

Predictors of Survival in Hospitalized Patients with Dilated Cardiomyopat -----a single cohort study

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Declaration of Interest

- Nothing to disclose.

Background

- 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

Fan X, Hua W, Xu Y, et al. Heart. 2014 ;100(16):1242-9.

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

Background

- 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

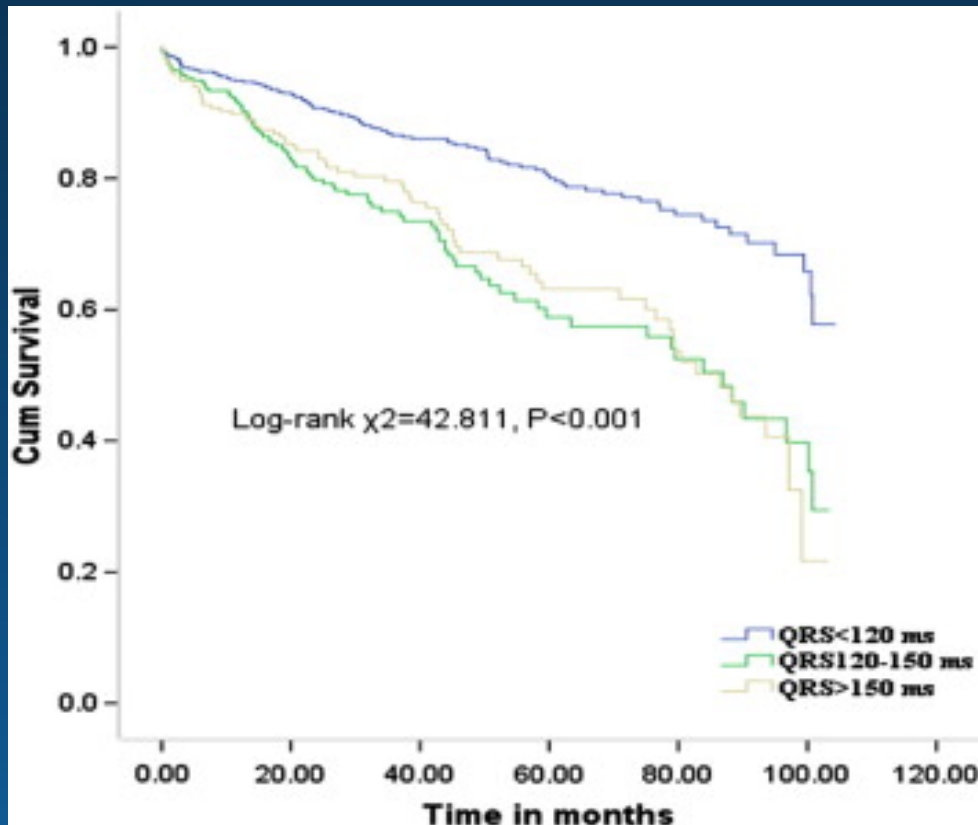
Methods

- 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

Methods

- 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%)

