

intraabdominal pressure increase caused by polycystic kidneys or primary collagen disorders. In our study, only 2 patients had polycystic kidney disease, which did not allow us to analyse the impact that the polycystic disease has on the risk of developing hernias during PD.

Some studies^{1,2} state that there is lower prevalence of hernias in APD-treated patients than in CAPD-treated patients. We have not found any statistically significant difference between the two techniques. However, APD patients used the same daytime volume as the CAPD patients (1756+ml compared with 1763+ml, respectively; $P=0.92/0.45$). These results do not correlate with those of other studies where greater daytime volumes were used for APD patients, which could explain why the results were different. Furthermore, it supports the hypothesis that increasing intraabdominal pressure in a sitting and decubitus position could cause an increase in hernia development during CAPD.

We treated all hernias with surgery, placing a mesh, and evolution was successful, with no recurrences. A mesh significantly reduces recurrence⁶ and should be used when repairing hernias in patients at risk of recurrence or new hernias, such those undergoing PD.

To summarise, PD patients with a history of hernia have a greater risk of developing abdominal hernias upon starting treatment. We recommend systematically examining for abdominal hernias in patients before starting PD treatment, and if patients present with clinical signs compatible with abdominal hernia, this complication should be suspected. If surgical repair is necessary, a mesh should be placed. Although abdominal hernias are a relatively frequent complication during PD, if treated correctly the patient's condition improves,

proving that that this complication should not be a motive for not using this technique.

1. Del Peso G, Bajo MA, Costero O, Hevia C, Gil F, Díaz C, et al. Risk factors for abdominal wall complications in peritoneal dialysis patients. *Perit Dial Int* 2003;23(3):249-54.
2. Hussain SI, Bernardini J, Piraino B. The risk of hernia with large exchange volumes. *Adv Perit Dial* 1998;14:105.
3. Durand FY, Chanliu J, Gamberoni J, Hestin D, Kessler M. Routine Measurement of Hydrostatic Intraabdominal Pressure. *Perit Dial Int* 1996(Issue Suppl 1):S84-S87.
4. Morris-Stiff G, Coles G, Moore R, Jurewicz A, Lord R. Abdominal wall hernia in autosomal dominant polycystic disease. *Br J Surg* 1997;84:615-7.
5. Modi K, Grant AC, Garret A, Rodger RS. Indirect inguinal hernia in CAPD patients with polycystic kidney disease. *Adv Perit Dial* 1989;5:84-
6. Martínez-Mier G, García-Almaza E, Reyes-Devesa HE, García-García V, Cano-Gutiérrez S, Mora R, et al. Abdominal wall hernias in end-stage renal disease patients on peritoneal dialysis. *Perit Dial Int* 2008;28(4):391-6.

**M. Gracia Toledo¹, M. Borràs Sans²,
A. Gabarrell³, J. Durán⁴,
E. Fernández Giráldez²**

¹ Nephrology Department. Biomedical Research Institute of Lleida. Arnau de Vilanova Hospital. University of Lleida, Spain.

² Nephrology Unit. Arnau de Vilanova Hospital. Lleida, Spain.

³ General Surgery Department. Santa María Hospital. Lleida, Spain.

⁴ Nephrology Department. Arnau de Vilanova Hospital. Lleida, Spain.

Correspondencia: M. Gracia Toledo

Servicio de Nefrología.

Institut de Recerca Biomèdica de Lleida.

Hospital Universitari Arnau de Vilanova.

Universitat de Lleida.

Doctora Castells, 42, 1.º A, 25001 Lleida.

martagt679@hotmail.com

martagt679@gmail.com

Successful pregnancy in a patient with chronic renal failure undergoing haemodialysis

Nefrologia 2011;31(2):219-21

doi:10.3265/Nefrologia.pre2010.Dec.10741

To the Editor,

Frequency of pregnancies during haemodialysis is low (between 0.3% and 0.75% per year in women of child-bearing age).¹ This fact is due to different hormonal factors which produce amenorrhoea.²⁻⁴

Maternal complications include: miscarriage, placenta abruptio, anaemia, infection, premature breakage of membranes, polyhydramnios, preterm labour, arterial hypertension, pre-eclampsia and eclampsia, haemorrhage, need for caesarean section, and maternal death. Foetal complications include: slow foetal growth, acute or chronic foetal distress, premature birth, newborn respiratory problems, increased stay in neonatal intensive care, and stillbirths or neonatal deaths.^{5,6}

We present the case of a 31-year-old patient with chronic renal failure (CRF) secondary to interstitial and tubular kidney disease due to a neurogenic bladder. She started renal replacement therapy with haemodialysis 15 months before.

Her medical history included: lipomyelomeningocele, cauda equina syndrome; neurogenic bladder; 3 pregnancies (2 miscarriages and 1 live birth).

