

Preventing Vasovagal Collapse During Minor Operative Procedures

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Abstract

Vasovagal collapse or syncope is an occasional event during operative procedures and treatments with an awake patient. For example, during operations with local anesthesia. When vasovagal collapse occurs the blood pressure of the patient can decrease and he may lose his consciousness. If the blood circulation is not reestablished immediately or if the patient collapses to the ground severe injuries can result. In this article the author describes the use of the How Exercise—established by Stanley Keleman—to prevent vasovagal collapse and thus protect the patients' health.

Keywords

Vasovagal Collapse – Vasovagal Syncope – Hyperventilation – Operation – Formative Psychology

The Mechanism of Vasovagal Collapse

Vasovagal collapse is defined as a sudden and intense widening of venous blood vessels combined with a reduced heart rate that has been triggered by a stimulation of the parasympathetic nerve system. As a result an increased quantity of the blood remains in the venous blood vessels and less blood circulates back to the lungs and heart. This leads to a sudden drop of blood pressure and a reduced blood circulation. This can cause a syncope or an acute loss of consciousness. A standing or sitting person may collapse and be severely injured. A prolonged, reduced circulation can also lead to hypo-oxygenic cramps. If a horizontal position of the body is prohibited, the person can even die. This reaction is regulated by neural cell areas of the brainstem that regulate the cardiovascular circulation.

Recent research points out that this mechanism primarily is an emergency reaction in case of a massive, life threatening bleed after an injury. A reduced blood flow in the limbs and abdomen offers a last chance for blood clotting to stop massive bleeding, before the circulation will completely stop. However, in some people the initial widening of the venous blood vessels is triggered by simple procedures like the drawing of blood samples or during minor operations with local anesthesia.

Vasovagal collapse can also occur in some people when they see blood or when they think or talk about blood. The brainstem is then probably overstimulated by the limbic system.

Clinical Situation

The author is working in a dermatological practice, where he is involved daily with operations using local anesthesia or drawing of samples. Occasionally patients collapsed during these procedures. Sometimes a surgical procedure has to be interrupted to stabilize the cardiovascular circulation of the patient. This increases the risk of contamination in the operation site and of postoperative infection.

The patient may also be traumatized and in a phobic reaction avoid future medical interventions.

Prevention and Established Treatments

Vasovascular collapse is well known in clinical practice and there are several procedures to prevent it. First of all, it is mandatory to ask patients about any history of a tendency to collapse when they see blood or during previous surgical procedures. Questionnaires prior to surgery in local anesthesia should include this issue.

Secondly, placing patients in a horizontal position during the treatments helps to prevent the danger of an injury due to collapsing. Additionally, in Germany, it is typical to give patients medication to increase blood pressure. During the procedure the awake patient should be repeatedly asked about his actual state. Continuous monitoring of the oxygen-saturation and of the heart rate, all along with an inspection of the patient, especially of the face or the skin, for signs of fading away (pale face, turning of the eyes upward, cold sweating, signs of panic reactions), give clues to the beginning vasovagal collapse.

When vasovagal collapse occurs, the patient must be brought to a horizontal position and the legs have to be lifted up. This leads to an increased intravascular blood volume and increased blood pressure. Within minutes a patient can gain a stabilized cardiovascular circulation and regain consciousness.

The How Exercise

The How Exercise is a self-regulatory method developed by Stanley Keleman. Its primary aim is to allow the person to sense his own body activities and to influence them with volitional muscular activity. The focus is how (on the way) the activity is performed.

The method has been developed in a psychotherapeutic setting. It is based on a series of increasing and decreasing muscular tonal activities, done in a step-by-step manner, similar to a pulsatory movement. However, the author has used the How Exercise in his private clinic in a way not primarily intended, but still very effective to prevent vasovagal collapse.

The Application of the How Exercise

The How Exercise can best be used before a vasovagal collapse occurs. Therefore, it is necessary to ask the patient prior to the surgical procedure for a history of collapse, especially due to surgical procedures or blood drawing. If the patient confirms this or if the patient shows signs of anxiety prior to the operation some instructions should be given. This can be done in a short period of time, and effectively before or after the application of the local anesthesia. The basic idea of influencing your own reaction, for example the level of the blood pressure, should be explained.

