Дискуссии

AND MUCH MORE THAN JUST HARD WORK...

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The article «Khoomei is no fun — it is hard work», by Dr. Zoya Kyrgys, (originally on tuvpravda.ru), as published in English translation on tuva.asia has generated some confusion, disbelief, dissatisfaction with the format and content of the article, and distrust of the experimental results. I believe it is in order to address some of the expressed concerns. I have not personally reviewed the research data, but as a Board Certified Anatomic Pathologist and Forensic Pathologist I am certainly qualified to comment on general practices in research design and methods, medicine, statistics, and on pathophysiology of cardiovascular and cardiopulmonary disease processes in general. As a matter of fact, I find the research and its results not only believable, but very straightforward, with results and conclusions which are clear and even self-evident, well-reasoned and well supported.

So, let's discuss this point by point:

- The article, as presented by Dr. Kyrgys, is a brief report of salient results of many years' research, as written for a general interest publication, i.e. for regular people, and naturally does not include detailed description of materials used, cohort data, variables controlled, statistical information used, other studies done to evaluate the research subjects' general state of health to rule out other variables, etc. That would frankly be way beyond the scope of any publication except a professional medical journal, quite aside from legal considerations such as privacy of the research subjects, copyright laws, etc., all of which are subject to stringent regulation. However, Dr. Kyrgys clearly names all the institutions and scientists involved, with their full credentials. At the

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end she states that «adequate methods of clinical, laboratory and instrumental research were used». This format would be totally appropriate as a «Letter» in a standard professional medical journal.

- The institutions where these studies were performed are highly reputable, of world fame. St. Luke's-Roosevelt Hospital Center, founded in 1854, 1871, is an affiliate of Columbia University College of Physicians and Surgeons, founded in 1767 as the first medical school in the thirteen colonies in New York City, which is still one of the most highly regarded medical schools and research centers in the USA. University of Tokyo, founded in 1877, is also a major research center, the most prestigious one in Japan, ranking 21st in the world. Novosibirsk Scientific Research Institute of Hygiene and Novokuznetsk State Institute for Continued Medical Education and their Department of Occupational Medicine and the named professionals involved in the studies are in a similar category . Russian Academy of Sciences (RAN), established in 1724, is also one of the most highly regarded scientific institutions in the world, which produced 19 Nobel Prize laureates over the course of the last century. It is preposterous to even for a moment consider that they would not be familiar with proper standard design and basic methods of what is really a fairly straightforward study involving clinical manifestations of cardiovascular and pulmonary diseases, which are the most prevalent, and therefore the best studied, in the «civilized» world. The research also represents a successfully defended doctoral dissertation at Novosibirsk Conservatory, as the article clearly states.

- The world data-base concerning blood pressure values for various cohorts — i.e. — age groups, with corrections for smokers, non-smokers, drinkers, married, single, tall, short, fat, skinny, male, female, and much more, in all possible permutations, is immense, and that is what is used on a daily basis by health and life insurance companies to calculate your premiums. You do not have to go out and actually bring in 10 people of the same age group, who drink and smoke as much as your study subjects, to the lab and examine them; the known sample size is immense, and therefore statistically much more significant.

Now to discuss the findings as such:

Research at the Roosevelt Hospital in 1995 revealed micro-hemorrhages in the mucosa of the vocal cords, that is petechial laryngeal hemorrhages. This is a result of capillaries rupturing as a consequence of extreme intrathoracic pressures. This finding is usually associated with more of these punctate hemorrhages in the tracheal mucosa and the lung tissue, sometimes even in the

eyelids and sclerae (the white) of the eyes. It is a diagnostic feature of various types of strangulation and suffocation deaths and asphyxial deaths in general; most people who are subjected to, or subject themselves to these pressures quickly end up on the autopsy table.

As the «khorekteer» technique is performed with contracted thoracic muscles, the thoracic organs - heart and lungs, as well as the major blood vessels, including the aorta and pulmonary arteries, are being squeezed. The heart attempts to compensate for this acute oxygen deficit in the tissues, and strains against these pressures, working harder and harder; the pulse frequency and blood pressure increase. At the same time, some of the pulmonary alveoli will rupture — this is rather easy, because their walls consist of only four cell layers, if you can imagine this — one cell layer of capillary wall, with one cell layer of alveolar lining on each side, stretched to the utmost, and only one blood cell at a time can pass through the capillary. This is where the gas exchange takes place.

