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Research Article

Viral Hepatitis C (HCV) in Hemodialysis

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Abstract

The aim of the study is to show the prevalence and risk factors of HCV at our hemodialysis (HD) center**,** in a study carried out on chronic hemodialysis patients during the year 2019, we identified eight cases out of 87 patients infected with HCV, or 9%. The average age in this population is 48 years, dialysed for an average of 15 years. Viral infection was discovered on average 12.5 years after the start of hemodialysis, during a routine screening examination. In this series, the genotype 1b was found in 2 cases (25%). Seven patients were treated out of the eight HCV hemodialysis patients, received dual therapy with sofosbuvir 400mg and daclar 60 mg for three months, with an early virologic response. A study done during a previous period, between 2015 and 2018, in the same center, looking at the risk factors for HCV transmission: 11 cases out of 134 hemodialysis patients infected with HCV. Among these cases, we noted the following factors; Blood transfusion: 3 cases (27.2%), surgery: 4 cases (45.4%), dental care: 2 cases (18%), no obvious cause: 2 cases (9%). Serologically ; HCV antibodies positive: 11/134, i.e. an 8.2% seroprevalence, PCR-viral RNA was positive in 10 out of 11 patients, i.e. a prevalence of 7.4% by PCR, number of copies: Above 1.03x 1, 000,000 (100%), number of Logs: Sup to 3.32 (100%), negative PCR: 01 patient.

Key Words: hepatitis C virus; Chronic hemodialysis

Introduction

Viral hepatitis C common in hemodialysis patients is the main viral infection, its prevalence ranges from 11 to 60%. Africa has the highest prevalence of hepatitis C virus infection Patients on HD are at high risk for HCV, with frequency of infection several times higher than that in non-uremic patients [1]. Its seriousness lies in the high risk of progression to chronicity and the development of cirrhosis or hepatocarcinoma. The hepatitis C virus (HCV) is an RNA virus. There are six groups, called genotypes from [1 to 6], and more than a hundred subtypes (1a, 1b ...).There are multiple transmission routes; blood path, genital, mother-child, medical procedures: digestive endoscopies, dialysis. Any material that may be in contact with the blood, reusable and poorly sterilized, can transmit the virus, hence the obligation to use single-use equipment. Dental care, acupuncture sessions if the needles are not disposable. Shaving, tattoos, ear piercing.

Study goals:

The aim of the study is to show the prevalence and risk factors of HCV at the hemodialysis center.

Methods:

The systematic virological assessment: before the start of dialysis sessions, then again every 03 -06 months (microbiology laboratory). HCV antibodies using the Elisa 3 Architect i 2000 SR technique, specificity: 99.6%.VHC PCR with the Cobas Ampli Pre´p / Cobas Taq Man VHC-test1 kit, performed in patients (antibody VHC +), sensitivity: 99.1%. In addition to detecting HCV RNA, HCV genotyping is also required to predict response to treatment and to specify the duration and dosage of treatment. The Fibroscan assessment: carried in the hepatology department.

HD session

Results

In our hospital, in a study carried out on chronic hemodialysis patients during the year 2019, we identified 8 cases out of 87 patients infected with

HVC, or 9%. The average age is 48 years with extremes ranging from 31 years to 74 years? A male predominance: 75%. Patients had been on dialysis for an average of 15 years with extremes ranging from 3 years to 32 years. Viral infection was discovered on average 12.5 years after the start of hemodialysis during a routine screening examination. In this series, the genotype 1b was found in 2 cases (25%). Seven patients were treated out of the eight HCV hemodialysis patients, ie 87.5% of the cases. Causal nephropathy was undetermined in 37% of cases, hereditary in 25% of cases, diabetic in 12.5% of cases, vascular and malformative in 12% of cases. The average pre-therapeutic viral load was 1, 287,500 IU / ml with extremes ranging from 1020,000 IU / ml to 2, 650,000 IU / ml. serum alanine aminotransferase (ALT) increased ≥ 2 times normal in one patient (12.5%) and normal in the rest of the patients. All seven patients received dual therapy based on sofosbuvir 400mg and daclar 60 mg for three months, with an early virological response and good tolerance.

