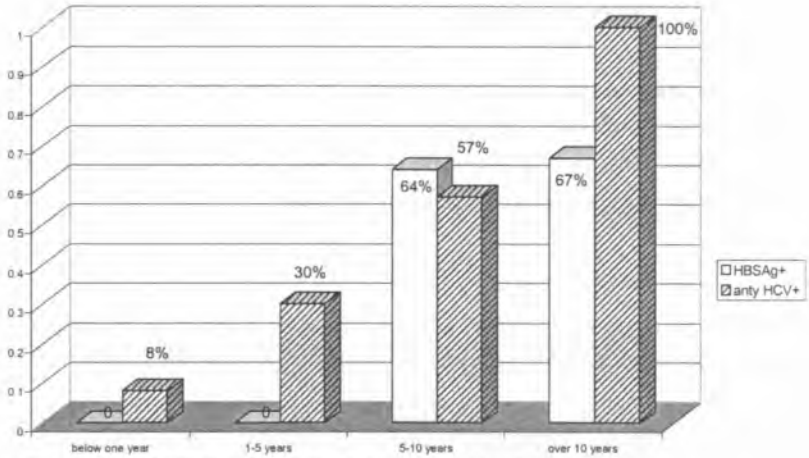

Fig. 4. The risk of WZW B and C infection depending on the length of hemodialyses

DISCUSSION

In uraemia we observe function disorders of many organs and systems. The treatment with the use of dialyses does not eliminate completely the condition of uraemia, and the best evidence of that is the persistence of immunological system suppression. This condition leads to immune deficits with hemodialysed patients and to frequent occurrence of infectious diseases (2).

Counteraction of some infectious diseases to a greater extent depends on personal engagement and change in previous habits and preferences. A factor that influences falling ill with infectious diseases is the lack of compliance of patients with liquid and diet recommendations. The research done indicates that the highest percentage of infectious diseases is encountered with people who do not comply with the diet. A similar situation is when people do not comply with liquid recommendation. Similar results were obtained by R i c k a et al. (9). The entry for infection may be vascular access. Inflammatory or thrombotic changes in the region of arteriovenous communication were observed during the last year with 30% of the examined people. Numerous punctures necessary for the conduction of hemodialysis disturb the protective barrier of the body i.e. skin, making easy for bacteria to penetrate into the blood, which is also confirmed by other authors (3, 4, 12).

The results of the research indicate that concurrence of other chronic diseases increases sickness rate of infectious diseases. Dialysed patients are one of the biggest group with risk of serum hepatitis (6). There is a clear interdependence between the length of the period of treatment with hemodialyses and the number of patients with hepatitis virus B and C. The longer this period is, the more people are the antiHCV carriers (7, 8). On the other hand, in the group of not vaccinated people, more than half members of the group are carriers of hepatitis virus B. U r b a n o w i c z et al. (11) vaccinated the dialysed HbsAg-negative and antiHBs-negative patients with the vaccine Engerix B and they confirmed a high efficiency of this method of prevention. This thesis is also confirmed by preventive programmes in Italy and Switzerland (1, 5). At present the problem deserves more attention. Hemodialysed people are exposed to great risk of HCV infections (12).

CONCLUSIONS

1. Hemodialysed patients are a group with an increased risk of infectious diseases.

2. A special problem among these patients is the infection with hepatitis virus B and C.

3. The frequency of occurrence of infectious diseases increases with the age of patients and the time of dialysotherapy.

4. Education of the sick in the area of infection prevention gives measurable effects such as decreases in the number of the sick.