In consequence of chronic and habitual application of these pressures, the heart gradually grows larger just like any other muscle that is chronically over-exercised, and the baseline arterial pressure increases. In response, the arteries, which are physically traumatized by this constant battering, grow less elastic, become fragile, and the heart has to generate even more pressure to push blood throughout the body. Meanwhile the ruptured lung alveoli heal by generating scar tissue — fibrous, hard, without blood vessels. This makes it even more difficult for the heart to circulate the poorly oxygenated blood through the damaged tissues, and it keeps getting bigger. The heart rate increases, as well as the pressure. The whole body is involved in the process. Not enough oxygen is getting to the tissues. The body responds by producing more red blood cells in a vain attempt to get more oxygen to the tissues — that is the polycythemic syndrome mentioned in the article. This makes the blood thick and sticky — it may clog the narrow capillaries and produce infarcts (zones of dead tissue) in the spleen and kidneys, as well as elsewhere.

The heart eventually becomes very large, with the right side, which is principally involved in circulating blood through the lungs, much bigger than the norm. This is so-called cor pulmonale. The weight may reach well over 1000 grams. Such a heart is enormous. In comparison, normal heart weight is considered to be up to about 400–450 grams maximum, even in very large people. An enlarged heart actually outgrows its own blood supply, and multiple small and larger infarcts, healed with fibrous scars, further decreasing the heart's ability to work.

The lung damage meanwhile continues as well, the torn-up and scarred alveoli dilate, there are bleeding patches of recently rupture alveolar walls, and to compensate for the loss of functional lung tissue, the entire chest cavity becomes wide and barrel-shaped. The hugely enlarged heart and distended lungs begin to encroach on the abdominal cavity and to squeeze the abdominal organs. The high blood pressure causes damage to the kidneys, liver, spleen… even to the eyes, because damage to the capillaries continues throughout the body. As the damage goes on, it causes ever more damage to more organs… this is the so-called positive feedback mechanism.

The arterial pressures as recorded for the three throat-singers are indeed dramatically elevated for their age group, no matter how much they may drink or smoke, and the fact that they fail to recover their baseline values for more than three minutes after stopping the «khorekteer» is also alarming. It is an index of chronic cumulative damage.

I would also like to point out that the clinical situation as described also puts the subjects at risk of strokes and rupture of brain aneurysms, because as the intrathoracic pressure increases, return of blood from the head and neck is obstructed and intracranial pressure rises as well. The resulting cerebral hypoxia (lack of oxygen in the brain), together with vibrations of the skull base, calvarium and brain caused by the vocalizations, could also produce altered states of consciousness, possibly akin to Dr. Stan Grof's holotropic breathing techniques.

There is another serious consideration. In my considered medical opinion, this research finally clears up all the wild speculations about the traditional prohibition on «female khoomei» as a superstition, old wives' tale or even some sort of male elitist prerogative. In fact, these findings conclusively prove that there is a very sound physiological basis for it. Even on the simplest mechanical level, the intra-thoracic and intra-abdominal pressures generated by «khorekteer» could contribute to miscarriages in early stages of pregnancy, while the increased blood pressure with all the cardiovascular pathological changes and blood circulation fluctuations as described above would put the woman at risk of various complications of pregnancy, as, for example, eclampsia, and, of course, placental insufficiency (small, fibrous placenta with thick blood vessels and inefficient gas and nutrient exchange) with consequent chronic fetal hypoxia, resulting in fetuses small for gestational age, poorly developed, and with damage to the developing organs. The fetal organ most vulnerable to chronic hypoxia is the brain…

However, this does not mean that khoomei, practiced moderately, sensibly and occasionally, is any more harmful than anything else in life.

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НАМНОГО БОЛЬШЕ, ЧЕМ ТЯЖЕЛАЯ РАБОТА...

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Аннотация: Автор статьи — доктор медицины — комментирует статью доктора искусствоведения З. К. Кыргыс, опубликованную в газете «Тувинская правда» «Хоомей — не забава, а тяжелый труд» (от 9 февраля 2012 г.), которая вызвала скепсис у ряда читателей. У последних сомнения вызвало перечисление вредных для здоровья горловиков факторов — особенностей исполнения хоомей, в число которых, по их мнению, должны входить также и вредные привычки: алкоголь, курение. Автор приводит компетентные мнения специалистов — ученых, медиков — относительно способов звукоизвлечения при исполнении горлового пения и их воздействия на организм у профессиональных певцов..

Ключевые слова: публикация, отклик, мнение, горловое пение, хоомей, здоровье, хоомейжи, медицина, профессия.