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Lifestyle and Rheumatoid Arthritis: Prevention and Non-Pharmacological Treatment

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Abstract

Background: In rheumatoid arthritis (RA), the immune system, which usually fights infections, attacks the joints by error, making them swollen, stiff and aching: over time it can cause severe disability. In order to contrast this illness, Medicine focused on early diagnosis in the belief that early care is important for prognosis. As it often happens, pharmacological treatments have overshadowed behavioural factors which importantly affect frequency and severity of RA, with underuse of their preventive and curative potential.

Materials and methods: Our review focuses on the main known risk and protective factors for RA as they emerge from the available literature. The reference period considered in our bibliographic research starts from 1991 to 2015.

Results and conclusion: Many preventive factors contribute to reduce the frequency and severity of RA as well as changing some risk behaviours. We have detailed all the available evidences for each of the relevant aspects in the prevention of RA. Clinicians should first consider suggesting changes in lifestyle, before prescribing pharmacological therapies in order to prevent insurgence of RA, reduce burden of disease and improve quality of patients' life.

Keywords Rheumatoid arthritis; Prevention; Lifestyle

Introduction

In rheumatoid arthritis (RA), the immune system, which usually fights infections, attacks the joints by error, making them swollen, stiff, and aching: over time, it can cause severe disability. RA is three times more frequent in women, with a peak between 40 years and menopause; patients who suffer from RA usually loses a some years of life, although the cause of death is not different from those of the general population. Seropositive forms, with specific antibodies in the blood, are much more common than serum-negative, and have worse prognosis. The frequency of the disease varies greatly in the world (Table 1), as well as its severity; this argues for the importance of environmental and behavioural risk factors [1]. Researches on monozygotic twins show that genetics also has a role, which however is very insubstantial compared to the "external" factors. In order to contrast this illness, Medicine focused on early diagnosis in the belief that early care is important for prognosis. Common medications for RA are: corticosteroids, to be progressively reduced in few months and others drugs that modify the course of RA, such as active ingredients for chemical synthesis.

North America	Native amer.	55
	USA	10
North Europe	England	9
	Netherlands	9
	Denmark	9
	Finland	8
	Sweden	7
	Norway	4-5
South Europe	France	6
	Spain	5
	Italy	3
	Yugoslavia	2
South America	Brazil	5
	Argentina	2
	Colombia	1
Asia	Japan	3
	China	2-3
	Philippines	2
	Pakistan	1
Middle East	Turkey	5
	Israel	3
	Egypt	2

Africa		0-3

Table 1: Frequency of RA x 1000 inhab

The most consolidated is methotrexate, sufficient as monotherapy only in 30% of cases; if not enough, sulfasalazine, leflunomide or hydroxychloroquine can be added. Moreover, there are also biotech drugs, derived from cell culture: the inhibitors of tumor necrosis factor α (anti-TNF-α)-etanercept, infliximab, adalimumab, which have raised the interest of producers and specialists, as many other very expensive biologic drugs. As it often happens, this has overshadowed the behavioral factors which importantly affect frequency and severity of RA, with underuse of their preventive and curative potential.

Materials and Methods

We have revised the principal evidence-based oriented papers from 1991 up to 2015 searching the Medical databases. We have not applied any exclusion criteria while, in the selection phase, we preferred to focus on the main known risk and protective factors for RA. A list of the researches taken into consideration can be found in the references. In the next part the results are shown divided into paragraphs according to the main topic.

Results

Hormonal factors

An early menarche, favoured by a "rich" diet and body fat, increases the risk of developing RA, as well as very irregular menstrual cycles; oral contraceptives, instead, protect against severe forms; while pregnancy causes a remission of RA [1].

Breastfeeding

Breastfeeding protects women against RA in proportion to its duration (Table 2). This is one more reason to promote it and to support all mothers during breastfeeding [2].

Factors		RR (CI 95%)
Menarche	≤ 10 y	1.6 (1.1-2.4)
	11 y	1.2 (0.8-1.6)
	12 y	reference
	≥ 13 y	1.1 (0.8-1.5)
Breastfeeding	No	reference
	≤ 3 months	0.9 (0.7-1.2)
	4-23 months	0.75 (0.5-1.2)
	≥ 24 months	0.5 (0.3-0.9)
Menstrual Cycle	regular	reference
	very irregular	1.2 (0.8-1.8)

Table 2: Association between RA, breastfeeding and reproductive factors

Mediterranean diet

It is a protective factor that can explain the geographic variations in frequency and severity of RA [3]. Adherence to the mediterranean diet is associated with an increase in serum markers of atheroma plaque stability which may explain, at least in part, the protective role of mediterranean diet against ischemic heart disease [4]. The experimental groups which were recommended on a diet rich in vegetables, fruits, legumes, fatty fish, received a daily supplement of 40 g of virgin olive oil or 30 g of walnuts/hazelnuts/almonds, while the control group was proposed only a healthy low-fat diet (Figure 1). During five years of follow-up, the experimental groups with mediterranean diet showed a rapid beneficial effect on blood pressure and blood fats, with a reduction in cardiovascular events and a slower but intense anti-inflammatory effect [5]. Three months of Cretan med-diet reduced pain of 1.4 points [3] on a scale from 0 to 10. Semi-fasting followed by 13 months of vegetarian diet has reduced pain by 1.9 points [6]. This systematic review has shown the benefits of vegetarian diet in patients with rheumatoid arthritis [7].

Fish

One serving per week of fatty fish (salmon, bluefish) or 4 of lean fish (cod) have reduced the risk of RA (RR 0.65; CI 95% 0.48-0.90) in Swedish women followed up for a mean of 7.5 years [8]. The benefit does not increase if fish is eaten more often. It's important to note, on the contrary, that the fish oil supplements have increased in tendency the risk (RR 1.32; 0.80-2.17), although an aggressive marketing continues to propose them, even if not supported by the evidence.

Avoid red and processed meat

English research (EPIC-Norfolk) showing an association between RA and red meat (OR 1.9; 0.9-4.0), red and processed meat combined (OR 2.3; 1.1-4.9) and total proteins (OR 2.9; 1.1-7.5) [9]. A subsequent research on 82,000 American nurses did not find such high risks, but only a tendency to a greater risk associated with a higher total proteins consumption (Rate ratio 1.17 and 1.34; 0.88-1.76), in particular of animal proteins [10]. Survey explaining that when RA is already established, meat consumption accelerates its activities with frequent exacerbation symptoms in correspondence to meat consumption [11].

Lots of fruits and vegetables

Low consumption of fruits is associated with a 2-3 times increase of RA risk [9]. Between many, the pomegranate is notable, as demonstrated by a randomized trial: its juice reduced principal inflammatory indexes (RR about 0.7).

Sweetened beverages

Consuming 1 or more of such beverages each day increases the risk of seropositive RA when it arises after menopause (RR 1.63; 1.15-2.30) [12]. The association is also stronger in those who have normal weight. The deleterious effect of these beverages seems due to the increase of inflammatory substances: those that expensive biologic drugs try to block.

Figure 1: Healthy diet recommendations.

Avoid excess salt and salty foods

They increase autoimmune diseases.

Moderate alcohol consumption

34,000 Swedish women followed for 7 years showed that with more than 3 drinks per week, RA risk was half that of the abstemious [13]. The same happened in the Danish women, regarding seropositive RA. Systematic review and meta-analysis of available researches suggests protection (RR~0.8) with modest consumption of alcohol [14]. Research 200,000 US nurses followed for decades have showed less concentration of inflammatory markers and, in those suffering from RA, lower radiographic progression with moderate alcohol consumption, while high consumption was associated with more inflammation [15].

Avoid obesity

This research followed for over two years subjects at high risk, with specific antibodies in the blood but without RA. Only 2% developed RA among non-smokers at normal weight, compared with a 60% of overweight smokers [16].

Do not smoke or quit as soon as possible

Cigarettes are an important risk factor for RA, especially for the seropositive form. A revision on available researches showed that RA increases with years of smoking and the amount of cigarettes smoked: e.g. RR doubles in those who smoke a pack daily for 20-30 years [17]. RA risk increases 20 times in those who have a genetic predisposition (shared epitope) and smoke [18]. Radiographic progression is very greater in smokers: OR 2.67 [19].

Exercise and physical activities

In 2014 the English National Institute for Clinical Excellence (NICE) asked all health operators to encourage patients with RA to practice physical activities, because the muscular strengthening helps to relieve pain and improves function in osteoarthritis [20]. A wide survey conducted by Arthritis Foundation showed that Tai Chi reduces pain, fatigue and stiffness, and it improves balance and well-being. It is consistent with the results of a Cochrane Review [21]. It's a healthy way to exercise, suitable for osteoarthritis and RA, which everyone can practice. In RA patients specific strengthening exercises and practice on hand mobility greatly improve functionality in addition to daily activities, confidence and satisfaction with the possibility to self-manage the symptoms [22,23]. A randomized controlled trial showed that the progression of radiological joint damage of the hands and feet in patients with RA, compared to the effects of usual care physical therapy, is not increased by long term high intensity weight bearing exercises [24]. These exercises may have a protective effect on the joints of the feet. The advent of biologic drugs has led patients to forget these aspects, on the contrary they should be absolutely rediscovered, for the great benefits at minimal cost.

The role of care manager

Study on the feasibility of a health-team building with the figure of the care manager, as a bridge between patients and physicians, in improving clinical parameters of the patients suffering from chronic diseases and supporting them in the disease management [25].

Conclusion

European Rheumatologic Guidelines underline the correct principle to share decisions between patient and rheumatologist. Nonetheless the patient must know first all the great potential of lifestyle changes, and be helped by doctors and health care professionals to put them into practice.

Notes

This discovery is of great interest. In fact, a systematic review of RCTs showing that the costly biological drugs, in combination with a background therapy with methotrexate, do not give better clinical results or better living quality than older and cheaper drugs such as low dose of sulfasalazine and hydroxychloroquine added to methotrexate (so called triple-therapy) [26]. The only relative advantage shown by a biologic drug seems a less radiographic progression of arthritis. Therefore even a simple strategy, such as a moderate consumption of alcohol or quitting smoke (which is more effective), can both slow down also radiological progression and ensure a good sustainability of RA therapies for the Health Systems.

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