REFERENCES

1. Ambuhl P. M. et al.: Epidemiology of chronic hepatitis B and C among dialysis patients in Switzerland. Schweizerische Medizinische Wochenschrift. J. Suiss. Med., 130, 10, 341, Mar 11, 2000.
2. Amore A., Coppo R.: Immunological basis of inflammation in dialysis. Nephrology Dialysis Transplantation, 17 Suppl. 8, 16, 2002.
3. Brueck M., et al.: Infective tricuspid valve endocarditis with septic pulmonary emboli due to puncture of an endogenous arteriovenous fistula in a chronic hemodialysis patient. J. Infect., 46, 3,188, 2003.
4. Miłkowski A. et al.: Propozycje wytycznych zapobiegania szerzenia się infekcji krwiopochodnych stacji hemodializ. Nefrologia i dializoterapia polska. Vol. I, 1–2, 1997.
5. Mioli V. A. et al.: Epidemiology of viral hepatitis in dialysis centers: a national survey. Nephron, 61, 3, 278, 1992.
6. Niemczyk S., Stopiński M.: Wirusowe zapalenie wątroby typu C u chorych z przewlekła niewydolnością nerek. Nefrologia i dializoterapia polska. Vol. II, 3, 1998.
7. Poux J. M. et al.: Vaccination against hepatitis B virus. Value of intradermal administration in dialysed patients non-responsive to intramuscular approach. Presse Medicale, 24, 17, 803, 1995.
8. Raccosta G. et al.: Prevalence of hepatitides in our hemodialyzed population. Nephron, 61, 3, 300, 1992.
9. Ricka R. et al.: Adequate self-care of dialysed patients: a review of the literature. Int. J. Nurs. Studies, 39, 3, 329, 2002.
10. Rutkowski B: Dializoterapia w codziennej praktyce. Wyd. II. Wydawnictwo Medyczne MAK-med., Gdańsk 1996.
11. Urbanowicz W.: Efficacy of prophylactic vaccination against Hepatitis B virus infection viruses in hemodialyzed patients. Przegl. Epidemiol., 54, 3-4, 343, 2000.
12. Wreghitt T. G.: Blood-borne virus infections in dialysis units – a review. Rev. Med. Virol., 9, 2, 101, 1999.

SUMMARY

Chronic kidneys' failure as well as hemodialysis operations lead to disorders of many organs' and system's functions. We can observe a decrease in the immunulogical system's efficiency, which consequently causes the decrease in a human body's defence abilities. The dialysed patients are subject to a frequent contact with medical equipment and they require numerous examinations. All these

factors, including the dialysis itself, increase the risk of occurrence of various types of infections, both bacterial and viral ones. The aim of the work was to try to define the kind and frequency of infectious diseases occurring among the dialysed patients. In order to conduct the research, the questionnaire among 50 patients in the centre of dialysis of the hospital in Chełm was made. Among the examined group, the most frequently occurring infectious diseases were infections of the ureter, bronchitis, flu and ear infection. Among 30% of the examined, inflammatory and thrombotic changes within a dialysis drainage tube occurred. 22% of the examined are the carriers of HBV. Among 36%, however, the antibodies of HCV were detected. Conclusions: 1. The hemodialysed patients make up a group that is at increased risk of infectious diseases. 2. The infection of B and C type is the exceptional problem among the hemodialysed patients. 3. The frequency of infectious diseases occurrence increases along with age and length of dialysotherapy. 4. Education of the patients about how to prevent infections brings measurable effects in the form of the decreasing number of morbidity cases.

Występowanie chorób infekcyjnych u pacjentów dializowanych

Przewlekła niewydolność nerek, jak również same zabiegi hemodializ prowadzą do zaburzeń funkcji wielu narządów i układów. Obserwuje się obniżenie sprawności układu immunologicznego, co w konsekwencji powoduje obniżenie zdolności obronnych organizmu. Pacjenci dializowani narażeni są na częsty kontakt ze sprzętem medycznym, wymagają licznych badań. Wszystkie te czynniki łącznie z samą dializą zwiększają ryzyko występowania różnego rodzaju infekcji zarówno bakteryjnych, jak wirusowych. Celem pracy była próba określania rodzaju i częstości występowania chorób infekcyjnych u pacjentów dializowanych. Do badań posłużono się ankietą, którą przeprowadzono wśród 50 pacjentów w Ośrodku Dializ Szpitala Miejskiego w Chełmie. W badanej grupie osób najczęściej występującymi chorobami infekcyjnymi były zakażenia dróg moczowych, zapalenie oskrzeli, grypa, zapalenie ucha. U 30% badanych wystąpiły zmiany zapalne lub zakrzepowe w obrębie przetoki dializacyjnej. 22% badanych jest nosicielami HBV, natomiast u 36% wykryto przeciwciała antyHCV. Wnioski: 1. Pacjenci hemodializowani stanowią grupę zwiększonego ryzyka występowania chorób infekcyjnych. 2. Szczególny problem wśród pacjentów hemodializowanych stanowi zakażenie wzw typu B i C. 3. Częstość występowania chorób infekcyjnych wzrasta wraz z wiekiem chorych i okresem dializoterapii. 4. Edukacja chorych w zakresie zapobiegania infekcjom przynosi wymierne efekty w postaci zmniejszenia się liczby zachorowań.