The Disturbing Facts About Diabetic Foot Infections In Brazil:
They Carry High Mortality And Amputation Rates:
What Can Be Done About It?
This Problem Also Probably Applies To Areas In The US

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DIABETIC FOOT

- Foot ulcers:
  - the leading cause of diabetic patients hospitalization (and costs)
  - a predictive clinical marker for limb amputation and for death

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- Amputation rate in literature
- diabetic foot infections (not only foot ulcers)
- ranged from 19.9% to 39%


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- DFU in China
  - The annual incidence of ulceration for DM patients: 8.1%
  - The annual incidence of amputation: 5.1%
  - The annual mortality: 14.4%.

Yufeng et al, Wound Healing Center, Trauma Center of Postgraduate Medical School, Chinese PLA General Hospital, Beijing, China

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- Turkey: 36.7%
  - Gürlek et al, 1997

FINANCIAL DISCLOSURE

Nothing to disclosure
**Diabetic Foot**

- Brazil: 47.7%
  - Resende et al, 2008

- Argentina: 32.5%
  - Sereday et al, 2009 (11 hospitals)

- USA: 42.3% in NYC
  - in three hospitals (private, public and VA)
    - the lowest rate in private hospital
    - the highest rate at the VA
  - Blumberg et al 2014

- Foot ulcers:
  - 50% to 85% of major amputations could be prevented
    (structured health program)

- Guiana (South America): 42%
  - After the development of a structured program for diabetic patients ➤ 14%
  - Lowe et al, 2015
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• Germany:
  – 21.7% outside the program
  – 4.7% inside a structured health program

• Italy:
  – 5% (structured health program)

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• Aims:
  • to identify predictive factors for
    – lower limb amputation
    – Death
  • 654 patients with infected diabetic foot

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• RESULTS
  • Age, mean (SD): 63.08 (12.1)
  • Gender (male): 67.4%

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• RESULTS
  • Wagner wound Classification: 97.4%
  • > 3 (Tendon and Bones)

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• RESULTS
  • Peripheral Artery Disease (PAD): 24.5%
  • Revascularization: 13%
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• RESULTS

• Ankle-brachial Index: mean: 0.41
  – <0.4: 43%
  – 0.4 - 0.59: 33%
  – 0.6 - 0.9: 17%
  – Incompressible: 7%

• RESULTS

• Creatinine level: 1.29 (0.47 - 11.73)
• Hemoglobin level: 9.50 (4.0 - 17.0)

• RESULTS

• Total Amputation rate: 69%

• RESULTS

• Amputation: 69%
  – Minor Amputation: 48%
    • Preserving the foot
    • Enabling to walk without prosthesis

• Limb salvage rate: 79%
**Diabetic Foot**

- **Results**
  - Mortality rate: 12%

- Predictors for major amputation (multivariate logistic regression analysis)

<table>
<thead>
<tr>
<th>Risk factor for amputation</th>
<th>OR</th>
<th>95%CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.02</td>
<td>1.001-1.035</td>
<td>&lt;0.04</td>
</tr>
<tr>
<td>Ischemia</td>
<td>2.20</td>
<td>1.46-3.31</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hemoglobin level &lt; 10 mg/dL</td>
<td>6.24</td>
<td>3.72-10.4</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

- Predictors for death (multivariate logistic regression analysis)

<table>
<thead>
<tr>
<th>Risk factor for Death</th>
<th>OR</th>
<th>95%CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.06</td>
<td>1.03-1.08</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Major Amputation</td>
<td>2.38</td>
<td>1.41-3.99</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Hemoglobin level &lt; 10 mg/dL</td>
<td>2.80</td>
<td>1.48-5.24</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

- We have made some improvements in the stratification of the patients.
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• We adopted the SVS-WIfI classification system

• Wound, Ischemia and foot Infection=WIfI

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• Project: Structured health program for diabetic patients

• offering to Health Care Payers
  • Public
  • Private

• patients are referred late in the course of the disease to our hospital

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• CONCLUSION

• Diabetic foot is associated with high amputation and mortality rates.

DIABETIC FOOT

• CONCLUSION

• limb salvage rate: 79%
• mortality rate: 12%

DIABETIC FOOT

• CONCLUSION

• Predictors for major amputation and death
  – Old age
  – PAD
  – low hemoglobin level
  – Major amputation

DIABETIC FOOT

• CONCLUSION

• A structured health program for diabetic patients

➤ Can reduce amputation and mortality rates throughout the world