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Volumetric overload shocks in the patho-etiology of the transurethral resection prostatectomy syndrome and acute dilution hyponatraemia

The Transurethral Prostatectomy Syndrome (TURS) is defined as severe vascular hypotension reaction that complicates endoscopic surgery as a result of massive irrigating fluid absorption causing severe acute dilution hyponatraemia (HN) of <120 mmol/l. The vascular shock is usually mistaken for one of the recognized shocks and Volumetric Overload Shock type 1 (VOS1) is overlooked making Volumetric Overload Shock Type 2 (VOS2) unrecognizable. In adults VOS1 is induced by the infusion of 3.5-5 litres of sodium-free fluids and is known as TURS or HN shock. VOS2 is induced by 12-14 litres of sodium-based fluids and is known as the adult respiratory distress syndrome. The most effective treatment for VOS1 and VOS2 is hypertonic sodium Therapy of 5%NaCl or 8.4% Sodium Bicarbonate. The literature on TURS is reviewed and the underlying patho-etiology is discussed.

As Starling's law for the capillary-interstitial fluid transfer, which underlies the principles of fluid therapy, proved wrong an alternative mechanism was found by studying the hydrodynamics of the porous orifice (G) tube akin to capillary. Incorporating the G tube in a chamber (C), representing the interstitial space surrounding a capillary, demonstrated a rapid dynamic magnetic field-like fluid circulation between the C and G tube lumen. The G-C phenomenon is autonomous having both filtration and absorption forces making a true replacement for Starling's law in every tissue and organ of the body.

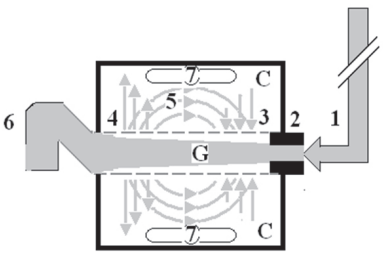

Figure: shows diagram of the porous orifice (G) tube enclosed in chamber (C) based on several photographs demonstrating the magnetic field-like G-C circulation phenomenon. The proximal inflow (arterial) pressure (1) pushes fluid through the orifice (2) creating fluid jet in the lumen of the G tube. The fluid jet creates negative side pressure gradient causing suction maximal over the proximal half of the G tube near the inlet (3) that sucks fluid into lumen. The side pressure gradient turns positive pushing fluid out of lumen over the distal half maximally near the outlet (4). Thus the fluid around G tube inside C moves in magnetic field-like fluid circulation (5) taking an opposite direction to lumen flow of G. tube. The inflow (arterial) pressure (1) and orifice (2) induce the negative side pressure energy creating the dynamic G-C circulation phenomenon that is rapid, autonomous and efficient in moving fluid out from the G tube lumen at (4), irrigating C at (5), then sucking it back again at (3), maintaining net negative energy pressure (7) inside C. The distal outflow (venous) pressure (6) enhances outflow at (4) and its elevation may turn the negative energy pressure (7) inside C into positive, increasing volume and pressure inside C chamber.

Biography

Ghanem was educated in Egypt and qualified in 1968, Mansoura University, Egypt. He gained postgraduate experience in UK where he was promoted in posts up to the consultant level. He practiced as consultant Urologist in UK, Saudi Arabia and Egypt. During his career he reported over 60 articles. He discovered two new types of vascular shocks, proved that one physiological law is wrong and provided an alternative. He resolved the puzzles of 3 clinical syndromes; TURP syndrome, the LPHS and ARDS. He is now on an editorial board member of many journals while he is happily retired in Egypt.

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