La Gestione dell’anemia nel paziente Trapiantato renale. Una competenza medica o infermieristica o di entrambi?

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Firenze 12 marzo 2011
Argomenti

- Ricerca europea EDTNA su PTA
- Presentazione Algoritmo per la gestione dell’anemia nel post trapianto renale
- Conclusioni

L’assistenza al tx renale riflessioni sulla cura firenze 12 marzo 2011
38.6% anaemia during a 5 year post-transplant period
8.5% severe anaemia
Risk factors: renal function, ACEI/ARB, donor age, recent infection

only 18.5% pts with severe anaemia treated with erythropoietin

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USA Yorgin et al (2002)

- 26% anaemic at 5 years post-transplant
- Renal function greatest risk factor
- 63% anaemic on switching from aza to MMF
“Anemia, which is a treatable complication, is significantly and independently associated with mortality and graft failure in kidney-transplanted patients”

Molnar et al 2007. Am J Transpl. 7(4)
- European Best Practice Guidelines
  Hb >11g/dL
- PTA is common
- Needs to be Managed
- Monitor and evaluate reasons for anaemia
- European Best Practice Guidelines
The Survey

- Postal
- English for UK, Netherlands, Belgium, Luxemburg; rest translated

- Extent and management of PTA

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Questions asked

- What is the total number of dialysis patients in your centre?
- Are transplants carried out at your centre?
- How many transplant patients are followed up in your centre?
- How many of these transplant patients currently use Epo?
- Who monitors the full blood count in your transplant patients?
- Is there an identified person with sole responsibility for monitoring anaemia in your transplant patients?
- What percentage of your transplant patients have a haemoglobin < 11.0 g/dL?
- What parameters do you use to determine the cause of anaemia in your transplant patients?
- Does your centre specify a haemoglobin below which a transplant patient is normally started on Epo?
- Do you have any specific algorithms / protocols to manage anaemia in your transplant patients?
- What protocols do you have?
- Would you find it useful to have a comprehensive algorithm?
- Comments?
centres responding in each country

<table>
<thead>
<tr>
<th>Country</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>10 (26%)</td>
</tr>
<tr>
<td>Spain</td>
<td>6 (15%)</td>
</tr>
<tr>
<td>Greece</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Israel</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Austria</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>UK</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Belgium</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Croatia</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Hungary</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Serbia</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Slovenia</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>

response rate = 32%
(39/123)
No. of centres responding 28

Mean (SD) 196 (245)
Median 113
Range 20-1130
### Transplant Activity

<table>
<thead>
<tr>
<th>Category</th>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplant Carried Out</td>
<td>Yes</td>
<td>33</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>No Answer</td>
<td>5</td>
<td>13%</td>
</tr>
<tr>
<td>Number of Transplant Patients Followed Up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of centres responding</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>512 (512)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>340</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>35-&gt;2000</td>
<td></td>
</tr>
<tr>
<td>% Transplant Patients Using Epo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of centres responding</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>20 (16)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>2-71</td>
<td></td>
</tr>
</tbody>
</table>

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### Person Monitoring Blood Counts in Transplant Patients

<table>
<thead>
<tr>
<th>Person Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>37 (95%)</td>
</tr>
<tr>
<td>Transplant Nurse</td>
<td>11 (28%)</td>
</tr>
<tr>
<td>Nephrology Nurse</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (8%)</td>
</tr>
</tbody>
</table>

Identified Person Monitoring Anaemia: 12 (31%)

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**percentage of transplant patients with Hb <11 g/dl**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of centres responding</td>
<td>36</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>16 (12)</td>
</tr>
<tr>
<td>Median</td>
<td>15</td>
</tr>
<tr>
<td>Range</td>
<td>2-60</td>
</tr>
</tbody>
</table>

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parameters used to determine cause of anaemia

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>38 (97%)</td>
</tr>
<tr>
<td>Ferritin</td>
<td>33 (85%)</td>
</tr>
<tr>
<td>Transferrin</td>
<td>25 (64%)</td>
</tr>
<tr>
<td>PTH</td>
<td>25 (64%)</td>
</tr>
<tr>
<td>Folate</td>
<td>24 (62%)</td>
</tr>
<tr>
<td>Reticulocytes</td>
<td>22 (56%)</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>22 (56%)</td>
</tr>
<tr>
<td>Red Cell Indices</td>
<td>18 (46%)</td>
</tr>
<tr>
<td>% Hypochromic Red Cells</td>
<td>14 (36%)</td>
</tr>
</tbody>
</table>

