

UREMIC PLEURITIS

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Abstract

One complication of treatment of hemodialysis in uremic patients is also exudative pleuritis. As a consequence of the expanded use of long-term hemodialysis treatment and the extended life spans, complications of chronic renal failure are being encountered with increasing frequency in uremic patients. Such patients develop many thoracic and extrathoracic problems. Pleuritis and pericarditis, uremic pneumonia, EN pulmonary infection, and metastatic pulmonary calcification. As a consequence of the expanded use of long-term hemodialysis and extended life spans, complications of chronic renal failure are encountered with an increased frequency among uremic patients. Such patients may develop many thoracic and extrathoracic problems most frequently uremic pleuritis and pericarditis, uremic pneumonia, infection, and metastatic pulmonary calcification. Despite the association with an exudative effusion, inflammatory pleural reactions in patients with uremic pleuritis may not be as severe as infection-induced effusions. Owing to the advancement in HD technology and other interventions, outcome of uremic pleuritis may be improved (Rashid *et al.*, 2013). Common etiologies of pleural effusion in this patient group are heart failure, volume overload, parapneumonic effusion, tubercular pleuritis, and uremic pleuritis (Bakirci *et al.* 2007, Patel *et.al* 2013). Exudative pleuritis as a result of global hiperkapni polyserosit and due to the lack of or inefficient filtration, compliance by patients due to the dietetic regime. Exudative bilateral pleuritis in female gender was present in 8 (14.8%) of the total of the patients = in 54 patients examined was present while unilateral pleuritis in 11/54 (20.4%) of female patients examined. Male patients examined for unilateral pleuritis was were examined 18/66 (27.3%), while for bilateral pleuritis were examined 16/66 (24.2%) of cases. Diagnosis was verified on the basis of the clinical symptoms, ultrasound, x-ray of lungs and respiratory function tests. As a conclusion, we can verify that increased body weight, infectious diseases, frequent inflammation as a result of impaired immunity, MIA tuberculosis, inactivity may be the most common causes of uremic pleuritis in patients treated with ESRD with long term recurrent HD.

Keywords: uremic pleuritis, chronic, hemodialysis

INTRODUCTION

Renal insufficiency is a chronic reduction of glomerular filtration debut (FG), with a progressive increase in creatinemia and urea. ESRD can also be defined as a coherence of common biological and clinical disorders called chronic uremia. This is due to the progressive loss of nephron function. In many cases, the rhythmic progression of kidney function impairment is a silent process and the patient realizes that his kidneys have a serious illness with consequent reversibility.

Often, it may happen that during a laboratory examination there is a kidney disease that has progressed to the uremia. One of the chronic complications of ESRD-treated patients with long terms HD-reversible is uremic-exudative pleural effusion. Chronic hemodialysis (HD) patients are predisposed to several complications associated with pleural effusion. In addition, uremia can directly cause pleuritis. Among these patients, patients with uremic pleuritis were identified and studied. The rate of uremic pleuritis was 23.7%. Other frequent etiologies of pleural effusion were parapneumonic effusion (23.7%), cardiac failure (19.7%), tuberculosis (6.6%), volume overload, malignancy, and unknown. In patients with uremic pleuritis, dyspnea was the most common symptom, followed by cough, weight loss, anorexia, chest pain, and fever.

