Predictors of Survival in Hospitalized Patients with Dilated Cardiomyopathy

----a single cohort study

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Declaration of Interest

• Nothing to disclose.
All cause Mortality in patients with Ischemic Cardiomyopathy is very high. Predictors of Survival in those patients were fully studied.

Post-MI patients for at least 40 days with an LVEF $\leq 35\%$ are at high risk of sudden cardiac death (SCD) and should receive prophylactic implantation of implantable cardioverter defibrillator (ICD) according to guideline

Background

Epidemiology of nonischemic cardiomyopathy

- High morbidity
- Poor prognosis
  - 5-year survival is less than 50%
- Prediction of death in patients with nonischemic cardiomyopathy is still challenging
Background

Predictors of Survival in Hospitalized Patients with DCM

- Age
- Gender
- Race
- NYHA class
- Left ventricular ejection fraction
- Left ventricular end-diastolic dimension
- LA diameter
- Left bundle branch block
- Systolic blood pressure
- NSVT on Holter monitoring
- Presence of AF/PVC
- B-natriuretic peptide level
- FBG
- VO2max
- Pulmonary artery systolic pressure
- Optimal medical therapy
- QRS duration
- Subclinical thyroid dysfunction
- Late gadolinium enhancement by CMR
- Others
• Correlation between QRS prolongation and DCM survival is limited
• No data on the association between subclinical thyroid dysfunction and survival in DCM
Predictors of Survival in Hospitalized Patients with DCM

- QRS Duration
- Subclinical Thyroid Dysfunction
Methods

- Hospitalized from November 2003 to September 2011 in Fu Wai Hospital
- A total of 1317 patients with DCM were enrolled,
- DCM was defined as systolic dysfunction (LVEF < 50%) and left ventricular dilatation and Absence of an apparent secondary cause of cardiomyopathy
- The primary end point: all-cause mortality

Xiaoping Li, Wei Hua et al. International Journal of Cardiology. 2013, 4979 – 4980
• 1317 patients with DCM were enrolled, 1119 patients with DCM were finally analysed.

• Mean age: 51.1 ± 14.7 years;

• Male: 73.4%

• Mean LVEF 31.9%

• LVD 68 mm

• The mean follow-up period was 3.5 ± 2.3 years
QRS duration and survival curves for patients with dilated cardiomyopathy

- Mean follow-up of 3.5 ± 2.3 years
- 268 (23.9%) died
- All-cause mortality rates were:
  - Highest in the patients with QRS >150 ms (n = 72, 33.3%)
  - Intermediate in those with QRS =120–150 ms (n = 85, 33.1%)
  - Lowest in those with QRS <120 ms (n = 111, 17.2%)

Xiaoping Li, Wei Hua et al. International Journal of Cardiology, 2014, 475–477
Results

• Patients with QRS $\geq 120$ ms had a higher all-cause mortality rate than those with QRS $<120$ ms

• No difference was found in the all-cause mortality rate between patients with QRS $>150$ ms and patients with QRS $=120-150$ ms

• QRS duration was a strong predictor of all-cause mortality in patients with DCM even after adjustment for the classic risk factors
Predictors of Survival in Hospitalized Patients with DCM