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Hb threshold to start epo

<table>
<thead>
<tr>
<th>Hb (g/dl)</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>No threshold given</td>
<td>10</td>
<td>10.5</td>
<td>8.0-12.0</td>
</tr>
<tr>
<td>8.0</td>
<td>1 (3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.0</td>
<td>2 (7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td>9 (31%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.5</td>
<td>7 (24%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.0</td>
<td>7 (24%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.5</td>
<td>2 (7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.0</td>
<td>1 (3%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Hb threshold to start epo

Hb level to start epo

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Hb at which epo commences

- All questionnaires: range 8-12.0g/dL
  - Variation within countries: Germany (most number of responses from single country): range 8-10.5g/dL

L’assistenza al tx renale riflessioni sulla cura firenze 12 marzo 2011
• 13,347 pts covered by survey
• 1,726 patients were anaemic (16%)
• PTA range 2-60%
# Protocols for Anaemia Management

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Epo</td>
<td>29 (74%)</td>
</tr>
<tr>
<td>IV Iron Administration</td>
<td>27 (69%)</td>
</tr>
<tr>
<td>Immunosuppression Review</td>
<td>25 (64%)</td>
</tr>
<tr>
<td>Modification of Other Drugs</td>
<td>21 (54%)</td>
</tr>
<tr>
<td>Blood Transfusion</td>
<td>13 (33%)</td>
</tr>
<tr>
<td>Folate</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Would Find Algorithm Useful</td>
<td>30 (88%)</td>
</tr>
</tbody>
</table>
% anaemia vs nurse or no nurse monitor

nurse
Range 3-60%
Mean 20.8
Median 17.5

no nurse
Range 2-40%
Mean 14.7
Median 12

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%pts on epo vs %pts anaemic each centre

L’assistenza al tx renale riflessioni sulla cura firenze 12 marzo 2011
%pts on epo vs %pts anaemic each centre

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%PTA vs epo threshold

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%anaemia vs use of algorithm

L’assistenza al tx renale riflessioni sulla cura firenze 12 marzo 2011
Survey sent to 123 transplant centers in 13 countries. Results show wide variance:
- 1,726 of 13,347 recipients were diagnosed as being anaemic (average: 16%; range: 2-60%).
- Working protocols varied with respect to the laboratory tests upon which anaemia was diagnosed, who monitored and/or treated anaemia, Hb threshold for treatment, and treatment.
Algorithm For Anaemia Management In Transplant Patients

Hb < 11 g/dl on 2 successive occasions

- ve

Antiproliferatives
mTOR inhibitors
ACEI/ARB

Refer to Doctor

Reticulocyte count

Ferritin > 150 ng/dl

Check CRP

Give IV iron

Reassess Fe " status

Ferritin > 200 ng/dl + Hb < 11 g/dl

Check red cell folate

Normal

Discuss with Dr

< 10

Response

Yes

Maintenance Dose

> 125/80 mm Hg

Check B/P

> 125/80 mm Hg

Refer to Dr for B/P

< 125/80 mm Hg

Doctor to set Hb Target & prescribe EPO

< 30 ml/min GFR

Eligible for EPO

Follow A then B

A

Ferritin < 200 ng/dl

Refer to Dr

B

< 10

> 10

Check PTH

> 20

> 200

< 10

< 200

Low

Normal

GFR Cockcroft
Gault/MDRD

Investigate cause of Anaemia

1 x for blood loss/Haemolysis

≤ 30 ml/min GFR

Eligible for EPO

Follow A then B

≥ 30 ml/min GFR

Refer to Dr

+ ve

Assess Fe" status

Ferritin < 200 ng/dl

Check B12

< 10

> 10

Check PTH

≤ 10

> 10

Discuss with Dr

≥ 20

≥ 200

Normal

< 10

> 10

High
Causes of PTA

- Immunosuppressants
- Infection
- Antiviral drugs
- ACE-I, ARBs
- Attitude!
- CKD: funding, renal function, iron, folate, PTH
conclusion

- PTA is common: inadequate approach in many centres
- regular screening and evaluation of contributing factors is recommended
- EDTNA/ERCA pocket guide & algorithm, slide set
additional comments

- highlighted the need for dedicated person to monitor Hb
- algorithm for Doctors not Nurses
- epo only funded reliably for dialysis pts. Protocol is for CRF pts
- tx centre not certified for epo use so nephrology centre has to prescribe epo or iron
- protocol is for all patients. Useful to have alg. but may not be followed by Drs