In April 2010, she reported amenorrhoea for one week, and ultrasound confirmed that she was 10 weeks pregnant. At this time, the patient had a creatinine clearance of 10ml/minute and residual diuresis of 2000ml/day (via self-catheterisation which has been performed since she was 5 years old due to her neurogenic bladder).

The following regimen was established:

Haemodialysis dosage was increased to six weekly sessions of 180 minutes, which resulted in: improved blood volume control (with no hypertensive or hypotensive events), less restriction on liquid intake solute fluctuation prevention, less episodes of low foetoplacental blood flow, reducing predialysis urea levels, and increasing protein intake.

We used a polysulfone dialyser with an ultrafiltration coefficient (*KUf*) of 82mL, and porous membrane thickness 40µm.

Qb was set at 300-350ml/minute and Qd at 500ml/minute.

The maximum ultrafiltration per hour was established at 400ml/hour to prevent hypotension. Weight adjustment was performed in accordance with the patient's blood pressure and clinical profile.

Weekly analytical tests were performed.

Drug treatment was: erythropoietin, iron i.v., oral bicarbonate and folic acid. Paracalcitol was withdrawn given the lack of experience with this drug in pregnant patients.

We did not observe any alterations in blood sugar levels and the three O'Sullivan's tests were normal.

The adjusted protein catabolism rate was 0.8 (same as before pregnancy) and the average standard Kt/V during the 9 months was 3.16. Weighted growth rate was 9kg.

Table 1 shows the remaining analytical parameters: blood pressure, dry weight, and erythropoietin dosage.

She did not have any fistula complications. She was not prescribed antihypertensive drugs at any moment.

Complications included: acute phlegmonous appendicitis (successfully repaired);

haematuria with pathological urine sediments (treated with antibiotics). Haematuria disappeared and sediment normalised; and three urinary infection episodes (treated with antibiotics).

The patient was hospitalised at 36 weeks, having a forceps-assisted vaginal delivery. The baby weighed 2.9kg and Apgar score was 9/10.

The patient recovered satisfactorily. Residual diuresis and creatinine clearance results after 1 month were similar to pre-pregnancy results: 2000ml/day and 9ml/min, respectively. The other biochemical parameters were normal and she returned to her dialysis regimen of three sessions a week with good tolerance.

In 1980, the European Dialysis Transplant Association (EDTA) published a case study on 13 000 women of fertile age. There were 115 conceptions among them: 45 therapeutic abortions, 53 miscarriages, and of the remaining pregnancies, the birth rate was 23%²

In 1996, Hou published another case study conducted in 206 North American dialysis units in 1990 and 1991. The sample included 1281 women between 18 and 44 years old.

Almost 70% of the pregnancies before 1990 ended in miscarriage, while less than 40% after 1990 ended in abortion or miscarriage.²

There are very few cases described during recent years, and those which we have found have been from some centres' isolated experience. Most report successful pregnancy rates, above 70%.^{7,8}

In 2005, Haase et al⁹ published the first prospective study on 5 patients treated between 2000 and 2004 at the Charité University Hospital in Berlin with a 100% birth rate.

Recently, Luders published a case study in the *AMJ* of all the pregnancies that occurred between 1988 and 2008 (it is the largest record to date) in women undergoing dialysis in the nephrology department of the San Paulo University Hospital, Brazil. Fifty-two pregnancies were studied, and 86.5% of them were successful.¹⁰

The survival rate of the babies born of mothers undergoing haemodialysis has improved, from 23% in 1980¹¹ to almost 90% during the last decade.^{9,10} However, foetal mortality is higher for women undergoing haemodialysis than the general population.⁵⁻⁹

Table 1. Clinical and laboratory variables and drug dose during pregnancy

Month	1	2	3	4	5	6	7	8
Blood pressure predialysis (mm Hg)	110/75	115/70	110/75	115/70	105/75	110/75	110/70	120/80
Blood pressure postdialysis (mm Hg)	100/65	100/65	105/75	100/70	95/70	100/80	100/70	110/75
Dry weight (kg)	83	83	83.5	84	85	88.5	91	92
Haemoglobin (g/dl)	11.6	10.6	10.3	10.7	11	11.4	11.7	12
EPO (units/week)	2000	6000	10 000	15 000	20 000	20 000	20 000	18 000
Weekly doses of iron	100	100	100	100	100	100	100	100
Calcium (mg/dl)	9.4	9.9	9.8	9.8	9.7	9.8	9.9	9.9
Phosphorus (mg/dl)	3.9	4.1	2.6	3.2	3	2.4	3.2	3
Urea predialysis (mg/dl)	119	90	60	61	70	61	64	57

To date, a systematic nephrological or gynaecological treatment for this type of patient has yet to be reported in the medical literature.⁹

Various measures are mentioned in publications, such as: increase the erythropoietin dosage, increase dialysis time, use low ultrafiltration rates to improve blood volume control, avoid hypotension events, reduce liquid intake restrictions and maintain low predialysis urea levels.^{9,10,12,13}

Pregnancy during dialysis continues to be rare and it occurs in various units. This makes it a difficult research point,¹⁴ but nevertheless these pregnancies should be included in a register, in the same way that other Societies and the EDTA have done.

