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Cardio-Vascular Events at Defecation: Are They Unavoidable?

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Abstract — Cardio-vascular events at defecation are to a considerable degree the consequence of an unnatural (for a human being) seating defecation posture on a common toilet bowl or bed pan. The excessive straining expressed in intensively repeated Valsalva Maneuvers is needed for emptying the bowels in sitting position.

The Valsalva Maneuver adversely affecting the cardio-vascular system is the causative factor of defecation syncope and death. The cardio-vascular system of a healthy man withstands the intensive and repeated straining at defecation, while the compromised cardio-vascular system may fail resulting in syncope or even death. The squatting defecation posture is associated with reduced amounts of straining and may prevent many of these tragic cases.

Introduction

Cardio-vascular events during straining at defecation are not rare. The reports of bed pan deaths, defecation syncope and cardiac rhythm disturbances are described repeatedly (1–4). Probably every physician practicing emergency medicine has encountered tragic cases of sudden death in the lavatory. Patients with acute coronary events are especially vulnerable to excessive straining which accompany defecation. Therefore it is a routine practice in coronary care units to administer laxatives or stool softeners, hopefully to reduce straining at defecation (5).

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Discussion

The defecation act results from the coordination efforts of both voluntary and reflex muscle activity (6). As a consequence of voluntary straining, while the glottis is closed the abdominal and intrathoracic pressures rise, a chain of events known as Valsalva Maneuver. The Valsalva Maneuver under controlled conditions (airway pressure of 40 mm Hg for a brief period of 10–15 seconds) is considered to be a safe procedure and used as a diagnostic (7) and a therapeutic (8) tool.

However, the Valsalva Maneuver at defecation on a common toilet bowl or bed pan is much more intensive, repeated closely and protracted. Thus, A. Halperin et. al., found that 70.2% of

straining efforts of normal subjects using a commode yielded intrathoracic pressures above 40 mm Hg. This figure became 88.4% for those using a bed pan (9). To accomplish the defecation act the normal subjects using a commode repeated the Valsalva Maneuver 4.6 times, while those using a bed pan 6.6 times. W. Littler et. al. found by continuous recording of blood pressure, heart rate and electrocardiogram, very large swings in the level of arterial pressure and heart rate during straining at defecation (10). In some cases, blood pressure reached an alarming level, such as 240/165 mm Hg. It was found that the Valsalva Maneuver induces a sharp rise of intravenous and intra-arterial pressure (1) and reduction of coronary flow velocity (11) and cerebral blood flow (12). Bradicardia, high grade A-V block, ectopic rhythm of nodal type and other types of cardiac rhythm disturbances were found in the persons performing Valsalva Maneuver (1, 4, 13). There is common agreement that Valsalva Maneuver adversely effecting the cardio-vascular system is the causative factor of defecation syncope and death (1, 3, 9, 11).

The majority of individuals dying on bed pans had serious organic heart disease (1). The defecation syncope described mostly in elderly individuals, in some of them were found serious illnesses (2, 3).

In view of the striking influence of Valsalva Maneuver on the cardiovascular system it is logical to search for a method to reduce the straining at defecation. However, nature itself supplied a mechanism guaranteeing only minimal straining at bowel elimination. In a recent trial the straining forces at bowel evacuation in a sitting posture on a regular toilet bowl were compared with that of the squatting position (14). Diet or any other daily habits were not changed during the trial. A striking reduction of straining in squatting posture was noted unanimously by the thirty volunteers taking part in the trial. The universal report of a reduced amount of straining in squatting position is explained by the straightening out of the recto-anal angle, thus permitting smooth bowel elimination with only minimal straining.

Bockus noted another factor characteristic for the squatting defecation posture (15). The thighs in such a position fixed upon the abdomen decreasing the capacity of the abdominal cavity. This permits easy elevation of the intra-abdominal pressure, thus encouraging the expulsion of the fecal mass. This condition is lacking in the sitting defecation posture. Additionally, the recto-anal angle straightens only slightly in a sitting position (16). Consequently excessive pressure expressed in intensively repeated Valsalva Maneuvers is necessary for bowel elimination in sitting defecation posture. The cardio-vascular system of a healthy man withstands the unphysiologically high pressure necessary for bowel elimination in the sitting position, while the compromised cardio-vascular system may fail resulting in syncope or even death. Adoption of a natural (for a human being) squatting defecation posture may prevent many of these cases.

Conclusion

There is usually common agreement that the ideal defecation posture for a human being is squatting (15). However, until recently the medical world has not realized the dimensions of the damage to health that may be caused by the sitting defecation posture. Both cardio-vascular and gastro-intestinal (17–19) systems may undergo injury.

Additional research on the subject is necessary.

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