

CASE 7

Done by:

**Elham AlGhamdi | Ibtihal AlMshawi | Lamyah AlThawadi | Mona AlQahtani | Nada Bin Samih
Nuha AlHomaidhi | Rawan Ghandour | Sarah AlSalman | Shahad AlQahtani | Yara AlZamil**

CASE SCENARIO

54-year-old man is undergoing a laparotomy and colon resection for Carcinoma. The anesthesiologist is attempting to calculate the fluid Replacement.

The patient body weight is 80 kg, 8 hours fasting with bowel preparation blood loss 500 ml and urine output is 400 ml

WHAT ARE THE COMPARTMENT THAT MUST BE CONSIDERED WHEN CALCULATING ?

The patient body weight is 80 kg, 8 hours fasting with bowel preparation blood loss 500ml and urine output is 400 ml.

DISCUSS THE VOLUME OF FLUID THAT SHOULD BE REPLACED?

Perioperative fluid application basically must replace two kinds of losses:

replacement of fluid losses from the body *via* insensible perspiration and urinary output

Maintenance therapy

replacement of plasma losses from the circulation due to fluid shifting or acute bleeding. Replacement therapy

The following factors must be taken into account:

- 1- Maintenance fluid requirements
- 2- NPO and other deficits: NG suction, bowel prep
- 3- Third space losses
- 4- Replacement of blood loss
- 5- Special additional losses: diarrhea.

The patient body weight is 80 kg

Total body water= 48 L
(60% of body weight in male)

Intracellular water= 32 L
(40% of total body weight)

Extracellular water= 16 L
(20% of total body weight)

Interstitial (extravascular)=
12 L (3/4 the extracellular
water)

Intravascular= 12 L
(3/4 the
extracellular water)

Rich in potassium
and fixed anions (protein,
phosphate and sulphate)

Rich in sodium and chloride and
low in potassium

2-WHAT ARE THE SIGNS OF PREOPERATIVE HYPOVOLEMIA?

Hypovolemia: *Signs & Symptoms*

- HTN
- Wt. loss
- Tented, dry skin
- ↑ RR, ↑ PR
- Cool skin
- Flat neck veins
- Oliguria
- Lethargy
- *subjective cue/s:*



WHAT ARE THE SIGNS OF PREOPERATIVE HYPOVOLEMIA?

Dry Skin

Sunken Eyes

Dry Tongue
And Mucus
Membranes

Postural
Hypotension

Tachycardia

Depressed Level
Of Consciousness

Organ Failure

Oliguria

Coma

Absence Of JVP

3-HOW TO CALCULATE THE FLUID REPLACEMENT IN THE INTRAOPERATIVE PERIOD ALL OF WHICH TAKE INTO CONSIDERATION THE PREOPERATIVE FLUID DEFICITS?

Preoperative Fluid Loss Replacement

500 Cc Multiplied By 3
= 1500 Cc

Plus Urine Output
400 Cc

maintenance requirements

4:2:1 rule
First ten kilos x 4 mL/kg/hr
Second ten kilos x 2 mL/kg/hr
Every kilo after that x 1 mL/kg/hr
a 80-kg adult will require $(10 \times 4) + (10 \times 2) + (60 \times 1) =$
120 mL/h of maintenance.

NPO
(PREOPERATIVE FLUID DEFECT)

Normal maintenance requirements
(4:2:1 rule) x number of hours of fasting
"NPO"
120 X 8H = 960 Cc

Anticipated Surgical Fluid Loss

Severe Tissue Trauma In Bowel Resection
6-8cc/Kg/Hr
8x80= 640 Cc/Hr

4-WHICH TYPE OF FLUIDS SHOULD BE USED ?

Dextrose: is metabolized leaving the water, which distributes freely within the total body water. Large quantities will cause hyperglycaemia and dilutional hyponatraemia.

Crystalloids: a similar concentration to extracellular fluid.

They will distribute within the extravascular compartment but not within the intracellular compartment Excessive saline can cause a hyperchloraemic alkalosis.

Colloids: suspensions of osmotically active, large particles.

They are usually of either starch or gelatin in origin. Initially, they are largely confined to the vascular compartment, although some have only a relatively short half-life prior to excretion.

THANK YOU