- QRS Duration
- Subclinical Thyroid Dysfunction
Methods

• A total of 1317 patients with DCM were enrolled, among them 963 DCM patients were evaluated for thyroid function
  – 7.1% (n=568) had subclinical hyperthyroidism
  – 84.7% (n=5816) had euthyroidism
  – 8.2% (n=579) had subclinical hypothyroidism
• 42.3% of the patients were newly diagnosed, and 57.7% were established DCM patients
• The end point of the study was all-cause mortality
### Table 2. Univariate and Multivariate Logistic Regression in Dilated Cardiomyopathy Patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate Analysis</th>
<th></th>
<th></th>
<th>Multivariate Analysis</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>HR</td>
<td>95% CI</td>
<td>P Value</td>
<td>HR</td>
<td>95% CI</td>
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<tr>
<td>Subclinical hypothyroidism</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Age</td>
<td>1.006</td>
<td>0.990–1.022</td>
<td>.469</td>
<td>0.998</td>
<td>0.981–1.016</td>
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<tr>
<td>Sex</td>
<td>1.332</td>
<td>0.810–2.191</td>
<td>.259</td>
<td>0.873</td>
<td>0.489–1.559</td>
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<tr>
<td>NYHA</td>
<td>1.179</td>
<td>0.880–1.580</td>
<td>.271</td>
<td>1.109</td>
<td>0.806–1.527</td>
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<tr>
<td>Disease duration</td>
<td>1.043</td>
<td>1.012–1.074</td>
<td>.006*</td>
<td>1.038</td>
<td>1.005–1.073</td>
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<tr>
<td>Smoking status</td>
<td>0.637</td>
<td>0.476–0.854</td>
<td>.003*</td>
<td>0.666</td>
<td>0.470–0.946</td>
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<tr>
<td>Drinking status</td>
<td>0.745</td>
<td>0.538–1.031</td>
<td>.076</td>
<td>0.850</td>
<td>0.581–1.244</td>
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<tr>
<td>FT₃</td>
<td>0.650</td>
<td>0.419–1.008</td>
<td>.054</td>
<td>1.137</td>
<td>0.619–2.086</td>
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<tr>
<td>FT₄</td>
<td>0.133</td>
<td>0.050–0.349</td>
<td>&lt;.001*</td>
<td>0.212</td>
<td>0.067–0.670</td>
</tr>
<tr>
<td>T₃</td>
<td>0.525</td>
<td>0.271–1.020</td>
<td>.057</td>
<td>0.997</td>
<td>0.415–2.399</td>
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<tr>
<td>T₄</td>
<td>0.799</td>
<td>0.716–0.892</td>
<td>&lt;.001*</td>
<td>0.865</td>
<td>0.744–1.004</td>
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<tr>
<td>Subclinical hyperthyroidism</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.028</td>
<td>1.008–1.048</td>
<td>.005*</td>
<td>1.034</td>
<td>1.011–1.057</td>
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<tr>
<td>Gender</td>
<td>1.478</td>
<td>0.875–2.496</td>
<td>.144</td>
<td>1.874</td>
<td>0.903–3.891</td>
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<tr>
<td>NYHA</td>
<td>1.893</td>
<td>1.342–2.670</td>
<td>&lt;.001*</td>
<td>2.140</td>
<td>1.466–3.124</td>
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<tr>
<td>Disease duration</td>
<td>1.031</td>
<td>0.997–1.066</td>
<td>.070</td>
<td>1.008</td>
<td>0.970–1.047</td>
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<tr>
<td>Smoking status</td>
<td>1.463</td>
<td>1.013–2.215</td>
<td>.043*</td>
<td>1.151</td>
<td>0.880–1.506</td>
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<tr>
<td>Drinking status</td>
<td>1.014</td>
<td>0.747–1.377</td>
<td>.930</td>
<td>0.968</td>
<td>0.669–1.400</td>
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<tr>
<td>FT₃</td>
<td>1.451</td>
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<td>.007*</td>
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<td>1.148–2.406</td>
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<tr>
<td>FT₄</td>
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<td>.802</td>
<td>1.004</td>
<td>0.905–1.114</td>
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<tr>
<td>T₃</td>
<td>2.045</td>
<td>1.334–3.134</td>
<td>.001*</td>
<td>1.954</td>
<td>1.174–3.253</td>
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<tr>
<td>T₄</td>
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<td>0.966–1.024</td>
<td>.692</td>
<td>0.946</td>
<td>0.844–1.061</td>
</tr>
</tbody>
</table>
Univariate and Multivariate Logistic Regression in DCM Patients

- Multivariate logistic analysis indicated that subclinical hypothyroidism was associated with serum FT4 levels, disease duration, and smoking status.
- Subclinical hyperthyroidism was associated with age, NYHA functional class, and serum FT3 and T3 levels.
There was a significant difference in the all-cause mortality rate between patients with euthyroidism and patients with subclinical hyper- and hypothyroidism (21%, 38.2%, and 26.6%, respectively; log-rank $\chi^2=13.104; P=0.001$)
The Cox multivariate analysis indicated that:
- subclinical hyperthyroidism were significant predictors of all-cause mortality in the DCM patients
- subclinical hypothyroidism were not significant predictors of all-cause mortality
Conclusion

• Patients with Dilated Cardiomyopathy and $\text{QRS} \geq 120 \text{ ms}$ had a higher all-cause mortality rate than those with $\text{QRS} < 120 \text{ ms}$. No difference was found in the all-cause mortality rate between patients with $\text{QRS} > 150 \text{ ms}$ and patients with $\text{QRS}=120 - 150 \text{ ms}$.

• Subclinical hyperthyroidism, but not subclinical hypothyroidism, was a predictor of all-cause mortality with adjustment baseline variables in DCM patients.
Thanks for your attention!