Results

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

Univariate and Multivariate Logistic Regression in DCM Patients

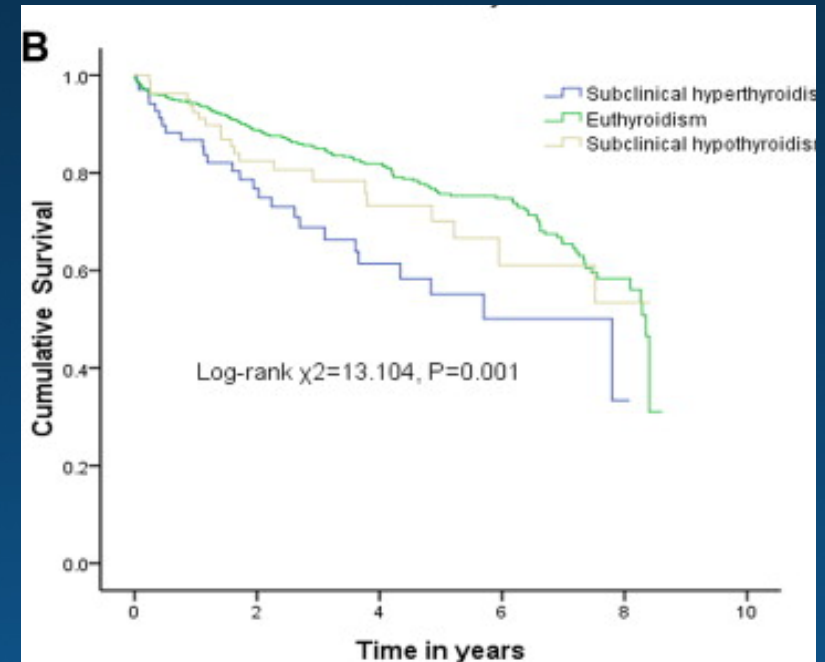
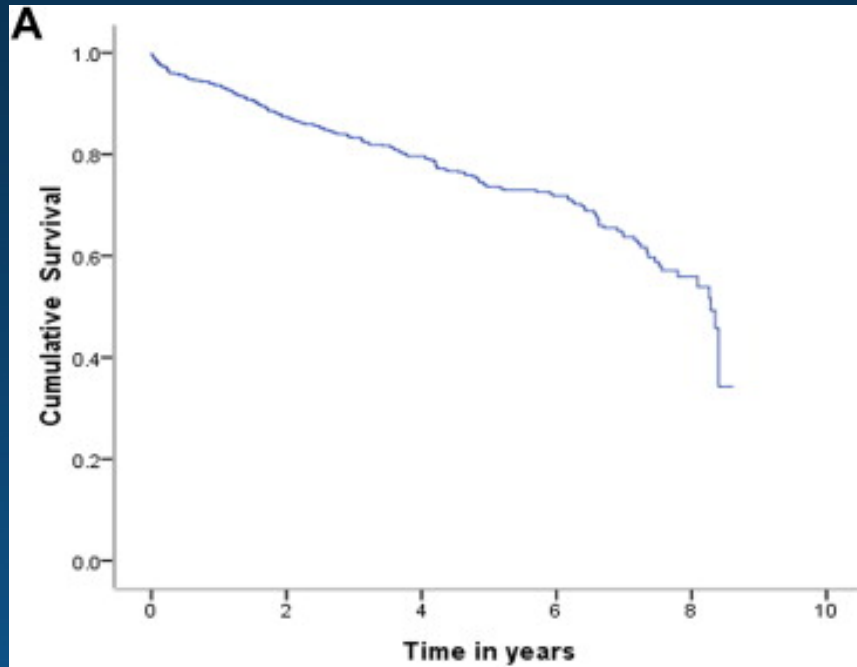
Table 2. Univariate and Multivariate Logistic Regression in Dilated Cardiomyopathy Patients

| Variable | Univariate Analysis | | | Multivariate Analysis | | |
|-----------------------------|---------------------|-------------|---------|-----------------------|-------------|---------|
| | HR | 95% CI | P Value | HR | 95% CI | P Value |
| Subclinical hypothyroidism | | | | | | |
| Age | 1.006 | 0.990–1.022 | .469 | 0.998 | 0.981–1.016 | .833 |
| Sex | 1.332 | 0.810–2.191 | .259 | 0.873 | 0.489–1.559 | .646 |
| NYHA | 1.179 | 0.880–1.580 | .271 | 1.109 | 0.806–1.527 | .524 |
| Disease duration | 1.043 | 1.012–1.074 | .006* | 1.038 | 1.005–1.073 | .024* |
| Smoking status | 0.637 | 0.476–0.854 | .003* | 0.666 | 0.470–0.946 | .023* |
| Drinking status | 0.745 | 0.538–1.031 | .076 | 0.850 | 0.581–1.244 | .403 |
| FT ₃ | 0.650 | 0.419–1.008 | .054 | 1.137 | 0.619–2.086 | .679 |
| FT ₄ | 0.133 | 0.050–0.349 | <.001* | 0.212 | 0.067–0.670 | .008* |
| T ₃ | 0.525 | 0.271–1.020 | .057 | 0.997 | 0.415–2.399 | .995 |
| T ₄ | 0.799 | 0.716–0.892 | <.001* | 0.865 | 0.744–1.004 | .057 |
| Subclinical hyperthyroidism | | | | | | |
| Age | 1.028 | 1.008–1.048 | .005* | 1.034 | 1.011–1.057 | .004* |
| Gender | 1.478 | 0.875–2.496 | .144 | 1.874 | 0.903–3.891 | .092 |
| NYHA | 1.893 | 1.342–2.670 | <.001* | 2.140 | 1.466–3.124 | <.001* |
| Disease duration | 1.031 | 0.997–1.066 | .070 | 1.008 | 0.970–1.047 | .686 |
| Smoking status | 1.463 | 1.013–2.115 | .043* | 1.151 | 0.880–1.506 | .306 |
| Drinking status | 1.014 | 0.747–1.377 | .930 | 0.968 | 0.669–1.400 | .862 |
| FT ₃ | 1.451 | 1.106–1.905 | .007* | 1.663 | 1.148–2.406 | .008* |
| FT ₄ | 0.989 | 0.905–1.080 | .802 | 1.004 | 0.905–1.114 | .938 |
| T ₃ | 2.045 | 1.334–3.134 | .001* | 1.954 | 1.174–3.253 | .010* |
| T ₄ | 0.994 | 0.966–1.024 | .692 | 0.946 | 0.844–1.061 | .345 |