Pleural fluid analysis showed that these patients had a significantly lower pleural to serum lactic dehydrogenase ratio, total pleural leukocytes, and polymorphonuclear count compared to patients with parapneumonic effusion. Improvement was achieved in 94.1% of patients with uremic pleuritis by continuation of HD, chest tube insertion or pleural decortication; an outcome better than the previous reports. Regardless of the considered variations in body fluids, it is more than necessary that the ultrafiltration (Uf) regulation during HD sessions should not exceed more than 2% of the so called dry body mass in HD treated patients (p .b.2% from 70kg = 1400 ml) However, most patients do not present adequacy and in the period between HD sessions they cumulate much excessive amounts of fluid (approximately up to 6-7% of the dry body mass) . Excessive water quantities lead to the circulatory hypersensor with a voluminous increase in arterial pressure and its complications. On the other hand, chronic hyperhydration causes edema in the visceral parenchyma and transudates in serous viruses by manifested polyisosis (plyserositis), pleura (pleurosia), ascites and hydroperikardium. Uremic pleuritis complications in uremic patients with recurrent HD have been known many years ago, but little attention has been paid to them despite their high incidence. The basic mechanisms of exudative pleuritis appear to relate to the forces of filtration through subpleural capillaries and lymphatic absorption or from other above-mentioned causes in the text that occur in patients with chronic renal failure (Yoneda *et al.*2004, Yoneda *et al.*2005). Sensibility and sensitivity to the development of exudative pleuritis as a complication during HD session for many known causes and unknown etiologies, because there are evidence that the mode of dialysis is supposed to be one of the causes of exudative pleuritis. In addition, numerous studies have verified that in particular uremic patients treated with chronic hemodialysis have necrotic character with fibrinous exudate and often hemorrhage (Jarratt *et al.* 1995, Wiener *et.al* 1985). During the treatment of spontaneous pleural pleuritis in the form of pleural thickening passes into the constrictive pleura which requires surgical decortication. There are no definitive suggestions on pathogenesis and safe treatment of urethral pleuritis although its treatment consists and is in most cases dependent on the definitive symptoms. However, there is insufficient data on the pathogenesis and natural flow of uremic pleuritis. The main pleuritis symptoms begin with dyspnoea, fatigue, chest pain, fever, temperature, excessive encumbrance and increased body weight. The prolonged duration of dialysis time ranging from 3.5 to 4.5 or 5 hours, adherence to dietary regime, broad spectrum antibiotic treatment, corticotherapy treatment, bronchodilator, symptomatic antipyretic and anti-rheumatic non-steroidal or steroidal therapy have significantly influenced. Treatment of uremic pleuritis and prevention of its occurrence in patients with TB, pleural inflammation, etc. (Rashid *et al.*, 2013). As common etiologies of exudative pleuritis in chronic HDP treated patients, there are also congestive heart failure, volume overload, epinephalitis, tuberculosis pleura, etc. (Bakirci *et al.* 2007, Patel *et.al* 2013). Due to the frequency with which this complication is associated with excessive encumbrance or cardiac failure, the reduction in dry body weight has led to severe thoracentesis often not being used. Pleural abnormalities of uremia have been recognized for many years but have been given little attention despite their high incidence. Mechanisms underlying pleural effusion relate to filtration forces across subpleural capillaries and lymphatic absorption, either of which can be abnormal in patients with renal failure (Yoneda 2004, Jarratt 1995). Neither the pathogenesis nor the appropriate treatment of uremic pleuritis has been established definitively. Pleuritis symptoms begin with dyspnea, fatigue, chest pain, fever, temperature, excessive encumbrance and increased weight. But treatment duration with HD, dietetic hygiene compliance regime, treatment with broad spectrum of antibiotics, overdose with corticotherapy, bronchodilator, antipyretic symptoms began to improve. Pleural effusion is a ubiquitous complication in HD patients. Common etiologies of pleural effusion in this patient group are heart failure, volume overload, parapneumonic effusion, tuberculotic pleuritis, and uremic pleuritis. In patients with uremic pleuritis, dyspnea was the most common

symptom, followed by cough, weight loss, anorexia, chest pain, and fever. Compared to patients with parapneumonic effusion, patients with uremic effusion had a significantly higher rate of dyspnea and lower rate of cough and fever. Pleural fluid analysis showed that these patients had a significantly lower pleural to serum lactic dehydrogenase ratio, total pleural leukocytes, and polymorphonuclear count compared to patients with parapneumonic effusion. Improvement was achieved in 80-92,0 % of patients with uremic pleuritis by continuation of HD, an outcome better than the previous reports. Owing to the advancement in HD technology and other interventions, outcome of uremic pleuritis may be improved.

MATERIALS AND METHOD

In the study were included 120 patients in total treated with HD, 60 (50%) were female and 60 (50%) were male, with an average age of: 57.00± 14.00 years, treated with dialysis more than 12 years in the Clinic of Nephrology in Skopje and Clinical Hospital of Tetovo. The group of examiners (blood donors) also were 54 (45%) women and 64 (55%) men had the same group of patients also by age, gender or religious and ethnical affiliation.

Table 1. Patient distribution by gender and age

Gender	Average	Age ± SD
Men	60 (55 %)	57.00 ± 14.00
Females	60 (50 %)	57.00 ± 14.00

Statistical tests and methods, basic arithmetic average and standard deviation $X \pm SD$ were used. Comparative statistics of lipid and lipoprotein parameters between the two groups were analyzed by test the so-called Student's t-test, while for examples dependent or independent and non-parametric tests were used the following tests: Mann-Whitney-U and Wilcoxon's test. Table number 2. Lung complications in patients treated with long term HD.