The patient is instructed to increase the muscular tone of his arms and fists in a step-by-step manner. The patient should not include the head, face, throat and thorax to avoid an increased pressure on the cervical baroreceptors, altered breathing or high pressure on central parts of the cardiovascular system. The important point is to increase the tension in discrete steps, and to maintain each step at least five seconds so that the patient can experience the intensity of his muscular effort. The patient should be asked to number his effort as a percentage. Therefore it is helpful to let him increase the tension to 20, 30, 50, 80 percent. In younger, healthy patients the tension can be increased up to 100 percent.

If the tension is not visible, it has to be tested, for example by pressing the bended lower arm downward. Testing the degree of rigidity as a sign of substantial tension is crucial, as patients tend to overestimate their effort. If there is insubstantial tension, the patient should be instructed to increase it. Then the patient is instructed to deliberately reduce the tension in several steps. Each step has to be held at least five seconds, until the patient can recognize the intensity of his tension.

Next the patient should be advised to reduce the tension in the arms to about 20 percent of the maximum intensity, but to hold this tension in a way that he does not get exhausted during the procedure. Then the patient should extend the exercise into the lower part of the trunk and continue with the abdomen and the lower extremities.

If the procedure is going to exceed more than five minutes, the patient should be asked to do the step-by-step increase and decrease of the arms and legs alternately. For example he should keep 20 percent of the tension in the arms and put more tension in the lower legs. This is done so that the patient, who is not used to physical exercise or who is producing too much tension for a prolonged time, is not getting exhausted.

As a by-product, the patient's attention is less focused on the operation procedures and more focused on his own ability to influence his physical state. At the end of the procedure the patient should reduce the tension in arms and legs and trunk to 20 percent and sit up slowly.

The patient can be instructed to remember this exercise and to practice it to be able to repeat it in similar future situations.

Result of Using the How Exercise

In the author's practice, the occasional event of a vasovagal collapse during surgical procedures has decreased further. Today it occurs only rarely and mostly in patients who do not communicate their history of prior collapse and their fear of the procedure. Therefore this exercise is strongly recommended. Before instructing patients, this exercise should be practiced personally in order to get used to it and its effects on systemic circulation.

Effects of the How Exercise

Different reasons may explain the effects of this exercise. Doing this exercise will increase blood circulation. The pressure of muscle groups on the blood vessels can increase blood pressure further. This will send different signals to the regulating brain stem area. Also the patient's attention is altered. Instead of passively waiting for the procedure to be performed on his body, he is involved in his own activities and he has to concentrate on his own exercising. This will alter his perception of external signals that have previously been linked with the collapse reaction.

Conclusion

This unusual use of the How Exercise has been helpful to prevent vasovagal collapse in the author's private practice. Although it does not fulfill the primary intention of the How Exercise, it includes several features of it. In a step by step manner, the patient exercises to learn a new way to organize his own body. By being able to repeat this method, the patient learns an exercise to influence himself. His experience of using himself differently, as well as the effects on his blood circulation during the exercise, influences his self-perception and his perception of the situation on the operation table.

Instead of patterns of panic and collapse, he learns patterns of personalized actions that stabilize his condition and help him to make new experiences of self-control in a previously uncontrolled situation.

This shows the abilities of the How Exercise, used as an isometric exercise—done in self-calculated steps—to influence physiological parameters, in this case the blood circulation.

Recently the author also used this exercise successfully in a similar clinical situation with patients in the early stage of hyperventilation. This supports the thesis that major effects of the How Exercise are due to a cerebral feedback, for example on the brain stem area. The How Exercise is a powerful tool to prevent complications during operative or invasive procedures and at the same time it leads to better treatment results. As a by-product, the health practitioner can work in a less stressed way, being able to deal better with occasionally occurring emergency situations.

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Biography

Hubert Mossmann, MD, has worked as a dermatologist in private practice since 1998, performing operations on a daily base. His specializations include psychotherapy (ECP), naturopathy, allergology and environmental medicine. Since 1995 he has practiced Formative Psychology. Email: hmossmann@gmx.de