EDITORIAL

Full title:
Patients’ wishes, pregnancy and vascular access: when one size does not fit all.

Short title:
pregnancy and vascular access

Authors and institutions
Giorgina Piccoli¹,², Gianfranca Cabiddu³, Maurizio Gallieni⁴
1, 2 Nephrologie Centre Hospitaler Le Mans, Le Mans, France; Dipartimento di
Scienze Cliniche e Biologiche Università di Torino, Italy;
3 Nefrologia Ospedale Brotzu, Cagliari, Italy;
4 Nephrology and Dialysis Unit, Ospedale San Carlo Borromeo, Department of
Clinical and Biomedical Sciences ‘Luigi Sacco’, University of Milan, Milan, Italy.

Contact author
Giorgina B Piccoli
Nephrologie Centre Hospitaler Le Mans, Le Mans, Avenue Roubillard 198, 72000
Le Mans France; Dipartimento di Scienze Cliniche e Biologiche Università di
Torino, Italy;
e-mail: gbpiccoliyahoo.it; tel 0033.669733371
Abstract

Pregnancy in dialysis patients is a rare but important event that challenges our knowledge and demands re-thinking many aspects of our practice, including vascular access. This editorial briefly discusses some open questions on vascular access in this situation that challenge the motto “fistula first” and underline the need for personalised approaches.

Information on vascular access in pregnant women is scant. Different approaches may be considered between women on dialysis already on a well-functioning tunnelled catheter and newly placed catheters: while a tunnelled catheter in a woman already stabilised on outpatient dialysis, who has shown being able to take correct care of it and who has freely chosen this option, is a reasonable choice, central venous catheters placed during pregnancy, especially in the hospital setting, may have a high risk of complications. Conversely, pregnancy may increase the risk of development of fistula aneurysms, but the frequency of this complication is still unknown.

The problem of whether or not shifting pregnant patients on peritoneal dialysis to daily haemodialysis sessions is still open, as well as the role of patients’ preference for avoidance of an invasive procedure, or refuse of pain. In the wait for answers, reflecting on the problems encountered by pregnant women on dialysis should make us reflect on how to improve vascular access management for all our patients.

KEY WORDS: pregnancy, pregnant, dialysis, hemodialysis, peritoneal, catheter, venous, CVC, vascular access, fistula
Pregnancy in dialysis patients is a rare but important, and emotional, event.

Several statements that can be made on this issue: pregnancy is a new clinical frontier in dialysis patients (1-2); pregnancy in dialysis is a rare condition that represents a valuable occasion for learning how to improve care in common situations (3); pregnancy in dialysis is an achievement that becomes possible thanks to a strong relationship between patients and physicians.

As all unusual or new situations, however, pregnancy in dialysis patients challenges our knowledge and demands re-thinking many aspects of our practice, leaving several open questions still deserving answers.

The paper by Mehandru and co-workers is addressed at one of these issues: vascular access (4). While, at least in principle, the dialysis community agrees on the motto “fistula first”, there are many situations, not only limited to elderly, high comorbidity patients, in which this may not be feasible, or advisable, and a wise compromise between agreed guidelines and patient’s will may be the only way to preserve one of pillars of care: a good patient-physician relationship (5-6).

The paper reports on three patients who conceived, two of whom had a successful pregnancy, while on hemodialysis via a tunnelled catheter. None of these patients had catheter related problems in pregnancy or after delivery, thus stressing the viability of this option in a situation in which all efforts to deliver an optimal dialysis should be done. The paper reports that the three patients were on chronic dialysis before conception and “discovered” in due time their pregnancy; they were all on dialysis since a short time (5-12 months). The Authors do not report on residual renal function (probably present, on the
account of the short interval between dialysis start and pregnancy, and
important in the management of these patients, and in the preservation of
fertility), and on dialysis schedules, but conception demonstrated by itself the
attainment of a good metabolic balance, in spite of the well-known limits of the
dialysis catheters (1). There is no indication whether pregnancy was desired or
unexpected, but the short delay between conception and discovery of pregnancy
suggests that this possibility was at least considered by the patients.
While it would be important knowing more on pregnancy outcomes, such as
birth weight, presence of intrauterine growth restriction, and on the dialysis
schedule (how many hours? 5-7 days per week?), the paper’s message is concise
and clear: a tunnelled catheter is compatible with dialysis in the most delicate
moment of a woman with end-stage kidney disease: pregnancy.
There are many reasons why this choice, that is justified by the Authors as
following the patients’ wish, may be advantageous and allow a safe and excellent
dialysis (table 1).
Information on vascular access in pregnant women is scant. Different approaches
may be considered between women on dialysis already on a well-functioning
tunnelled catheter and newly placed catheters: while, as reported by Mehandru
et al (4), a tunnelled catheter in a woman already stabilised on outpatient
dialysis, who has shown being able to take correct care of it and who has freely
chosen this option, is a reasonable choice, compatible with good outcomes (or, in
other words, a lack of negative interference of the vascular access on pregnancy
outcomes), central venous catheters placed during pregnancy, especially in the
hospital setting, may have a high risk of complications (7). Of note, in this large
series of 97 CVC placements in non-dialysis patients who were admitted for
obstetric care at a tertiary care teaching hospital, one out of 4 had a major
complication, half of which was infectious. This is a remarkably high
complication rate, although the authors concluded that it was not different from
that observed in the overall non pregnant population. A similar conclusion was
recently reached with regard to peripherally inserted catheters in pregnancy and
puerperium (8).