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.

Kaplan-Meier Survival Curves for Patients with Dilated Cardiomyopathy



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 $\chi^2=13.104; P=0.001$)

Cox Regression of All-Cause Mortality in the Dilated Cardiomyopathy Patients

Table 3. Cox Regression of All-Cause Mortality in the Dilated Cardiomyopathy Patients

| Variable | Univariate Analysis | | | Multivariate Analysis | | |
|-----------------------------|---------------------|-------------|--------------------|-----------------------|-------------|--------------------|
| | HR | 95% CI | P Value | HR | 95% CI | P Value |
| Age | 1.010 | 1.000–1.019 | .046 [†] | 0.999 | 0.988–1.012 | .970 |
| Sex | 1.186 | 0.884–1.590 | .255 | 1.188 | 0.810–1.742 | .379 |
| Diabetes mellitus | 0.926 | 0.629–1.347 | .670 | 0.810 | 0.523–1.256 | .347 |
| Atrial fibrillation | 1.380 | 1.030–1.848 | .031 [†] | 1.287 | 0.902–1.836 | .164 |
| Ventricular tachycardia | 1.006 | 0.711–1.423 | .973 | 0.921 | 0.620–1.369 | .683 |
| NYHA | 1.648 | 1.376–1.972 | <.001 [†] | 1.247 | 1.006–1.546 | .044 [†] |
| Smoking status | 0.924 | 0.795–1.075 | .307 | 0.974 | 0.799–1.188 | .798 |
| Drinking status | 0.835 | 0.701–0.996 | .045 [†] | 0.823 | 0.661–1.026 | .083 |
| Disease duration | 1.028 | 1.010–1.046 | .002 [†] | 1.012 | 0.991–1.034 | .258 |
| QRS duration | 1.009 | 1.005–1.013 | <.001 [†] | 1.009 | 1.004–1.013 | <.001 [†] |
| LV diameter | 1.037 | 1.023–1.051 | <.001 [†] | 1.009 | 0.991–1.029 | .326 |
| LA diameter | 1.055 | 1.038–1.073 | <.001 [†] | 1.038 | 1.017–1.060 | <.001 [†] |
| LVEF | 0.967 | 0.951–0.983 | <.001 [†] | 0.990 | 0.971–1.010 | .339 |
| FT ₃ | 0.503 | 0.392–0.645 | <.001 [†] | 0.779 | 0.562–1.081 | .135 |
| FT ₄ | 0.831 | 0.629–1.098 | .193 | | | |
| T ₃ | 0.418 | 0.278–0.628 | <.001 [†] | 0.844 | 0.500–1.425 | .525 |
| T ₄ | 0.922 | 0.870–0.976 | .005 [†] | 0.978 | 0.922–1.037 | .454 |
| Subclinical hyperthyroidism | 2.041 | 1.354–3.077 | .001 [†] | 2.068 | 1.068–4.006 | .031 [†] |
| Subclinical hypothyroidism | 1.184 | 0.754–1.858 | .464 | 1.144 | 0.696–1.880 | .596 |
| NT-proBNP* | 4.947 | 3.031–8.074 | <.001 [†] | 2.465 | 1.398–4.348 | .002 [†] |
| Amiodarone | 1.079 | 0.720–1.617 | .713 | 0.993 | 0.358–2.755 | .989 |

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 $QRS \geq 120$ 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
- Subclinical hyperthyroidism, but not subclinical hypothyroidism, was a predictor of all-cause mortality with adjustment baseline variables in DCM patients

Thanks for your attention !