Short Communication

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Camel Milk: Hinders or Assistant in Anesthesia?

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ABSTRACT

During surgical interventions, it is extremely important to take into account the duration of the anesthesia. In this regard, we count the impact of nutrients that can significantly reduce or enhance the effect of the anesthetic. A shift in this indicator in both directions is highly undesirable. Thus, an increase in the duration of exposure to an anesthetic slows down the return of the operated to normal physical activity, while a shortening of the anesthesia duration creates problems for the performing the operation doctor. Camel milk (CM) is one such nutrients that significantly alters the anesthetic efficacy. The data in the literature regarding the effect of CM on anesthesia are contradictory. We decided to shed light on this issue by conducting a simultaneous study of both users and non-users of CM. The results revealed a significant difference in the response to anesthesia in these two groups of patients. In this regard, during surgery, one should take into account the different impact of CM on anesthesia, both in patients who use it for the first time before surgery, and in patients who are accustomed to its constant use.

Keywords: Anesthesia Duration; Camel Milk; Cytochrom P

Introduction

Camel milk (CM) is a valuable source of nutrients, including vitamins and minerals. CM is good because it has little cholesterol and sugar, but a lot of minerals. It contains immunoglobulins, lysozyme, β-lactoglobulin, lactoferrin, as well as lactoperoxidase, which have an immunoprotective effect of [1,2]. CM's beta-lactoglobulin is unique antioxidant; its lactoferrin has the ability to inhibit the development of cancer cells. Iron from CM prevents osteoporosis and anemia. It is rich in pantothenic acid, folic acid, nicotinic acid and cobalamin, vitamin C, vitamin A, and riboflavin [1,3-5]. Vitamin C in CM is on average three times higher than in cow's milk [2,6,7]. Camel milk exhibits antibacterial, antiviral, antifungal effects. Due to such a rich content, it significantly changes the metabolism of those who consume it regularly. Thus, there are conflicting reports in the literature that it can both prolong anesthesia and shorten the duration of the anesthetic. We set out to conduct a study on the effect of milk on the anesthesia duration in various groups of patients: we compared the duration of anesthesia in those who constantly use CM and those who practically do not use it.

Materials and Methods

The research & Ethic Committee along with Ministry of Health and Prevention, Research Ethics Committee/RAK Subcommittee (MOHAP/REC/2019/37-2019-UG-D) have approved this research of RAK Medical Health and Sciences University (RAKMHSU-REC-83-2018-UG-D). To achieve the goal, all the subjects were sort into 2 main group. Those who constantly consume milk constituted the

first group; the second group of patients consisted of non-drinkers CM. Both groups included representatives of both Arab and non-Arab ethnicity. Anesthesia was carried out by the infiltration method: one cartridge Lidocaine 2% + epinephrine 1:100,000. The duration of anesthesia was checked by the absence of a pain reflex and sensitivity in the local area of anesthesia.

Results and Discussion

Our study made it possible to shed light on the existence of a radical difference in the reaction of patients to Lidocaine anesthesia, depending on their habit of drinking CM. Thus, those who had CM in their daily diet, without using CM immediately before anesthesia, had a longer duration (3 and a half hours) of the anesthetic vs patients without daily consumption of CM. The same patients showed a significant reduction of the anesthesia effect to 1.7 hours when they were asked to drink CM immediately before anesthesia. Thus, we observed a 1.6-fold difference (decrease) in the duration of anesthesia with CI p=0.001. This phenomenon requires an explanation. Why do patients who are used to drinking CM have an extended period of anesthesia? One explanation may be the results published in the work of Ibrahim Z. et al. [8] that CM inhibits the cytochrome system of hepatic microsomal oxidation. Ibrahim Z. and co-authors showed that CM suppresses the expression of mRNA for cytochrom P (CYP) system, such as CYP 1A2, CYP3A2 and CYP2B1 involved in the modification and detoxification of drugs. The authors also founf out that CM reduces the expression of mRNA for CYP3A2, CYP2B1, CYP1A1 and CYP1A2 in the liver, which undoubtedly prolongs the anesthetic circulation time in the patient's blood and contributes to the prolongation of anesthesia. This allows to take a fresh look at CM as a safe "assistant" of dentists in anesthesia. However, such patients should be warned about the reversible effect of CM on the duration of anesthesia when used immediately before the administration of the anesthetic, since in this case, CM reduces the effect of the anesthetic in this category of people and, accordingly, inevitably leads to a significant increase in the number of manipulations or an increase in the dose of the anesthetic for such patients.

Along with this, this group of patients showed a decrease in the time of anesthesia when taking CM immediately before anesthesia. How to explain this fact? On the background of the suppression of the cytochrome system caused by the constant use of CM, we observed its activation when using CM rich in vitamin C immediately before anesthesia (the anesthesia detoxification rate rised 1,6 times). Because, as it is acknown, vitamin C is an integral part of the cytochrome system. It can be assumed that in people who are accustomed to drinking rich in vitamin C CM, a new type of adapted microsomal oxidation system dependent on high doses of vitamin C is created. And direct use of CM before anesthesia supplies the body with the amount of vitamin C required to "turn on" and activate microsomal oxidation. It means that using CM immediately before anesthesia you provide the body with the dose of vitamin C, which the body has become accustomed and adapted due to the constant supply of CM. Our study opens the horizon for future research that will investigate the effect of supplements containing vitamin C on the microsomal oxidation system, and most likely we will see a significant shift in its activity in patients accustomed to taking high doses of vitamin C, as happens with those who routinely use CM.

If we compare these data with those of patients who are not used to drinking CM routinely, it turns out that, on average, the duration of anesthesia for Lidocaine drugs is equal to 1,9, which is 1,58 times less than in the group that drink CM regularly. Again, we observe the phenomenon of extension (!) the anesthesia duration up to 3 hours in these patients if they use CM immediately before anesthesia. How to explain this fact? Since CM is a foreign component for this group of people, the body reacts to it as to an allergen: it gets to know it and tries to neutralize the components that first time come into contact with the detoxification system. In this way, the body works on two front: on the one hand, it must neutralize the anesthetic, which is a chemical compound essentially alien and harmful to the organism, on the other hand, it neutralizes the components of a new, unfamiliar CM, which came in the same time period with anesthesia. This is the most reasonable explanation for the prolongation of anesthesia in patients who use CM for the first time before anesthesia (in our case, due to the investigation). Nevertheless, the molecular mechanisms of the CM effect on the reticuloendothelial and the immune system of the body are waiting for their discovery by the painstaking work of scientists.

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