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CASE REPORT

Severe lactose intolerance in a patient with coronary artery disease and ischemic cardiomyopathy

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Abstract A 72-year-old man with severe lactose intolerance was admitted for non-ST-segment elevation myocardial infarction. The coronary angiogram revealed occlusion of the distal third of the first diagonal artery and several non-significant lesions. The pre-discharge echocardiogram revealed moderate left ventricular systolic dysfunction. Discharged on dual antiplatelet therapy, rosuvastatin, perindopril and carvedilol, he was repeatedly readmitted in the following days for abdominal pain/bloating, diarrhea and nausea despite avoiding food products containing lactose. To date, there has been no comprehensive study on the relationship between lactose intolerance and coronary disease, nor has its impact on therapeutics been appropriately addressed. Intolerance to lactose-containing prescription medicines is an extremely rare phenomenon and few strategies are available to overcome this condition, as it has received little attention from the scientific community. Commercial forms of the lactase enzyme and probiotics can limit symptom severity, but different routes of administration, different brands of the same medicine or completely different medicines may be necessary. Some measures were proposed to our patient and, soon afterwards, he was completely asymptomatic in both gastrointestinal and cardiovascular terms.
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Intolerância severa à lactose em paciente com doença coronária e miocardiopatia isquémica

Resumo Um indivíduo de 72 anos, sexo masculino, com história de intolerância severa à lactose, foi admitido por enfarte agudo do miocárdio sem supradesnivelamento do segmento ST. A coronariografia revelou oclusão do terço distal da primeira artéria diagonal e múltiplas lesões não significativas, enquanto o ecocardiograma pré-alta revelou disfunção ventricular esquerda de grau moderado. O doente teve alta, medicado com dupla-antiagregação (ácido acetilsalicílico e clopidogrel), rosuvastatina, perindopril e carvedilol, porém foi repetidamente re-admitido nos dias seguintes por quadro de dor abdominal, flatulência, diarreia e náusea, apesar da evicção de produtos alimentares contendo lactose. Até este momento, a relação potencial

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entre a intolerância à lactose e a doença coronária não foi adequadamente avaliada, e nenhum estudo atentou no impacto daquela condição na qualidade e diversidade da terapêutica cardiovascular necessária em doentes com patologia cardíaca. A intolerância a medicamentos contendo lactose é um fenómeno extremamente raro, sendo também raras as estratégias para ultrapassar esta situação, tendo em conta a escassa atenção que este tema mereceu da comunidade internacional. Formas comerciais da enzima lactase e probióticos podem limitar a severidade dos sintomas, porém habitualmente formas diferentes de administração, diferentes formulações da mesma substância ou mesmo substâncias alternativas são necessárias. Algumas medidas foram propostas ao doente em causa e, uma semana depois, o mesmo apresentava-se completamente assintomático dos pontos de vista gastrointestinal e cardiovascular.

A 72-year-old male patient was admitted to the cardiac intensive care unit for non-ST-segment elevation myocardial infarction. He had a history of hypertension, hypercholesterolemia, smoking (90 pack-years) and chronic obstructive pulmonary disease. His daily medication included a budesonide/formoterol inhalation aerosol. He mentioned aspirin allergy and severe lactose intolerance, diagnosed during adolescence, which he had learned to control with strict diet restrictions. Irritable bowel syndrome, celiac disease and Crohn's disease were excluded in adulthood.

The coronary angiogram revealed occlusion of the distal third of the first diagonal artery and diffuse coronary artery disease with multiple non-significant atherosclerotic lesions throughout the coronary tree. The pre-discharge echocardiogram was suggestive of ischemic cardiomyopathy with moderate left ventricular systolic dysfunction.

Discharged on dual antiplatelet therapy (clopidogrel/triflusal), rosuvastatin, perindopril and carvedilol, he was repeatedly readmitted for flatulence, abdominal pain and bloating, diarrhea and nausea, a clinical picture compatible with lactose intolerance, ''exactly the same'' as he had felt whenever he consumed lactose-containing food. Following each admission the patient denied chest pain and dyspnea and the physical exam was unremarkable. In each case, following exclusion of peptic ulcer and gastritis, ischemic colitis and recurrent myocardial ischemia, he was discharged from the emergency department.

After his third readmission, he suspended all medication on his own initiative. Soon afterwards, all symptoms disappeared and did not recur until the moment he restarted taking his medication. The cycle was repeated, with the same results.

At his first cardiology follow-up visit, the patient anxiously asked for advice. His blood pressure and cholesterol levels were uncontrolled and, although denying recurrent angina, he mentioned moderate effort fatigue and dyspnea compatible with NYHA class II heart failure.

Discussion

Adult-type hypolactasia, characterized by down-regulation of lactase enzyme activity in the intestine during development, is the most common human enzyme deficiency.

Symptoms caused by undigested lactose are non-specific, vary greatly in severity, depend on the amount of lactose ingested, individual sensitivity and the amount and type of colonic flora, and may overlap with those of other gastrointestinal diseases such as irritable bowel syndrome or those presenting with secondary lactose malabsorption such as celiac disease. It is important to distinguish hypolactasia, a low level of lactase not necessarily associated with symptoms, from clinical lactose intolerance resulting from congenital complete loss of lactate (very rare), inherited loss after weaning (common) or secondary intestinal damage (from rotavirus or *Giardia* infections). Accurate diagnosis of lactose malabsorption through lactose tolerance or breath hydrogen tests is cost-effective and time-saving considering lactose intolerance is easily treatable by diet modification in most cases.

Brief mention should be made of the important difference between cow's milk allergy and cow's milk intolerance. The latter condition is an immunologically mediated reaction to cow's milk proteins that may involve the gastrointestinal tract, skin, respiratory tract, or even multiple systems (potentially causing systemic anaphylaxis). Cow's milk allergy does not interfere with lactose-containing prescription medicines.[1]

To our knowledge, to date no comprehensive review on the relationship between lactose intolerance and cardiovascular disease has been published, nor has its impact on therapeutics been appropriately addressed. There is surprisingly little in the literature on therapeutic considerations in these patients.

Older studies suggested that a diet relatively low in lactose, in populations with a low prevalence of lactose absorbers, consistently protects against ischemic heart disease,[2] and that lactose could be the dietary factor responsible for increased risk of coronary artery disease.[3] These studies had serious limitations, however, and a more recent meta-analysis of cohort studies concluded that milk consumption actually correlates with a small but significant reduced risk of coronary disease.[4] Lactose intolerance usually leads to lower calcium intake from dairy foods, which increases risk of diabetes and hypertension.[5] A low intake of calcium and other dairy-related nutrients (potassium and magnesium), especially in African-Americans,[6] may