

Treatment of heart failure and ascites with ultrafiltration in patients with intractable alcoholic cardiomyopathy

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Background. In Western countries the excess of alcohol intake causes, secondary, non ischaemic cardiomyopathy and cirrhosis. Frequently, therapy is not effective so ultrafiltration was tried on patients affected, with positive effects on life quality. We tried to verify utility and tolerance to peritoneal ultrafiltration in a group of subjects affected by heart failure secondary to alcoholic cardiomyopathy, refractory to conventional therapy.

Methods. Sixteen patients (14 males, 2 females) with heart failure and ascites affected by alcoholic cardiomyopathy were studied. All subjects were in IV class NYHA (New York Heart Association); ejection fraction (EF) was evaluated by echocardiogram and ascites by abdominal ultrasound. Patients were submitted to clinical exam, body weight, abdominal circumference, diuresis and routine biochemical exams, electrocardiogram and chest X-ray. Subsequently they underwent intermittent nocturnal peritoneal dialysis with a changing cycle of 6-12 hours per session. After 5 days, subjects were checked through echocardiogram and abdominal ultrasound.

Results. The patients mean age was 56.7 ± 3.2 years. After ultrafiltration, all subjects showed decreased body weight, abdominal circumference and urea; there was an increase of diuresis and Natriuria. Fifteen subjects entered III NYHA class without variation of EF; all of them showed clinical and echographic reduction of ascites. Mean ultrafiltration quantity was 6.084 ml with mean dialysis hours 20; 7.36% of patients had fever that disappeared within 24 hours with antibiotic therapy. All subjects referred to feel well and the mean hospitalization period was of 7 day in spite of the usual 22 days.

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Conclusions. We suggest peritoneal dialysis for patients with congestive heart failure and ascites caused from alcoholic cardiomyopathy refractory to conventional therapy.

KEY WORDS: Cardiomyopathy, alcoholic, therapy - Heart failure, congestive, therapy - Ascites, therapy - Peritoneal dialysis.

The excess of alcohol intake represents in the Western world, the first cause of dilatative non ischaemic-cardiomyopathy.¹

The continuous assumption of alcohol causes progressive injury to myocardium² and liver until cirrhosis.³⁻⁶

Males between 20-55 years are more affected by alcoholic cardiomyopathy; they should have drunk a lot of alcohol (half liter of whisky or equivalent for wine or beer) for more than 10 years.⁷⁻⁹ Eighty percent of these subjects die within in a 3 years time and 40-50% in a 3-6 years time.¹⁰

In the chronic drinker the echocardiogram shows changes in his systolic and diastolic function;⁸ more serious cases develop congestive heart failure^{9, 11} with ascites and peripheral (declivous) oedema.

The natural history of alcoholic cardiomyopathy is characterized, if drinking persists, by worsening of

TABLE I.—Clinical and biohumoral parameters before and after ultrafiltration.

Parameters	Before	After
Height (cm)	171.72±2.4	
Weight (kg)	98.58±1.5	88.13±0.7*
Abdominal circumference (cm)	146±8	98.5±3*
Diuresis (ml/24 hrs)	333.63±100	1616.63±210*
Total protein (g/dl)	7.02±0.5	7.25±0.4
Albumin (g/dl)	3.79±1.2	3.83±1.7
Urea (mg/l)	66±12	43±7
Creatinin (mg/l)	1.29±0.5	0.91±1.1
Red cell (×1000)	2840	3206
Hb	9.35±1.7	10.3±2.4
Ht	29.83±3.2	30.7±2.8
Pts (×100)	435±7	427.5±8.3
Na seric (mEq/l)	133.41±2.5	133.5±1.3
Na urinary (mEq/l)	17±2.5	104±3.6*
K seric (mEq/l)	4.82±1.4	4.57±1.6
K urinary (mEq/l)	36.66±4.3	37±4.2

*) p<0.05.

the myocardial injury refractory to medical therapy and subsequent death of the patient.¹⁰

Refractoriness to therapy is recognized when symptoms persist at rest or with the lighter activities during treatment with ACE inhibitors, diuretics, digitalis, inotropics, etc.²

A good therapy for these subjects could be heart transplant but difficulty in finding organs, the patient's age (with subsequent difficulty in overcoming surgery complications) and the presence of cirrhosis often make it impossible.

Thus some researchers tried to treat refractory heart failure (with or without ascites), with ultrafiltration¹²⁻¹⁴ achieving positive effects on patients' life quality.