RESULTS

Chronic pulmonary obstruction was present in 12/54 (22.2%) of female while the male gender was present in 20/66 (30.3%). Exudative pleuritis as a result of global poliserose and due to the lack of or inefficient filtration, compliance-a by patients due to the dietetic regime. Exudative bilateral pleuritis in females was present in 8 (14.8%) of the total patients = in 54 examined patients was present while unilateral pleuritis in 11/54 (20.4%) female patients examined. Male patients examined for unilateral pleuritis were 18/66 (27.3%), while for bilateral pleuritis were examined 16/66 (24.2%). Diagnosis was verified with the help of clinical symptoms, ultrasound, lung x-ray and respiratory function tests.

Table 2. Lung complications

Lung complications	Females	Men
Pleuritis billateralis	18 (14.8 %)	16 (24.20%)
Pleuritis unilateralis	11 (20.4 %)	18 (27.30%)

DISCUSSION

The causes of pleural effusion in uremic patients are numerous. In addition to uremic pleuritis, possible pathogeneses include overhydration, cardiac failure, bronchopulmonary bacterial infection of tuberculosis, hypoproteinemia and hemothorax, of the alveolo-capillary membrane secondary to toxic-lesional factors.(Jarratt *et al.*, 1995, Johnson *et al.*, 1964). Jarratt *et al.* reported that heart failure was the most common cause of pleural effusions (Chernow *et al.*, 1977).

It was thought that there would be patients with heart failure in the group diagnosed as overhydrated in the current study. Uremic pleuritis results from necrotizing fibrinous inflammation and often results in exudates formation because of the inflammatory increase in capillary permeability. Pleuritis is a pleural inflammation which is usually manifested by the appearance of the smallest or largest amount of exudates in the pleural space. The fluid in the pleura is inflamed when its production as a result of any inflammatory process exceeds and increases its absorption into the pleura. Lymphatic pathways have the ability to absorb 20 times the greater amount of fluid that is normally produced, which means when this absorption is limited and the production increases, then we have manifestations of the effusion. Generally, depending on the exudates, three types of pleura are distinguished: a) fibrinous pleuritis or "dry" pleuritis, when the amount of fibrin-rich exudates is so small that under ordinary examinations it cannot be noticed at all. b) exudative pleuritis, with quantization of serous or serum exudates and c. pleuriti purulent, when the exudate is purulent with secretion. Bacillus tuberculosis is still the most common cause of pleuritis, especially in younger people. The most common causes are: Gram positive bacteria: Streptococcus and Staphylococcus, the negative gram bacteria, Esherichia coli, adenoviruses, the coxsackie group, echo-virus, psittacosis, and rarely, Herpes Simplex. About 60% of pneumococcal pneumonia, 40% of all bacterial pneumonitis are associated with lower or greater pleural effusion. Viral and mycoplasmic infections are also occasionally permeated with pleural effusion. If the presence of exudates precedes dry pleuritis then exudative pleuritis symptoms (pleuritis exsudativa) are accompanied by all of the above-mentioned symptoms such as: slow body temperature rise, loss of appetite, loss of body weight, sweating but there are instances of immediate temperature increase associated with tachycardia. In the pleura, large amounts of serofibrinous exudates are formed which separate the pleura sheets. Complication dominated the two target groups of the examined patients (females and males - 120), chronic obstruction of lungs and exudative pleuritis. Infectious disease including parapneumonic effusion and tuberculosis can be the most common causes of pleural effusion in hemodialysis patients. This study showed that some inflammatory pleural reactions such as increase in pleural leukocyte count may be attenuated in hemodialysis patients. Pleural fluid analysis showed that these patients had a significantly lower pleural to serum lactic dehydrogenase ratio, total pleural leukocytes, and polymorphonuclear count compared to patients with parapneumonic effusion. Improvement was achieved in 80-92,0 % of patients with uremic pleuritis by continuation of HD. Owing to the advancement in HD technology and other interventions, outcome of uremic pleuritis may be improved.

CONCLUSION

As a conclusion, we can verify that increased encumbrance, increased body weight, infectious diseases, tuberculosis can be the most common causes of uremic pleuritis in patients treated with ESRD with long term recurrent HD. Our study verified that the uremic pleuritis of these patients was significantly cured with lower dehydrogenase serum, increased number of leukocytes and polymer-phonucleases, increased sediment and increased concentration of C-proteins. Due to the advancement and improvement of HD technology and modalities, permanent patient education for the respect of body weight the uremic pleuritis manifestations in the centers of hemodialysis have been significantly improved and reduced.

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