Consumption of some spices in patients with rheumatoid arthritis: a case-control study

Sara Moradi¹, Ahmad-Reza Dorosty-Motlagh²*, Milad Daneshi-Maskooni¹, Keramat Nouri-Jelyani²

1. Department of Community Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Iran
2. Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

Corresponding Author email: dorostim@sina.tums.ac.ir

ABSTRACT: The consumption of spicy foods has received more attention in relation to Rheumatoid arthritis in recent years. The traditional Iranian diet contains large amounts of spicy foods, including turmeric, and ginger, sesame, allium, chili pepper, providing an opportunity to assess consumption of spicy foods in relation to health. In addition, few data exist about the association between diet and Rheumatoid arthritis. Here, we present the study that aimed to explore the association between consumption of spicy foods among Iranian Rheumatoid arthritis patients. This case-control study was conducted on 60 patients with Rheumatoid arthritis and 60 healthy adults aged 20-60 years. Dietary intakes of peoples obtained using questionnaire. Diagnosis of Rheumatoid arthritis was evaluated by a Rheumatologist. Statistical analysis was performed with the software SPSS IBM 20. This study showed a significant positive relationship between intake of Ginger (p<0.001) and Sesame (p<0.05) in case and control groups.

Keywords: Rheumatoid arthritis, Turmeric, Ginger, Sesame, Allium, Chili pepper.

INTRODUCTION

Rheumatoid arthritis is an autoimmune disease that results in a chronic, systemic inflammatory disorder that may affect many tissues and organs, but principally attacks joints. It can be a disabling and painful condition, which can lead to substantial loss of functioning and mobility if not adequately treated. The process involves an inflammatory response of the capsule around the joints secondary to swelling of synovial cells, excess synovial fluid, and the development of fibrous tissue in the synovium. RA can also produce diffuse inflammation in the lungs, heart, and subcutaneous tissue. Although the cause of RA is unknown, autoimmunity plays a big part. Treatments are pharmacological and non-pharmacological. Non-pharmacological treatment includes physical therapy, occupational therapy and nutritional therapy but these don’t stop the progression of joint destruction. Analgesics and anti-inflammatory drugs, including steroids, suppress symptoms, but don’t stop the progression of joint destruction either. Disease-modifying antirheumatic drugs (DMARDs) slow or halt the progress of the disease. The newer biologics are DMARDs (MajithiaV, et al. 2007). The evidence for complementary and alternative medicine (CAM) treatments for RA related pain is weak, with the lack of high quality evidence leading to the conclusions that their use is currently not supported by the evidence (Macfarlane GJ, et al. 2011). About 0.6% of the United States adult population has RA, women two to three times as often as men (Helmsick, CG, et al. 2009). Onset is most frequent during middle age, but people of any age can be affected (National Institute of Arthritis and Musculoskeletal and Skin Diseases, 2009). Herbal supplements and spices can often have significant side effects, and can interact with prescription medications being taken at the same time. These risks are often exacerbated by the false general belief by patients that herbal supplements are always safe and the hesitancy by patients in reporting the use of herbal supplements to physicians (Efthimiou, P, Kukar, M 2010).

Turmeric is a plant of the ginger family (Chan, E.W.C. et al. 2009). It is native to India. Curcumin has been a centre of attraction for potential treatment of an array of diseases, including cancer, alzheimer's disease, diabetes, allergies, arthritis and other chronic illnesses (Nagpal M, Sood S. 2013; Shehzad A, 2013). It is a significant ingredient in most commercial curry powders. Most turmeric that is used is in the form of rhizome powder. Although typically used in its dried, powdered form, turmeric is also used fresh, like ginger. It has numerous uses in Far
Western recipes. Turmeric is widely used as a spice in South Asian and Middle Eastern cooking. Many Persian dishes use turmeric as a starter ingredient. Almost all Iranian fried dishes consist of oil, onions, and turmeric followed by any other ingredients that are to be included (Aggarwal BB, et al. 2007). The active compound of Turmeric, curcumin is believed to have a wide range of biological effects including anti-inflammatory, antioxidant, antitumour, antibacterial, and antiviral activities, which indicate potential in clinical medicine (NCCAM, 2012; NIH, 2013). According to the National Center for Complementary and Alternative Medicine, “there is little reliable evidence to support the use of turmeric for any health condition because few clinical trials have been conducted.” (Yang C, et al. 2013). Curcumin is well-tolerated; the most common side effects are nausea and diarrhea (Asher GN, Spelman K. 2013). Allium sativum, commonly known as garlic, is a species in the onion genus, Allium. With a history of human use of over 7,000 years, garlic is native to central Asia (Ensminger, AH, 1994). It was known to Ancient Egyptians, and has been used for both culinary and medicinal purposes (Simonetti G. 1990). Such as PMS and rheumatism (Zohary D, Hopf M. 2000). Ginger is the rhizome of the plant, consumed as a delicacy, medicine, or spice. Ginger cultivation began in South Asia and has since spread to East Africa and the Caribbean (Spices, 2007). Preliminary studies showed that ginger may affect arthritis pain or have blood thinning and cholesterol lowering properties, but these effects remain unconfirmed. Ginger has also been historically used to treat inflammation (Ginger, 2007). Sesame is a flowering plant in the genus sesame. Numerous wild relatives occur in Africa and a smaller number in India. With a rich nutty flavor, it is a common ingredient in cuisines across the world (Ten Wolde S, 1997). Like other nuts and foods, it can trigger allergic reactions in some people. These results do not suggest an anti-inflammatory effect of sesame oil as present in injectable gold preparations which are used in the treatment of rheumatoid arthritis (Ray Hansen R, et al. 2011).