Regarding patients with an AV access, an interesting case report (9) warns
against the risk of development of fistula aneurysms in pregnancy, but the
frequency of this complication is still unknown and we suggest that patients
already treated with an AV access should continue to do so, with careful
observation of the access.

The problem of whether or not shifting pregnant patients on peritoneal dialysis
to daily haemodialysis sessions is still open. Because of increased abdominal
pressure and later in pregnancy because of limited space, as well as for the need
of better depuration, daily hemodialysis might be considered, which for PD
patients means inserting a CVC. However, the position of the Italian study group
on kidney and pregnancy, based upon a systematic review on pregnancy
outcomes in dialysis patients, encompassing also series and case reports on
peritoneal dialysis, is more flexible, suggesting that carefully adapted peritoneal
dialysis may be a sound therapeutic option, in particular in women with residual
renal function (10,11).

Finally, the paper by Mehandru et al raises another issue: the authors underline
that they counselled the patients about creation of an AV fistula and that the
patients preferred a catheter on the account of lesser aesthetic impact, avoidance
of an invasive procedure, refuse of pain. We might object that AV fistulae are not
necessarily disfiguring and that pain management may be effective, provided
that the vascular access is well functioning. Their legitimate answers, however,
indicates that much is still to be done on this issue. Definitely, one size does not
fit all...

Declarations:
There no funding and no conflict of interest for this editorial.

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<tr>
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<th>Tunnelled catheter</th>
<th>AV fistula</th>
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<tbody>
<tr>
<td>Aesthetic issues</td>
<td>Less disfiguring, easy to hide (aneurysms, button-hole scars)</td>
<td>If correctly punctured and well-functioning, it may not be disfiguring; catheters limit activities like swimming, etc.</td>
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<td>Pain</td>
<td>No pain</td>
<td>Pain management is feasible in most cases (local anaesthetics, cryoanesthesia)</td>
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<td>Need for surgery</td>
<td>Avoidance of surgery</td>
<td>An invasive procedure may be needed anyway in the case of an infected perm cath. Risks of surgery to be balanced with specific risks of catheters (infection, malfunction).</td>
</tr>
<tr>
<td>Possibility of failed AV access surgery</td>
<td>Avoids risk of AV access malfunction in particular in women with small or damaged vessels</td>
<td>A skilled surgeon may foresee wise solutions</td>
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<td>Transplant</td>
<td>Temporary choice in patients waiting for transplantation</td>
<td>Transplanted patients: lower risk of infection after surgery in patients with high grade immunosuppression in the case of late or non-functioning graft</td>
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<td>Cardiac effects of vascular access</td>
<td>No risk for worsening the hyperdynamic state of pregnancy</td>
<td>A distal AV fistula is only rarely associated with a hyperdynamic status.</td>
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<td>Infections</td>
<td>When correctly managed, tunnelled catheters are compatible with a long infection-free duration</td>
<td>Lesser risk of infection</td>
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<td>Dialysis efficiency</td>
<td>Tunnelled catheters may allow high blood flow if correctly managed in women without coagulation problems (which may also affect AV fistulae or grafts)</td>
<td>Better function, better dialysis; however, not all AV fistulae have an optimal function.</td>
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<td>Access in daily dialysis</td>
<td>Lesser risk for catheter malfunction, no pain, no risk for fistula dysfunction</td>
<td>Daily dialysis is not necessarily associated with risk for vascular access dysfunction, but this should be balanced with the characteristics of the vascular access.</td>
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