The prevalence of Diffuse Idiopathic Skeletal Hyperostosis in a Western European outpatient population

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Introduction: Diffuse Idiopathic Skeletal Hyperostosis (DISH) is a common but often overlooked spinal disorder in which ankylosis can occur due to ossification of longitudinal ligaments. Clinical symptoms of DISH are usually mild and consist of back pain, skeletal stiffness and impaired mobility. Serious complications of DISH, however, are myelopathy, spinal canal stenosis and unstable fractures after minor trauma. The etiology of DISH is unknown, but it is strongly associated with obesity and type 2 diabetes and could therefore become a more frequent disease of Western society. Studies investigating the demographic characteristics of DISH have found a prevalence ranging from 2.9% in a Korean population to 25% in Caucasian males in the United States of America. No recent data are available on the prevalence of DISH in West European countries; therefore the current study was conducted.

Materials and Methods: The posteroanterior and lateral chest radiographs of 501 randomly selected patients (>50 years), referred to our institution by general practitioners for unrelated conditions, were reviewed. The indication to acquire each chest radiograph was recorded and assigned to one of four categories: cardiovascular, pulmonary, abdominal and miscellaneous. The latter category included fatigue; weight loss; unexplained elevation of erythrocyte sedimentation rate and general discomfort amongst other things. The original radiological reports were retrieved for formal assessment of thoracic pathology.

DISH was established when the anterior longitudinal ligament was ossified over four or more contiguous levels, according to the criteria of Resnick et al. Three level involvement was defined as pre-stage DISH and recorded separately to provide insight in the natural course and progression of DISH. Logistic regression analysis was performed to investigate the influence of age and gender on the prevalence of DISH. Finally, the individual predicted probability of developing DISH according to age and gender was calculated.

Results: The mean age of individuals with DISH was 69.6±10.0 years versus 66.0±10.8 years for controls, with a male/female ratio of 2:1. The overall prevalence of DISH was 17.0% (95% CI 13.7-20.3). Gender (p = 0.006) and age (p = 0.006) were both significantly related to the presence of DISH, demonstrating males and older individuals to have a higher probability of developing DISH.

The prevalence of DISH stratified in 10-year age groups: number of patients (percent; 95% confidence interval).

<table>
<thead>
<tr>
<th>Age Range</th>
<th>No DISH</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>161 (100.0%)</td>
<td>125 (80.9%)</td>
<td>46 (29.0%)</td>
<td>14 (8.7%)</td>
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</table>

Pre-stage DISH was found in 4.6% (CI 2.8-6.4) and was more frequent in females. The individual predicted probability of developing DISH is 18.8% in males of 60 years of age; by the age of 80 this risk is increased to 32.1%. Females have 9.1% chance of developing DISH when they are 60 years old; by the age of 80 years this risk has almost doubled to 16.9%.

No significant differences were found between the indications for individuals displaying no DISH; pre-stage DISH; or DISH (p = 0.062). The diagnosis DISH was not described in any of the radiological reports. DISH could be established on 97.6% of PA radiographs versus 40.0% on lateral views. In 36 individuals (7.2%) radiological assessment was inconclusive; they were, regardless of cause, considered non-DISH subjects.

Discussion: The prevalence of DISH in this outpatient cohort was at least 17.0%, which is high compared to recent literature. This percentage may further increase due to current demographic trends of obesity and type 2 diabetes in aging populations. Logistic regression analysis showed that males and older individuals have a higher probability of developing DISH. Pre-stage DISH was found in 4.6% and was more frequent in females. A posteroanterior chest radiograph may be a reliable DISH screening tool.

References: