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OSETLJIVOST NA GLUTEN

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Sažetak: Uvod: Žitarice su kao glavna komponenta ishrane uvedene pre otprilike 10000 godina, a danas je globalna proizvodnja pšenice na neverovatnom nivou. Osetljivost na gluten je stanje koje pogađa milione ljudi u svetu i uključuje reakciju na protein gluten u žitaricama, ne samo u proizvodima od pšenice, već i u mnogim drugim. Gluten je važan za lekare jer je povezan sa mnogim bolestima i često se meša sa drugim osetljivostima na određene sastojke u hrani (alergijama). Cilj rada: Cilj ovog rada je da objasni šta je „alergija na gluten“, odnosno njen pravi naziv, da li ona zaista postoji i kako je razlikovati od alergije na žitarice, kao i koje su posledice nerazumne bezglutenske dijetete. Alergija ili netolerancija?: Alergija na gluten ne postoji, već je pravi naziv osetljivost na gluten. Većina ljudi koji su netolerantni koriste izraz alergija jer ljudi lakše razumeju i taj naziv je popularan u društvu. Isto je bitno znati da alergija na pšenicu nije isto što i osetljivost na gluten i da ova dva različita stanja zahtevaju različitu vrstu dijetete. Simptomi netolerancije na gluten: Simptomi osetljivosti na gluten nastaju nakon par sati ili dana od konzumiranja hrane koja sadrži gluten i najčešće uključuju gastrointestinalne simptome. Osetljivost na gluten se prezentuje slično kao sindrom iritabilnog kolona i može da uključuje bol u stomaku, nadimanje, dijareju, zatvor, ali i sistemske manifestacije. Za postavljanje dijagnoze osetljivosti na gluten ne postoji određen test ili laboratorijski nalaz, već se dijagnoza postavlja započinjanjem dijetete bez glutena, a zatim pojedinačnim uključivanjem jedne po jedne namirnice ili proizvoda koji sadrži gluten. Takođe, postoji čitav niz poremećaja povezanih sa glutenom. Potencijalna neželjena dejstva dijetete bez glutena: Ljudi koji se odlučuju za dijetetu bez glutena nemaju nikakve zdravstvene osnove za to. Poznato je da se većina sportista odlučuje za ovu dijetetu verujući da poboljšava sportske performanse i smanjuje inflamaciju. Međutim, ova dijeteta je često siromašna mikronutrijentima, skupa i umesto gubitka na težini, dovodi do povećanja telesne težine. Zaključak: Žitarice su glavni izvor ugljenih hidrata, bogate su vlaknima, vitaminima i mineralima i ne treba ih izbegavati sve dok za to ne postoji medicinski razlog. Mnogi lekari su i dalje smatraju diskutabilnim osetljivost na gluten bez celijakije (OGBC), ili nekog drugog skrivenog poremećaja, tako da treba još dokaza da li ovo stanje zaista postoji i koji je njegov pravi mehanizam nastanka. Sve osobe na koje se sumnja da imaju problem sa konzumiranjem glutena ili FODMAP-a (fermentabilni oligosaharidi, disaharidi, monosaharidi i polioli) treba da se konsultuju sa lekarom ili nutricionistom.

Cljučne reči: gluten, osetljivost na gluten bez celijakije (OGBC), osetljivost na gluten, alergija na gluten, alergija na žitarice

UVOD

Žitarice kao glavna komponenta ljudske ishrane uvedene su tek pre otprilike 10000 godina. Uvođenjem žitarica ljudi prelaze sa ova na poljoprivredu što je izazvalo nagli rast žetve i potrošnje žitarica. Danas globalna proizvodnja pšenice prelazi 700 miliona tona godišnje [1]. Belančevina koja se nalazi u pšenici se naziva gluten, međutim ovo je zajedničko ime i za slične belančevine koje se nalaze u ječmu, raži i zobu. Gluten kod čoveka može uzrokovati više različitih poremećaja među kojima je i alergija na gluten [2]. Ova "prirodna" potreba da se proizvodnja poboljša je dovela do veštačkog oplemenjivanja i selekcije pšenice koja se bolje prilagođavala na ekstremne klimatske uslove i

otpornija je na bolesti. Ovakva manipulacija pšenicom je dovela do drastične promene u genetskoj raznolikosti i kvaliteta pšenice.

Gluten je izuzetno važan u pravljenju hleba i drugih proizvoda. Gluten (eng. glue - lepak) predstavlja komponentu koja drži hleb, odnosno obezbeđuje da se testo diže i formira mehuriće u procesu fermentacije. Pekarski proizvodi imaju karakterističnu teksturu zahvaljujući glutenu. Danas je svest o značaju glutena u proizvodnji hrane dovela do ekstrakcije glutena iz semena biljaka i njegove upotrebe ne samo kod većine pekarskih proizvoda, već i u proizvodnji slatkiša, krepera, grickalica, bombona i slično.

Smatra se da je upravo ova genetska modifikacija

SENSITIVITY TO GLUTEN

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Summary: Introduction: Cereals were introduced as staple diet approximately 10,000 years ago, and today the global wheat production is at an incredible level. Gluten sensitivity is a condition that affects millions of people worldwide and includes a reaction to the gluten protein in grains, not just products from wheat, but also from many others. It's gluten which is important for doctors because it is connected to many diseases and is often mistaken for other sensitivities to the certain ingredients in food (allergies).

The aim of the paper: The aim of this paper is to explain what "gluten allergy" is, i.e. its real name, whether it really exists and how to distinguish it from grain allergy, as well as what the consequences of unreasonable gluten free diet are.

Allergy or intolerance? There is no such thing as gluten allergy, its real name is sensitivity to gluten. The majority of people who are intolerant use the word allergy because it is easier for people to understand it and that name is popular in the public. It is also important to know that wheat allergy is not the same as sensitivity to gluten and that these two different conditions require different types of diet.

Symptoms of gluten intolerance: Symptoms of gluten sensitivity appear after a few hours or days from consuming food containing gluten and most often include gastrointestinal symptoms. Gluten sensitivity is manifested similarly to irritable bowel syndrome and can include pain in the stomach, flatulence, diarrhea, constipation, but also systemic manifestations. There is no specific test or laboratory finding to make a diagnosis for gluten sensitivity, but the diagnosis is made starting a gluten-free diet and then adding one food at a time or products which contains gluten. Also, there exists a whole range of disorders connected with gluten.

Potential side effects of a gluten-free diet: People who choose a gluten-free diet do not have any health grounds for that. It is known that most athletes opt for this diet believing it improves athletic performance and reduces inflammation. However, this diet is often poor in micronutrients, expensive and instead of weight loss, it leads to weight gain.

Conclusion: Cereals are the main source of carbohydrates, they are rich in fibers, vitamins and minerals and should not be avoided unless there is a medical reason to do so. Many doctors are still undecided about whether it is sensitivity to gluten without celiac disease or some other hidden disorder, so that there needs further proof that this condition really exists and what its real mechanism of origin is. All people who are suspected of having a problem with consuming gluten or FODMAPs should consult with a doctor or a nutritionist.

Key words: gluten, gluten sensitivity without celiac disease (OGBC), gluten sensitivity, allergy to gluten, allergy to cereals

INTRODUCTION

Humanity has existed for about 2.5 million years, but cereals as the main component of human nutrition were introduced only about 10000 years ago. By introducing cereals people went from hunting to agriculture, which caused a sharp increase in grain harvest and consumption. Today, global production of wheat exceeds 700 million tons per year [1]. The protein found in wheat is called gluten, however this is a common name for similar proteins found in barley, rye and oats. Gluten in humans can cause several different disorders, among

which is allergy to gluten [2]. This "natural" need to improve production has led to artificial breeding and selection of wheat that was better adapted to extreme climatic conditions and was resistant to the diseases. Such manipulation in wheat has led to drastic changes in genetic diversity and quality of wheat.

Gluten is extremely important in making bread and other products. Gluten (eng. glue - glue) is the component that holds the bread, i.e. it ensures that the dough rises and forms bubbles in fermentation process. Bakery products have a characteristic texture thanks to gluten. Today,

pšenice i glutena bila preveliki šok za naš organizam i nije dala vreme našem imunološkom sistemu da razvije prirodne mehanizme prilagođavanja [2].

Upravo ova belančevina i osetljivost na nju je postala glavna tema interesovanja i istraživanja šire javnosti i interesovanje naroda je dovelo do ogromne literature i informacija koje nisu nužno pouzdane [3]. "Alergija na gluten" je stanje koje pogađa više miliona ljudi na svetu i podrazumeva reakciju na protein gluten u žitaricama, i ne samo pšeničnim proizvodima, već i u mnogim drugim, pravi naziv za ovo stanje je osetljivost na gluten ili osetljivost na gluten bez celijakije.

Potražnja i potrošnja hrane bez glutena se u poslednjih 30 godina značajno povećala. U poređenju 2011. i 2016. godine, 2016. je skoro dvostruko više novca potrošeno na namirnice bez glutena. Društvene mreže, mediji i marketing je podstakao veliki broj ljudi da se zainteresuje za dijetu bez glutena, a problem je u tome što je većina ljudi prihvatila ovaj način ishrane zbog verovanja da konzumiranje hrane sa glutenom dovodi do štetnih posledica [4] Danas se sve veći broj ljudi, odlučuje za bezglutensku dijetu bez prethodne preporuke lekara, čime se kasnije otežava postavljanje prave dijagnoze.

Cilj rada

Većina ljudi koji se odluče za dijetu bez glutena to uradi na osnovu informacija iz medija i popularne literature, bez prethodne konsultacije sa lekarom. Ovo ne samo da otežava uvid u pravo zdravstveno stanje osobe, već može imati i negativan uticaj na zdravlje pojedinca. Gluten je značajan za lekare jer je povezan sa mnogim bolestima i često se meša sa drugim alergijama. Cilj ovog rada je objasniti da šta je to "alergija na gluten", odnosno njen pravi naziv, da li ona zaista postoji i kako je razlikovati od alergije na žitarice, kao i koje su posledice neosnovane dijetu bez glutena.

Alergija ili osetljivost?

Alergija na gluten u stvari ne postoji [2]. Ovaj termin je netačan jer ne postoji stanje kao što je alergija na gluten. Osobe koje imaju celijakiju opisuju svoje stanje kao alergiju, jer je ovaj termin lakše razumeti ili čak ni oni sami ne znaju razliku između autoimune bolesti i osetljivosti ili alergije. Celijakija je autoimuna bolest koja rezultira oštećenjem tankog creva koje se pokreće unošenjem hrane koja sadrži

gluten [5]. Osetljivost na gluten je stanje koje postoji i pravilno je reći da je neko osetljiv na gluten, a ne da ima alergiju. Osetljivost na gluten bez celijakije karakterišu crevni i ekstraintestinalni simptomi koji se odnose na uzimanje hrane koja sadrži gluten, a da pri tom osoba nema celijakiju ili alergiju na pšenicu [6]. Za razliku od celijakije, pacijenti koji su osetljivi na gluten nemaju celijakiju, odnosno povezana antitela i mogu biti HLA-DK2/8 negativni (humani leukocitni antigen) niti histološke abnormalnosti tankog creva. Studije su pokazale da ove osobe imaju normalnu crevnu permeabilnost i na gluten ne reaguju aktivacijom imunog odgovora [4].

Dakle, postoji osetljivost na gluten, ali ne i alergija na gluten. Sa druge strane, treba znati koja je razlika između osetljivosti na gluten i alergije na pšenicu. Ova dva termina ne podrazumevaju iste probleme. Alergije na žitarice su česte i najčešća je alergija na pšenicu koja za posledicu može imati atopijski dermatitis, anafilaksu izazvanu vežbanjem, eozinofilni ezofagitis ili celijakiju [3]. Osobe koje su osetljive na gluten treba da izbegavaju sve vrste žitarica koje sadrže gluten, dok osobe sa alergijom na žitarice (pšenicu) treba da izbegavaju samo pšenicu, dok mogu da jedu druge žitarice [7].

Simptomi osetljivosti na gluten

Ljudi imaju enzime koji pomažu da se uneta hrana razgradi. Enzim koji obrađuje proteine ne može u potpunosti da razloži gluten i on kao takav dolazi do tankog creva. Većina ljudi neće imati nikakve simptome nakon što nesvareni gluten dođe u tanko crevo, ali kod nekih on može izazvati ozbiljan autoimuni odgovor ili druge neprijatne simptome. Simptomi mogu da budu intestinalni ili ekstraintestinalni [8].

Simptomi osetljivosti na gluten su povezani sa konzumiranjem hrane koja sadrži gluten i obično u potpunosti nestaju kada osoba ne konzumira istu. Simptomi nakon pojave nestaju nakon par sati ili dana. Prezentacija osetljivosti na gluten je veoma slična sindromu iritabilnog kolona (sindrom nervoznih creva) i uključuje sledeće:

- bol u stomaku,
- nadimanje,
- abnormalnost u radu creva (dijareja ili zatvor),
- sistemske manifestacije (kognitivna disfunkcija, glavobolja, umor, bol u

the awareness of the importance of gluten in food production has led to the extraction of gluten from plant seeds and its use not only in most bakery products, but also in the production of sweets, crackers, snacks, candies and the like. It is believed that this genetic modification of wheat and gluten was too much of a shock for our organism and it did not give time for our immunological system to develop natural adjustment mechanisms [2].

This very protein and sensitivity to it has become a major topic of interest and research of the wider public and the interest of the people has led to a huge literature and information that is not necessary reliable [3]. "Allergy to gluten" is a condition which affects millions of people in the world and includes a reaction to the gluten protein in cereals, and not only in wheat products, but also in many others, the proper name for this condition is gluten sensitivity or glutensensitivity without celiac disease.

Demand for and consumption of gluten-free food has significantly increased in the last 30 years. In 2016 almost twice as much money was spent on gluten-free food compared to 2011. Social networks, the media and marketing encouraged a large number of people to interested in gluten-free diet, and the problem is that most people have adopted this way of eating because of beliefs that consumption of food with gluten leads to harmful consequences [4]. Today, an increasing number of people opts for a gluten-free diet without a prior recommendation from a doctor, which later makes it more difficult to reach the correct diagnosis.

The aim of this paper

Most people who choose a gluten-free diet do so based on information from the media and popular literature, without prior consultation with a doctor. This not only makes it difficult to see the real state of health of a person, but it can also have a negative impact on the individual's health. Gluten is important to doctors because it is associated with many diseases and is often confused with other allergies. The aim of this paper is to explain what "gluten allergy" is, i.e. its real name, whether it really exists and how to distinguish it from a grain allergy, as well as what consequences of groundless restricted gluten-free diet are.

Allergy or sensitivity?

Gluten allergy does not actually exist [2]. This

term is incorrect because there is no such thing as allergy to gluten. People who have celiac disease describe their condition as an allergy, because this is the term easier to understand or even they themselves do not know the difference between an autoimmune disease and a sensitivity or allergies. Celiac disease is an autoimmune disease that results in damage to the small intestine that is triggered by consuming food containing gluten [5]. Gluten sensitivity is a condition that exists and is more correct to say that someone is sensitive to gluten, not that they have an allergy. Gluten sensitivity without celiac disease is characterized by intestinal and extraintestinal symptoms related to the intake of food containing gluten, while the person does not have celiac disease or wheat allergy [6]. Unlike celiac disease, patients who are sensitive to gluten do not have celiac disease, that is, the associated antibodies and may be HLA-DK2/8 negative (human leukocyte antigen) nor histological abnormalities of the small intestine. Studies have shown that these people have normal intestinal permeability and do not react to gluten through the activation of immune response [4].

So there is gluten sensitivity, but not gluten allergy. On the other hand, one should know the difference between sensitivity to gluten and allergies to wheat. These two terms do not imply the same problems. Cereal allergies are common and the most common is allergy to wheat which can result in atopic dermatitis, anaphylaxis caused exercise, eosinophilic esophagitis or celiac disease [3]. People who are sensitive to gluten should avoid all types of grains that contain gluten, while people with a grain (wheat) allergy should avoid only wheat while they can eat other cereals [7].

Symptoms of sensitivity to gluten

Humans have enzymes that help break down the food they eat. The protein-processing enzyme cannot fully break down gluten and it reaches the small intestine as such. Most people won't have any symptoms after undigested gluten enters the small intestine, but in some it may cause a serious autoimmune response or other unpleasant symptoms. Those symptoms can be intestinal or extraintestinal [8].

Symptoms of sensitivity to gluten are connected with consumption of food which contains gluten and usually they disappear completely when a person does not consume it. Symptoms then

zglobovima ili mišićima, utrnulost nogu ili ruku, dermatitis (ekcem ili osip),

- depresija,
- anemija [9].

Ako se simptomi jave u detinjstvu, najčešće se javljaju tipični gastrointestinalni simptomi (bol u stomaku i/ili hronična dijareja), dok se od sistematskih najčešće javlja umor [9]. Dijagnoza osetljivosti na gluten se treba razmotriti kod svih pacijenata koji imaju uporne intestinalne ili sistematske tegobe, a istovremeno imaju uredan serološki nalaz. Nažalost, još uvek ne postoji nijedan, precizan biomarker koji može sa sigurnošću da ukase na postojanje osetljivosti na gluten. S obzirom na to, danas se ova dijagnoza postavlja na osnovu pojave simptoma i uzimanja glutena, uporedo sa placebo kontrolisanim "izazivanjem" simptoma [6]. Kada se osoba javi lekaru i posumnja se na osetljivost na gluten, započinje se sa procesom postavljanja dijagnoze. To se radi tako što se krene sa dijetom bez glutena (sve hrane, pica, lekova, kozmetike i sl. koje sadrže gluten). Kada se svi simptomi povuku, kreće se sa uvođenjem jedne po jedne stavke i čeka se pojava simptoma. Kada se simptomi pojave nakon uvođenja nove stavke, zna se na koju namirnicu ili proizvod pacijent reaguje bše [3].

Postoji par poremećaja koje gluten može da izazove ako se konzumira, a pojedinac ne reaguje dobro na njega. Neki od tih poremećaja su sledeći:

- OGBC – osetljivost na gluten bez celijakije, o čemu je reči bilo u ovom članku. Ovaj termin se koristi da opiše stanje kada pojedinac nema celijakiju ili alergiju na gluten, ali ima intestinalne tegobe nakon konzumiranja hrane koja sadrži gluten;
- Celijakija – glavni uzrok nastanka celijakije je upravo osetljivost na gluten, a ovo je stanje u kome imuni sistem napada sopstvena tkiva kada se konzumira gluten. Ove promene uglavnom nestaju nakon početka dijetete bez glutena;
- Glutenska ataksija – još uvek ne postoje jasni dokazi kako ova ataksija nastaje, ali se pretpostavlja da antitela koja se formiraju utiču na mali mozak. Dijeta bez glutena može da poboljša neurološke deficite, ali nije uvek korisna, jer nekada oštećenje malog

mozga bude nepovratno;

- *Dermatitis Herpetiformis* – ovaj poremećaj predstavlja neuobičajene kožne promene koje su u direktnoj vezi sa glutenom i celijakijom, a nastaju kao autoimuni odgovor na unos glutena. Karakterišu ga uporan svrab, inflamatorne papule na koži i vezikule na podlaktici, kolenima, temenu i zadnjici [10].

Potencijalna neželjena dejstva dijetete bez glutena

Većina osoba koje praktikuju dijetetu bez glutena, kao što je prethodno navedeno, nema bolesti ili netoleranciju na gluten, a ipak se odlučuje za ovaj način ishrane. Glavni razlog za to je verovanje da je dijeta bez glutena zdravija od tipične visokokalorične ili dijetete sa žitaricama. Ljudi koji imaju ovakav način ishrane često pokušavaju da ublaže neke simptome koji nisu potvrđeni dijagnozom ili žele generalno poboljšanje zdravstvenog stanja, bez prethodne pojave bilo kakvih simptoma. Mnogi ljudi veruju da je dijeta bez glutena povezana i sa gubitkom težine. Čak je i jedna studija potvrdila ovu teoriju (primećen je gubitak obima u struku, telesna težina i viši nivo lipoproteina), ali je grupa ispitanika bila nepouzdana, tako da ovo još uvek ostaje samo teorija [4].

Čak su se i sportisti zalagali za dijetetu bez glutena, tvrdeći da poboljšava performansu i izdržljivost [4]. Sportisti moraju detaljno da isplaniraju svoj režim ishrane radi optimalnih performansi i naravno, smanjenja gastrointestinalnih simptoma. Takođe se veruje da dijeta bez glutena smanjuje upalu, međutim, nijedna teorija još uvek nije potvrdila ovo. U slučaju da neki sportista ima bolji učinak to može biti zato što ima nedijagnostifikovanu celijakiju ili jednostavno gube na težini i samim tim se osećaju bolje i lakše kreću [11].

Studija iz 2015. godine sa 910 sportista bez celijakije je utvrdila da je 41% praktikovalo dijetetu bez glutena više od 50% vremena, a samo 13% njih je to radio zbog prethodno ustanovljenog medicinskog stanja. 57% je prijavilo osetljivost na gluten koju su sami primetili (stomačne tegobe i umor). 28,7% ispitanika je glavni izvor informacija pronalazilo putem interneta, 26,2 % su informacije dobijali od trenera ili fizioterapeuta, dok je 17,4% informacije dobijalo od drugih sportista [4].

Negativna strana dijetete bez glutena je vrlo bitna. Hrana koja sadrži gluten (žitarice) su

disappear after a couple of hours or days. Manifestation of gluten sensitivity is very similar to irritable bowel syndrome (nervous intestines syndrome) and includes the following:

- pain in the stomach,
- flatulence,
- abnormality in the work of bowels (diarrhea or constipation),
- systemic manifestations (cognitive dysfunction, a headache, fatigue, pain in the joints or muscles, numbness in the legs or arms, dermatitis (eczema or rash),
- depression,
- anemia [9].

If symptoms appear in childhood, typical gastrointestinal symptoms appear (pain in the stomach and/or chronic diarrhea), while fatigue is the most common among systematic ones [9]. Diagnosis of sensitivity to gluten should be considered in all patients who have persistent intestinal or systematic complaints, and at the same time have a regular serological finding. Unfortunately, there still doesn't exist a single precise biomarker which can with certainty point to the existence of sensitivity to gluten. Today this diagnosis is made based on the appearance of symptoms and intake of gluten, compared to placebo-controlled "food challenge" symptoms [6]. When the person goes to the doctor and gluten sensitivity is suspected, the diagnosing process begins. This is done by starting a gluten-free diet (getting rid of all foods, drinks, medicines, cosmetics, etc. that contain gluten). When all of the symptoms withdraw we continue with the introduction of one item after the other and wait for the symptoms to appear. When the symptoms appear after the introduction of a new item, we know which food or product the patient reacts Badbadly to [3].

There are a couple of disorders that gluten can cause when it is consumed and the individual does not react well to it. Some of those disorders are:

OGBC - gluten sensitivity without celiac disease, which was discussed in this article. This term is used to describe a condition where an individual does not have celiac disease or a gluten allergy, but has intestinal troubles after consumption of food which contains gluten;

Celiac disease - the main cause of celiac disease

is sensitivity to gluten, and this is a condition in which the immune system attacks its own tissues when gluten is consumed. These changes mostly they disappear after the start of a gluten-free diet;

Gluten ataxia - there is still no clear evidence of how this ataxia occurs, but we suppose that the antibodies that are formed affect the cerebellum. A gluten-free diet can improve neurological deficits, but it is not always useful, because sometimes damage to the cerebellum can be irreversible;

Dermatitis Herpetiformis - this disorder represents unusual skin changes which are directly related to gluten and celiac disease, and arise as an autoimmune response to gluten intake. It is characterized by persistent itching, inflammatory papules on the skin and vesicles on the forearms, knees, head and buttocks [10]. Potential side-effects of gluten-free diet

Most people who are on a gluten-free diet, as previously stated, do not have any diseases or intolerance to gluten, but still opt for this way of nourishment. The main reason for this is a belief that a gluten-free diet is healthier than a typical high-calorie or grain-rich diet. People who have this way of eating often try to alleviate some symptoms that have not been confirmed by a diagnosis or want a general improvement in their health condition, without any previous symptoms. Many people believe that a gluten-free diet is associated with weight loss. There is even one study that confirmed this theory (a loss of girth in the waist was observed, as well as body weight loss and higher levels of lipoprotein), but the test group was unreliable, so this still remains only a theory [4].

Even athletes advocated gluten-free diet, claiming that improves performance and endurance [4]. Athletes have to plan their own nutrition in detail in order to have optimal performance and of course, for the purpose of reducing gastrointestinal symptoms. It is also believed that gluten-free diet reduces inflammation, however, no theory has yet confirmed this. If an athlete has better performance that can be because he may haveundiagnosed celiac disease or simply is losing weightand therebyfeels better and moves more easily [11].

A 2015 study of 910 non-celiac athletes found

na dnu piramide ishrane i itekako važne za naše zdravlje. Ove namirnice su dobra opcija za zadovoljavanje svakodnevnih kalorijskih potreba. Posledice dijete bez glutena su sledeće:

- Nedostatak nutrijenata – žitarice od celog zrna su bogate vlaknima, vitaminima i mineralima. Većina testenina i hlebova bez glutena nisu obogaćeni ovim mikronutrijentima, što otežava njihov prirodan unos.
- Dodavanje na težini – iako je uočeno da se može izgubiti na težini, grickalice i refinisani hlebovi mogu imati više masti, šećera i kalorija, što dovodi do povećanja telesne težine.

Cena – dijeta bez glutena je skupa, pogotovo za naše tržište. Pored povećanih finansijskih troškova primećen je sociopsihološki uticaji. Ovaj režim ishrane zahteva upornu posvećenost ograničenoj ishrani i načinu života. Osoba se može osećati izolovano ili imati negativne komentare iz okoline [4].

OGBC kao poseban klinički entitet

Danas u svetu medicine postoje mnoge debate o tome da li osetljivost na gluten bez celijakije zaista postoji. Gluten je možda jedno od najkontroverznijih i neshvaćenih jedinjenja hrane. Iako se za određene osobe smatra da imaju osetljivost na gluten, mnogi lekari i stručnjaci ne prihvataju osetljivost na gluten bez celijakije kao poseban klinički entitet. Zašto je to tako?

Jedan od najboljih primera je upravo dokaz da osetljivost na gluten bez celijakije zapravo ne postoji. Iako je postojanje osetljivosti na gluten (bez celijakije) dokazano u jednoj studiji, kasnije u isti ljudi sproveli studiji i objavili članak u kome tvrde i dokazuju suprotno. Prvi rad (koji je pokazao postojanje) je objavljen 2011. godine i tada je sprovedena studija gde je prikazano da dijeta sa glutenom može da izazove gastrointestinalne tegobe i kod ljudi koji ne pate od celijakije [12]. Međutim, drugi rad (koji pokazuje nepostojanje OGBC) objavljen 2013. godine nakon sprovedene studije na maloj grupi ispitanika, pokazuje da ne postoje određeni, specifični odgovori na gluten. Nakon analize podataka, objavljeno je da svaka dijeta koja je bila data ispitanicima, bilo da je sadržala gluten ili ne, je postakla ispitanike da prijave pogoršanje simptoma. Čak i kada je ispitanicima dat placebo, ispitanici su opet prijavili pogoršanje simptoma. Iako je grupa ispitanika bila mala (37 ljudi)

podaci su jasno ukazivali da gluten nije bio krivac za simptome, već su razlozi bili psihološki [12]. Upravo zbog ovakvih studija, većina lekara ne prihvata dijagnozu OGBC-a ili osetljivosti na gluten bez nekih drugih, pratećih poremećaja.

Istovremeno, etiologija nastanka osetljivosti na gluten nije jasno shvaćena, iako se veruje da postoji imunobški odgovor na gluten, nijedna studija još uvek ovo nije dokazala. Drugi potencijalni krivci uključuju inhibitore amilaze-tripsina (ATI) i fruktane (koji se nalaze u FODMAP-ovima) [14]. FODMAP (fermentabilni oligosaharidi, disaharidi, monosaharidi i poliololi) su deo pšenice i mogu igrati ulogu u NCGS patofiziologiji i razvoju simptoma. Placebo kontrolisana studija je otkrila da su se simptomi poboljšali sa smanjenim unosom ovih komponenti, tako da je zaključak da poboljšanje simptoma nije zbog nekonzumiranja glutena, već FODMAP-a. Pored toga, ova studija je pokazala da su dve nedelje dijete bez glutena izazvale smanjenje simptoma u poređenju sa onim prijavljenim tokom dijete sa niskim sadržajem FODMAP [15].

Još uvek postoji mnogo nejasnoća u vezi sa OGBC-om, i možda su uzroci gastrointestinalnih simptoma gastrointestinalne infekcije, lekovi, prethodni hirurški zahvati i sl. Treba još dosta vremena da se osetljivost na gluten, mehanizam i pravi uzrok nastanka u potpunosti razume.

ZAKLJUČAK

Iako mnoge osobe primećuju gastrointestinalne tegobe nakon konzumiranja žitarica i hrane sa glutenom, osetljivost na gluten bez celijakije još se još uvek ne priznaje kao poseban klinički entitet. Razlog za to je što ne postoje jasni dokazi koji bi pokazali da osoba ima osetljivost na gluten, a da nema neko drugo skriveno stanje ili da simptomi nisu isključivo psihološke prirode.

Žitarice su glavni izvor ugljenih hidrata i njihova apsorpcija se odvija u tankom crevu, dajući nam energiju. Uvek treba birati žitarice od celog zrna i sa što manje šećera i konzervansa. Ako za to ne postoji jasna indikacija, ne treba se odlučiti za dijetu bez glutena. U slučaju da postoji bilo kakva sumnja da osetljivost na gluten ipak postoji, treba se javiti lekaru. U slučaju da se postavi jasna dijagnoza osoba treba krenuti sa ovom dijetom.

Ove osobe treba da izbegavaju brašno, hleb, krekeri, mešavine za pečenje, testenine,

that 41% practiced gluten-free diet more than 50% of the time, and only 13% of them did so because of a previously diagnosed medical condition. 57% reported gluten sensitivity which they noticed themselves (stomach ailments and fatigue). 28.7% respondents found their main source of information online, 26.2% received information from coaches or physiotherapists, while 17.4% received information from other athletes[4].

The negative side of the gluten-free diet is very important. Foods containing gluten (cereals) are at the bottom of food pyramid and are so important for our health. These foods are good option for satisfying daily caloric needs. The consequences of a gluten-free diet are:

A lack of nutrients - cereals from the whole grain are rich in fibers, vitamins and minerals. The majority of gluten-free pasta and bread are not enriched with these micronutrients, which makes their natural intake difficult.

Adding weight - although it was observed that weight can be lost snacks and refined breads can have more fats, sugar and calories, which leads to weight increase.

Price - gluten-free diet is expensive especially for our market. In addition to increased financial sociopsychological influences were observed. This diet requires persistent commitment to limited diet and way of life. A person can feel isolated or have negative comments from the environment [4].

OGBC like special clinical entity

Today in the medical world there is much debate about whether gluten sensitivity without celiac disease really exists. Gluten is perhaps one of the most controversial and misunderstood food compounds. And if certain persons are considered to have sensitivity to gluten, many doctors and experts do not accept sensitivity to gluten without celiac disease like special clinical entity. Why is that so?

One of the best examples is precisely the proof that gluten sensitivity without celiac disease actually does not exist. Although the existence of gluten sensitivity (without celiac disease) was proven in one study, later the same people conducted a study and published an article in which they claimed and proved the opposite. The first paper (which showed the existence of this) was published in 2011 and then a study was conducted where it was shown that a diet with

gluten can cause gastrointestinal problems even in people who do not suffer from celiac disease [12]. However, another paper (showing the absence of OGBC) published in 2013 after conducting a study on a small group of respondents, showed that there are no certain, specific responses to gluten. After analyzing the data, it was reported that each diet that was given to respondents, whether it contained gluten or not, encouraged the respondents to report deterioration of symptoms. Even when subjects were given a placebo, respondents again reported deterioration of symptoms. Although the group of respondents was small (37 people), the data clearly indicated that gluten was not to blame for the symptoms, but the reasons were psychological [12]. Precisely because of studies like this, most doctors do not accept the diagnosis of OGBC or sensitivity to gluten without some others, accompanying disorders.

At the same time, the etiology of gluten sensitivity is not clearly understood, and although it is believed that there exists an immunological response to gluten, no study has proved it yet. The other potential culprits include amylase-trypsin inhibitors (ATI) and fructans (found in FODMAPs) [14]. FODMAPs (fermentable oligosaccharides, disaccharides, monosaccharides and polyols) are part of wheat and may play a role in NCGS pathophysiology and development of the symptoms. Placebo controlled study revealed that the symptoms improved with reduced intake of these components, so the conclusion is that the improvement of the symptoms was not due to non-consumption of gluten, but because of FODMAPs. Besides, this study showed that two gluten-free weeks caused a reduction in symptoms compared to that reported during a low-fat diet FODMAPs [15].

There is still much uncertainty about OGBC, and the causes may be gastrointestinal symptoms of gastrointestinal infection, medications, previous surgical procedures, etc. It requires a lot of time to fully understand the mechanism and the real cause of origin of sensitivity to gluten.

Conclusion

Although many people notice gastrointestinal complaints after consuming grains and food with gluten, non-celiac gluten sensitivity is still not recognized as a distinct clinical entity. The reason for this is that there is no clear evidence

žitarice, sos, začine, prerađeno meso, pivo i sl. Pirinač, kukuruz, krompir, soja, voće, povrće, meso, jaja, vino i destilovana alkoholna pića su bez glutena i prihvatljivi su za jelo ili piće, ali samo kada su ti proizvodi maksimalno prirodnog porekla, jer se nekad gluten koristi kao aditiv. Mnogi drugi proizvodi možda nemaju gluten u

sebi, ali se gluten možda koristio u njihovoj pripremi ili pakovanju. Pacijenti treba da se konsultuju sa lekarom ili nutricionistom.

Debate i konverzacije na temu osetljivosti na gluten bez ceiljakije se vode svakodnevno, ali je pred nama dug put do pravilnog razumevanja ovog stanja.

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to show that a person has a sensitivity to gluten, without having some other hidden condition or that the symptoms are not exclusively of psychological nature.

Cereals are the main source of carbohydrates and their absorption takes place in small intestine, providing energy to us. One should always choose whole grain cereals with as little sugar and preservatives as possible. If there is no clear indication for that, one should not decide on a gluten-free diet. If there is any doubt that gluten sensitivity still exists, a doctor should be consulted. In case there is a clear diagnosis for this a person should start with this diet.

These people should avoid flour, bread, crackers, baking mixes, pasta, cereals, sauces, spices, processed meat, beer, etc. Rice, corn, potatoes, soybeans, fruits, vegetables, meat, eggs, wine and distilled spirits are gluten-free and acceptable to eat or drink, but only when these products are of completely natural origin, because gluten is sometimes used as an additive. Many other products may not have gluten in them, but gluten may have been used in their preparation or packaging. Patients should consult a doctor or a nutritionist.

Debates and conversations about non-celiac gluten sensitivity happen every day, but we have a long way ahead of us in order to understand this condition properly.

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