The chili pepper is the fruit of plant. The substances that give chili peppers their intensity when ingested or applied topically are capsaicin and several related chemicals, collectively called capsaicinoids. Chili peppers originated in the Americas (Thenibble, 2013). Capsaicin is a safe and effective topical analgesic agent in the management of arthritis pain, herpes zoster-related pain, diabetic neuropathy, mastectomy pain, and headaches (Cancer nursing, 2005). Besides its use as a food additive in various spicy cuisines, capsaicin is currently utilized for therapeutic purposes to treat various peripheral painful conditions such as rheumatoid arthritis and diabetic neuropathy (Surh Y, 1996).

Food spices used in canned beverages and baked products, dairy products, ice cream, yogurt, yellow cakes, orange juice, biscuits, popcorn color, sweets, cake icings, cereals, sauces, gelatins, etc. The traditional Iranian diet contains large amounts of spicy foods, including turmeric, ginger, sesame, garlic, chili pepper, providing an opportunity to assess consumption of spicy foods in relation to health. In addition, few data exist about the association between diet and Rheumatoid arthritis. Here, we present the study that aimed to explore the association between consumption of spicy foods among Iranian Rheumatoid arthritis patients.

**METHODS AND SUBJECTS**

This study was designed as a case-control study. Sample size was determined based on the pilot study. Spices are eaten by Rheumatoid arthritis patients (ascases and healthy adults as controls) assessed, in level of error probability α = 0.05 and 1–β = 0.95. The sample size in each group was 60. Study was conducted on 60 Rheumatoid arthritis patients referred to Rheumatology clinics of Tehran hospitals and 60 healthy adults (whoreferredto the other parts of hospitals with patients). The inclusion criteria included the diagnosis of Rheumatoid arthritis almost in 9 months ago. The researcher of explanation about study and completion of informed consent to assess spice intake used a semi-quantitative food frequency questionnaire. After that, questions about spices assessed. Semi-quantitative FFQ included list of 147 foods with standard size and have been validated in glucose and lipid study of Tehran in 2004. The subjects were asked to report their frequency of consumption of each food according to its value in the past year. The frequency of food and spices consumption was by day, week, month, and analyzed by general consumption or not. After data collection, the statistical software SPSS IBM 20 were used for entry and analysis of them. P-values less than 0.05 were significant.

**RESULTS**

The mean age of case and controls are 41. 65 percent of cases and 91 percent of controls were married. The difference of education level in cases and controls was significant, so that 38 percent of cases were lower than diploma and 28 percent of controls were higher than diploma. Diploma in both groups is the same (P<0.001). Other differences have been presented in below table.

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Table 1. Frequency of spices in cases and controls

<table>
<thead>
<tr>
<th>P-Value</th>
<th>Count (%)</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Controls</td>
<td>Cases</td>
</tr>
<tr>
<td>&lt;0.001</td>
<td>5 (8.3%)</td>
<td>35 (58.3%)</td>
</tr>
<tr>
<td>=0.50</td>
<td>49 (81.7%)</td>
<td>46 (76.7%)</td>
</tr>
<tr>
<td></td>
<td>60 (100.0%)</td>
<td>60 (100.0%)</td>
</tr>
<tr>
<td>&lt; .05</td>
<td>9 (15.0%)</td>
<td>20 (33.3%)</td>
</tr>
<tr>
<td>=0.54</td>
<td>18 (30.0%)</td>
<td>15 (25.0%)</td>
</tr>
</tbody>
</table>

DISCUSSION

This study showed a significant positive relationship between intake of ginger and sesame in case and control groups. Ginger and sesame consumption in rheumatoid arthritis patients were seven times more than healthy adults. Ginger-turmeric rhizomes mixture may be effective against RA severity and complications as shown in an AIA rat model (Ramadan G, 2013). Ginger extract was as effective an anti-inflammatory agent as betamethasone in this in vitro model (Ribel-Madsen S et al, 2012). Seven patients suffering from such disorders reported relief in pain and associated symptoms on ginger administration. (Srivastava KC, Mustafa T, 1989). The methodology of this study is different from other studies and this study has been performed for the first time in Iran. The traditional Iranian diet contains large amounts of spicy foods, including turmeric and use of turmeric is routine in Iran and almost every food thus in this study 100% of cases and controls use turmeric. In most studies effect of the active component of spices, especially in animal models or gene expression studies evaluated, but in this study, consumption of spices between rheumatoid arthritis patients and healthy adults were evaluated. In this study, allium (p=0.50) and chili pepper (p=0.54) showed no significant relationship with rheumatoid arthritis.

CONCLUSION

Ginger and Sesame consumption in rheumatoid arthritis patients were seven times more than healthy adults.

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REFERENCES


Sesame Allergy. Institute of Food Research, United Kingdom. www.ifr.ac.uk.