1. López Menchero R, Albero MD, Cabeza B, Álvarez L, Del Pozo C, Sánchez L. Successful pregnancy in a patient with systemic lupus erythematosus on hemodialysis. *Nefrologia* 2004;24(1):70-4.
2. Luque Vadillo E, Matamala Gastón A, Places Balsalobre J, Alconchel Cabezas S, Torres Jansá M, Días Cocera M. Gestación en una paciente con IRC en programa de hemodiálisis. *Rev Soc Esp Enf Nefrol* 2002;19:47-9.
3. Swaroop R, Zabaneh R, Parimoo N. Pregnancy in end-stage renal disease patients on hemodialysis: two case reports. *Cases J* 2009;12(2):8139.
4. Gangji AS, Windrim R, Gandhi S, Silverman JA, Chan CT. Successful pregnancy with nocturnal hemodialysis. *Am J Kidney Dis* 2004;44(5):912-6.
5. Okundaye I, Abrinko P, Hou S. Registry of pregnancy in dialysis patients. *Am J Kidney Dis* 1998;31(5):766-73.
6. Vázquez-Rodríguez JG. Hemodiálisis and pregnancy: technical aspects. *Cir Ciruj* 2010;78(1):99-102.
7. Piccoli GB, Conijn A, Consiglio V, Vasario E, Attini R, Deagostini MC, et al. Pregnancy in dialysis patients: is the evidence strong enough to lead us to change our counseling policy? *Clin J Am Soc Nephrol* 2010;5(1):62-71.
8. Barua M, Hladunewich M, Keunen J, Pierratos A, McFarlane P, Sood M, et al. Successful Pregnancies on Nocturnal Home Hemodialysis. *Clin J Am Soc Nephrol* 2008;3(2):392-6.
9. Haase M, Morgera S, Bamberg CH, Halle H, Martini S, Hoher B, et al. A Systematic approach to managing pregnant dialysis patients-the importance of an intensified haemodiafiltration protocol. *Nephrol Dial Transplant* 2005;20:2537-42.
10. Luders C, Castro MC, Titan SM, De Castro I, Elias RM, Abensur H, Romão JE. Obstetric Outcome in Pregnant Women on Long-term Dialysis: A Case Series. *Am J Kidney Dis* 2010;56(1):77-85.
11. Report from the Registration Committee of the EDTA. Successful pregnancies in women treated by dialysis and kidney transplantation. *Br J Obstet Gynecol* 1980;87(10):839-45.
12. Giatras I, Levy DP, Malone FD, Carlson JA, Jungers P. Pregnancy during dialysis: case report and management guidelines. *Nephrol Dial Transplant* 1998;13:3266-72.
13. Hou S. Pregnancy in chronic renal insufficiency and end-stage renal disease. *Am J Kidney Dis* 1999;33(2):235-52.
14. Hou S. Pregnancy in women treated with dialysis: lessons from a large series over 20 years. *Am J Kidney Dis* 2010;56(1):5-6.

K.R. Furaz Czerpak, A. Puente García, E. Corchete Prats, M.A. Moreno, R. Martín Hernández

Nephrology Department. Los Llanos Centre. FRIAT. Móstoles, Madrid, Spain.

Correspondencia: K.R. Furaz Czerpak
Servicio de Nefrología. Centro Los Llanos. FRIAT. C/Río Segura, Nº 5. 28935 Móstoles, Madrid.

karina_furaz@hotmail.com
kfuraz@friat.es

B) BRIEF CASE REPORTS

Nephropathy following administration of angiogenesis inhibitors

Nefrologia 2011;31(2):221-2

doi:10.3265/Nefrologia.pre2010.Nov.10729

To the Editor,

Angiogenesis has an important role in metastasis development. In recent years, the vascular endothelial growth factor (VEGF) has become one of the main objectives in treating tumour-induced angiogenesis.

Various studies have shown that the anti-VEGF monoclonal antibody, bevacizumab, can reduce angiogenesis and inhibit solid tumour growth.¹

Various secondary effects have been associated with bevacizumab use. Two of the most common effects are moderate proteinuria (up to 64% of cases) and hypertension. Nephrotic-range proteinuria only occurs in 1%-2% of bevacizumab-treated patients.²

We present the case of a 42-year-old man, diagnosed with grade II

fibrosarcoma in the thigh and left-scapular region in November 1999. Tumour resection was indicated.

Three years later, he developed progressive pulmonary metastatic disease, which was treated with surgery and chemotherapy (MAID protocol: mesna, adriamycin, ifosfamide and dacarbazine).

In May 2004, he developed progressive pulmonary metastatic disease again and was treated with taxotere and gemcitabine, completing 6 cycles. He