Obesity and Osteoarthrosis: A Retrospective Study in a Saudi Arabian Primary Health Care Centre

Bengt Linder, Tahiya Binhemd, Ake Ahlberg


During a period of 18 months, 168 men and women presenting to the primary health care centre of King Faisal University, Dammam, Saudi Arabia, were studied retrospectively to determine whether a correlation existed between osteoarthrosis of the hips and/or knees and obesity. A similar number of matched controls were included for comparison. The correlation between osteoarthrosis and obesity in the study population, as determined by the Quetelet index of body mass, was significant. The occurrence of osteoarthrosis as a complication of obesity is inferred, and measures taken to reduce obesity in the community may help lessen this disability.

Previous research has shown that obesity is associated with an increase in the frequency of a number of diseases such as hypertension, diabetes mellitus, arthrosis gout and gall bladder disease. In addition, studies have shown the correlation between obesity and osteoarthrosis (OA) of the hip and/or knee in patients in Western Europe and the USA and in Japan. A study from Saudi Arabia showed a high prevalence of obesity among patients referred to a tertiary health care unit with OA of the knees. Saudi Arabia has undergone a remarkable and rapid development over the past two decades. This has brought with it some of the diseases previously associated with the more economically developed countries of the West. Of these, obesity is the most obvious and important in view of the increased risk of morbidity and mortality known to be associated with marked obesity.

The aim of this study was to determine whether there is an association between OA and obesity in patients frequenting the primary health care clinic (PHCC) of the Family and Community Medicine Department of King Faisal University, Dammam, Saudi Arabia.

Subjects and Methods

This was a retrospective study and included all females and males who attended the PHCC between October 1986 and March 1988 in whom a diagnosis of OA of knee(s) and/or hip(s) was made according to the diagnostic criteria of the American Rheumatism Association. During the study period of 18 months, a total of 4721 new patients were registered of whom 168 (3.5%) were diagnosed as having OA of knee(s) and/or hips(s); 114 (67.9%) were females and 54 (32.1%) were males. With the exception of three patients who had OA of the hip, all were diagnosed as having OA of the knee(s). The reason for this predominance of knee OA is not clear but has been discussed in a previous article by the present authors.

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The age, weight in kilograms and height in centimetres of each patient were recorded at the first encounter. This is a routine procedure in this PHCC. An equal number of controls, matched for sex and age (±3 years) were randomly selected. The mean age of the case was 53.0 years (females 50.0 years, males 59.3 years). Of the cases, 149 (88.7%) were Saudis, and 19 (11.3%) were non-Saudi Arabs. Among the controls, 154 (91.7%) were Saudis, and 14 (8.3%) non-Saudi Arabs. All individuals were Muslims.

The Qutelet body mass index (BMI) was calculated for each subject by dividing the body weight in kilograms by the square of the height in metres, and the significance of the difference between cases and controls was tested using a paired t-test. Obesity was considered as a Qutelet index of 25 kg/m² or more; the ideal value ranging from 20 to 24 kg/m².7

Results
The mean weight for the OA group was 74.7 kg (females 73.0, males 76.7), and for the controls 69.8 kg (females 67.6, males 74.4), which is 4.9 kg less than for the OA cases. The difference was 5.4 kg and 2.3 kg for the female and male groups, respectively. The mean height of the OA cases was 1.58 m and for the control group 1.60 m (Table 1).

<table>
<thead>
<tr>
<th>OA cases</th>
<th>Controls</th>
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<tbody>
<tr>
<td>Mean weight (kg) Female</td>
<td>73.0 ± 14.6</td>
</tr>
<tr>
<td>Male</td>
<td>76.7 ± 14.7</td>
</tr>
<tr>
<td>Total</td>
<td>74.7 ± 14.7</td>
</tr>
<tr>
<td>Mean height (m) Total</td>
<td>1.58 ± 0.09</td>
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The mean BMI of the cases was 29.8 kg/m², whilst that of the controls was 27.2 kg/m², a difference of 2.6 kg/m² (p < 0.0001) Table 2. When the mean BMI of the two sexes was compared, the difference was significant in the females being 3.4 kg/m² (p < 0.0001), whilst in the males, it was only 0.8 kg/m² (p > 0.1).

<table>
<thead>
<tr>
<th>OA cases (n = 168)</th>
<th>Controls (n = 168)</th>
<th>Mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>30.8 ± 5.7</td>
<td>27.4 ± 4.7</td>
</tr>
<tr>
<td>Male</td>
<td>27.7 ± 4.5</td>
<td>26.9 ± 3.6</td>
</tr>
<tr>
<td>Total</td>
<td>29.8 ± 5.5</td>
<td>27.2 ± 4.3</td>
</tr>
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Discussion
The controls as well as the OA cases in this study had a Qutelet body mass index well above what is defined as obesity. The index was significantly higher in the OA cases than in the controls. This difference was, however, only significant in the females. The reason for this sex difference is not known. Whether obesity contributes to the development of OA or whether OA and subsequent inactivity causes obesity is a matter of dispute. It seems clear, however, that overweight worsens the symptoms of an existing OA and increases the risk of complications in connection with surgical management of the condition.

It is recommended that promotive programmes aimed at reducing obesity in the community need more emphasis and commitment. The primary health care team is ideally suited for detecting and preventing obesity which is not only a disease, but also a social as well as behavioural problem with all its attendant medical complications and psychological sequelae. It is appreciated that prevention of obesity is by no means an easy task, but in view of the ease of diagnosing obesity, the efforts of consistent counselling and follow-up, especially in young patients should be made, and would be rewarding in the long term.

References