U-Shaped Association Between Consumption of Marine n-3 Fatty Acids and Development of Atrial Fibrillation

*a Danish Cohort Study*

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U-Shaped Association Between Consumption of Marine n-3 Fatty Acids and Development of Atrial Fibrillation - a Danish Cohort Study

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Objectives
The aim was to investigate the association between consumption of marine n-3 polyunsaturated fatty acids (PUFA) and development of atrial fibrillation (AF).

Background
Previous studies have suggested a lower risk of AF with higher intakes, but results have been inconsistent.

Methods
A total of 57,063 Danish participants 50 to 64 years of age were enrolled in the Diet, Cancer, and Health Cohort Study between 1993 and 1997. Dietary intake of fish and marine n-3 PUFA was assessed by a semi-quantitative food frequency questionnaire. Time-to-event data was analyzed in a Cox proportional hazards regression model using restricted cubic splines.

Results
3,345 incident cases of AF occurred over 13.6 years (Figure 1). The association was U-shaped between consumption of marine n-3 PUFA and risk of incident AF, with the lowest risk of AF at moderate intake near the median consumption of 0.63 g/day (Figure 2). When comparing quintiles of marine n-3 PUFA intake, a 13% statistically significant lower risk of incident AF was seen in the middle quintile (HR 0.87, 95% CI 0.78-0.98) compared with the lowest quintile of intake (Table 1). Intake of total fish, fatty fish, and the individual n-3 PUFA, eicosapentaenoic acid, docosahexaenoic acid, and docosapentaenoic acid also showed U-shaped associations with incident AF.

![Figure 1](http://example.com/image.png)

![Figure 2](http://example.com/image.png)

Table 1: Quintiles of Dietary Intake of marine n-3 PUFA and Risk of Incident Atrial Fibrillation

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Total Case Count</th>
<th>HR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>876</td>
<td>1.00 (Ref.)</td>
<td>1.00</td>
</tr>
<tr>
<td>Q2</td>
<td>876</td>
<td>1.00 (Ref.)</td>
<td>1.00</td>
</tr>
<tr>
<td>Q3</td>
<td>876</td>
<td>0.98 (0.94-1.02)</td>
<td>0.51</td>
</tr>
<tr>
<td>Q4</td>
<td>876</td>
<td>0.97 (0.93-1.02)</td>
<td>0.42</td>
</tr>
<tr>
<td>Q5</td>
<td>876</td>
<td>0.96 (0.92-1.00)</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Conclusions
We found a U-shaped association between consumption of marine n-3 PUFA and risk of incident AF, with the lowest risk close to the median intake of total marine n-3 PUFA.

A moderate dietary intake of marine n-3 PUFA may be preferable for primary prevention of AF.

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