Risk Factors for Viral Transmission

In a previous study, looking at the risk factors for HVC transmission, period between 2015 and 2018: 11 cases out of 134 hemodialysis patients infected with VHC: 8.2%. Among these cases we noted the following factors, **Blood** transfusion: 3 cases (27.2%)**,** Surgery: 4 cases (45.4%)**,** Dental care: 2 cases (18%)**,** No cause: 2 cases (9%) HCV antibody positive: 11/134, seroprevalence : 8.2%. PCR-viral RNA (11 patients): 10 patients (anti- HCV + / ARNVHC +), number of copies: Above 1.03x 1, 000,000 (100%), number of Logs: Sup to 3.32 (100%), and negative PCR: 01 patient, or VHC prevalence: 7.4% by PCR.

Discussion

Low rate observed in our center (8.2% -9%), is explained by: preventive hygiene measures (gloves and disposable dialysis consumables, sterilization of dialysis generators between sessions ..., use of recombinant erythropoietin. The more sensitive third generation tests have significantly reduced the risk of false negatives PCR, the sensitivity of which is the most effective diagnostic test for patients with renal failure. Infection with HCV normally leads to increased serum alanine aminotransferase (ALT), and laboratory blood testing for ALT is used to screen for liver disease in the general population. This is not the case in chronic hemodialysis patients, however, this test has weak diagnostic value in ESRD patients because ALT tends to be below reference range in this patient group. The potential causes of this are vitamin B6 deficiency, presence of uremic toxins, or presence of blood components that absorb ultraviolet light [2]. In our cases reported in this series only one patient had an increase in ALT (25%). One study identified HCV genotype 1b as the most prevalent subtype in patients receiving HD or continuous ambulatory peritoneal dialysis in Turkey [1].The genotype 1b was found in 2 cases (25%), the genotype study did not take place in all of these patients. Viral infection was discovered on average 12.5 years after the start of hemodialysis, during a routine screening examination in our study. This observation is already known in the literature, among factors reported in hemodilysed patients, such as, excessive exposure to blood and nosocomial transmission of HCV in hemodialysis units, and long dialysis duration are the main determinants of increased risk of HCV infection in the HD patient group[3[. The worldwide prevalence of HCV infection among HD patients varies widely, with estimates ranging from 5% to approximately 60% depending on geographic location (4-5). In 2002, the prevalence of HCV infection across HD centers of the United States was approximately 8%, nearly five times greater than that of the general population in that country [6, 7]. In some European dialysis centers, the yearly incidence of HCV infection reportedly ranges from 0.4% to 16.0% [8]. Anti-HCV prevalence among patients on chronic HD in the United States decreased from 10.4% in 1995 to 7.8% in 2002 [9]. Isolating-HCV-infected patients or using dedicated machines for such patients are not advocated, except as necessary during local outbreaks [8-10].

Conclusion

Hepatitis C virus related liver disease is a significant cause of morbidity and mortality in patients with end-stage renal disease (ESRD) who are treated with dialysis. Early diagnosis and treatment of HCV infection prior kidney transplantation prevent complications after transplantation and reduces mortality (11). Serologic testing has clearly demonstrated that HCV infection is highly prevalent among ESRD patients and is a serious cause of increased morbidity and mortality in this group. The excessive exposure to blood and blood products, nosocomial transmission of HCV in hemodialysis units, and long dialysis duration are the main determinants of increased risk of HCV infection in the hemodialysis patient group. In practice, HCV must be detected in hemodialysis patients by the search for HCV antibodies and, if in doubt, by HCV PCR. It is essential that each dialysis center carefully follows every HCV-infected ESRD patient to determine viral load, do HCV genotyping, assess the extent of hepatic fibrosis, and establish optimal treatment strategies. Its treatment is mainly preventive based on compliance with universal hygiene rules, but also curative based on direct acting antivirals.

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