Hemofiltration really consents subtraction of a lot of fluid (until 100 ml/hour) and even of toxic metabolites.¹⁵

The aim of the present study was to verify utility and tolerance to peritoneal ultrafiltration in patients affected by alcoholic cardiomyopathy with heart failure refractory to conventional therapy.

Materials and methods

We considered 16 subjects (14 males, 2 females) that came to our Internal Medicine Institute for heart failure with ascites.

The patients were affected by alcoholic cardiomyopathy consequent to continuous assumption of alcohol.

All of them were in IV NYHA class and had an EF <20% evaluated with two dimensional echocardiography. The transthoracic echocardiography was performed with Hewlett Packard Sonos 500 imaging system. It was assessed heart chamber dimension, left ventricular function, valvular structure and performance; ejection fraction was used as an index of left ventricular function.

All the subjects were refractory to traditional therapy. Refractoriness was considered when there was no clinical improvement after maximal administering of the highest dosage of ACE inhibitors (captopril, enalapril, lisinopril), saluretics (furosemide), inotropics (dobutamina) and digitalis.

Patients were monitored daily for clinical exams, weight, abdominal circumference and diuresis.

Furthermore, they underwent routine blood exams, chest X-ray, echocardiogram and abdominal ultrasound.

Then they were treated with intermittent nocturnal peritoneal dialysis on a cycle changing 6-12 hours per session; at the end of the session, they repeated blood exams and even cardiac and abdominal ultrasound on the 5th day.

Statistical analysis was made with χ^2 test; and a p<0.05 result was considered significant.

Results

The mean age of examined patients was 56.7±3.2 years (range 49-74).

After ultrafiltration reduction of body weight abdominal circumference and urea, increase of diuresis and Na⁺ ejection were observed (Table I). Fifteen patients firstly in IV NYHA class, became III class without improvement of EF; all the subjects showed reduced ascites either clinically or at ultrasound.

The mean fluid quantity removed during ultrafiltration was 6.084 ml (range 1700-11.500) with mean dialysis time of 20.7 hours (range 7-31). Complications related to peritoneal dialysis technique consisted in fever (2 cases) that resolved in 24 hours with antibiotics. The mean hospitalization time was 7 days (range 5-9).

All patients reported quick improvement of life quality.

A short follow-up in 15 days was carried out, which showed that one subject died from acute myocardial infarction.

Discussion and conclusions

Heart failure of patients with alcoholic cardiomyopathy in the final phases could show refractoriness to medical therapy. Considering mortality is close to 100%, in these cases some authors tried invasive non "traditional" therapies.¹⁶

Peritoneal ultrafiltration represents one of these choices as it allows the subtraction of a conspicuous volume of liquids and the removal of toxic substances.¹⁵ In fact patients feel well immediately.¹⁴

In this study 16 patients with refractory heart failure were submitted to peritoneal dialysis with immediate benefit either subjective and clinical or instrumental. Almost all patients regressed to III NYHA class even if left EF did not improve.

Ascites reduction was also observed that contributed to improve the quality of life like other authors had already proved these data for ischaemic, hypertensive, valvular and congenital cardiomyopathy¹⁷ in IV NYHA class using intermittent peritoneal dialysis performed in the day-hospital. They also demonstrated the presence of major complications like peritonitis in 16% of patients that underwent dialysis.^{18, 19} We observed its utility also for alcoholic cardiomyopathy and we noticed fever in two cases that recovered within 24 hours with antibiotics. A transient bacterial peritonitis would seem possible we suggest adequate selection of patients candidates to peritoneal dialysis preferring young subjects or those without other concomitant pathologies.

The methodology gives an immediate well being sensation reducing chronic stasis and ascites, thus it is also important for reduced hospitalization days from the usual 22 to 7.

This result is very important because actually cardiovascular pathologies are in first place for incidence and costs.^{20, 21}

We could not give sure results about mortality because we performed only a short follow-up. The only case that died from acute myocardial infarction is attributable not to the ultrafiltration but to the cardiomyopathy *per se*.

It seems appropriate to underline the importance of this treatment when medical therapy is not effective and patients would be hospitalized in the intensive care unit until they improve or are to be submitted to heart transplant.

In conclusion, peritoneal dialysis is an invasive therapy that could be used in the treatment of refractory

heart failure also in subjects with alcoholic cardiomyopathy waiting for heart transplant.

It improves the quality of life of these patients and lets the hospital save economic resources.

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