

APRIL 1981

THURS. NIGHT PVSARG MEETING PROGRAM

HANDOUTS

1930-2000

I. BUSINESS

- ① 1st-2nd CHECKLISTS
- ② GCS
- ③ HYPOTHERMIA TEST

10 MIN.

II. MEDICAL TRAINING

A. INTRODUCTION

1. HANDOUTS

2. REVIEW (BRIEFLY) EMT + WMT TRAINING LEVELS

3. RATIONALE OF BASIC WMT MATERIAL
SELECTION

4. OUTLINE OF TONIGHT'S + SATURDAY'S TRAINING

B. HYPOTHERMIA

1. INTRO

a. A FAMILIAR ADVERSARY FOR AERC

- ENVIRONMENTAL HAZARDS

- RECOGNITION

- PREVENTION + FIRST AID FOR
INCIPIENT HYPOTHERMIA

- PR + EDUCATION (AWARENESS; 3W's)

b. TONIGHT - HYPOTHERMIA AS A

MEDICAL PROBLEM FOR OUR PATIENTS

COMPLICATED BY

- TRAUMA (E.G. -)

- DEHYDRATION + EXHAUSTION (E.G. -)

- MEDICAL PROBLEMS (E.G. -)

2. THE PROBLEM

a. CONFUSION IN MEDICAL LITERATURE, E.G.:

- SOME SAY SLOW R (WARM ROOM) \Rightarrow 50% SAVE

- OTHERS: SLOW \Rightarrow 0% SAVE, BUT FAST \Rightarrow 50% SAVE

b. 3 BLIND MEN + ELEPHANT:

TAIL - ROPE

LEG - TREE TRUNK

TRUNK - SNAKE

c. SIMILARLY W/ HYPOTHERMIA - DRs.

HAVE BEEN USING THE SAME NAME

FOR 3 DIFF. PARTS OF THE HYPOTHERMIA
BEAST.

DO

- PLACE? (GENE)

- EOP FOR SAT.

STICKS?

SPUNTS

3. SIDETRACK - NORMAL RESPONSE TO MIN. COLD STRESS

- a. SLIGHT STRESS? - (VASOCONSTRICTION)
- b. MORE STRESS?

↑ M.R - ↑ BMR; ↑ SHIVERING, OR ↑ WORK
RESULTANT Δ IN BODY?

(↓ GLYCOGEN + FAT, ↑ WASTE LEVELS
= EXHAUSTION + FATIGUE)

[N.B. - EXHAUSTION + MILD HYPOTHERMIA
ARE OFTEN ALMOST INDISTINGUISHABLE]

- c. MORE STRESS (MORE THAN THE BODY CAN RESIST) OR LONG-TERM COLD STRESS ⇒ EXHAUSTION ⇒ ↓ BODY'S ABILITY TO COMPENSATE?
- ↓ CORE TEMP. (ET SEQ.)

lost of heat
(top, thin, a few - summer)
above
below
summer

4. NOW TOUCHING THE ELEPHANT'S LEGS!

MOUNTAIN HYPOTHERMIA

SIGNS + SYMPTOMS, STAGE BY STAGE:

- a. STAGE I: COMPENSATED
- b. STAGE II: EXHAUSTION + MAXIMAL REFLEX SURVIVAL ACTIVITY
- c. STAGE III: DECOMPENSATION
- d. STAGE IV: COMA + DEATH
(REFER TO HANDOUT + DISCUSS)

DISCUSS R_x LAST NOW ON TO THE ELEPHANT'S TAIL -

5. IMMERSION HYPOTHERMIA:

- a. COLD STRESS GREATLY MORE THAN HUMAN ABILITIES TO COMPENSATE
- b. SURVIVAL TECHNIQUE: CONSERVATION (BALL UP); FLAILING CAUSES MORE HEAT LOSS THAN PRODUCTION
- c. TRIAGE: THIN, QUIET VICTIMS
1st PRIORITY
- d. FIRST R_x: IMMEDIATE HOT TUB REWARMING OF TRUNK (W/0.5% 40°C)
(90%+ SURVIVAL RATE)

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NOW, THE THIRD ANATOMICAL PART OF HYPOTHERMIA:

6. CHRONIC HYPOTHERMIA

↓ CORE TEMP OVER LONG PERIODS W/LITTLE COLD STRESS.

a. USUALLY A RESULT OF PREDISPOSING FACTORS INTERFERING WITH CNS THERMOSTAT MORE SO THAN ↓ COMPENSATORY MECHANISMS.

LIST + DISCUSS BRIEFLY?

(N.B.: ↓ LOC, EDEMA, KETONACIDOSIS SOMETIMES SEEN)

b. R_x + OUTCOME MORE OR LESS DEPENDENT ON PREDISPOSING FACTORS

c. ALCOHOL + CARBITURATES ↓ METABOLISM + ↑ SURVIVAL

7. THREE 3's

- ACUTE (IMMERSION)

- SUBACUTE (MTN, SOMETIMES CHRONIC, OR EXHAUSTION)

- CHRONIC (W/REPT)

ARE ONLY 3 OF THE MORE PROMINENT FEATURES OF THE ~~HYPOTHERMIA~~ ELOPHANT, BUT PROVIDE A USEFUL WAY OF THINKING IF WE REMEMBER THEY ARE BUT DIFFERENT WAYS OF APPRECIATING AN ELOPHANT

8. TO CONSIDER TREATMENT NOW!

a. 1 MORE PHYSIOLOGICAL FACT: COLD DIURESIS (WHY?)

b. SLOW (PASSIVE) REWARMING: USCG

STUDY SHOWED WHEN CORE $T^{\circ} \downarrow \leq 35^{\circ}C$, ONLY 65% COULD DO SO

c. ACTIVE EXTERNAL REWARMING: - AFTER DROP, REWARMING SHEET, ACIDOSIS

- W/SHIVERING: ↓ SHIVERING BUT ~ SAME REWARMING

RATE + AFTER DROP AS (b.) (SAVES ENERGY?)

d. ACTIVE INTERNAL ^{NON-INVASIVE} WARM HUMIDIFIED AIR/O₂

- MOST OF ΔH IN HUMIDITY

- O₂ MAY HELP METABOLISM, BUT SHOULD PROBABLY

ALSO HAVE CO₂ TO STIMULATE BREATHING + PROTECT HEMT

INVASIVE

8. ACTIVE INTERNAL FLOWING: PERITONEAL LAVAGE, ETC.: SIGNIFICANT ASSOCIATED PROBLEMS W/ PROCEDURE. ONLY ONE SUITABLE FOR FIELD: WARM IV FLUIDS - BOUNG; HELPS REPLACE LOST FLUIDS.

9. CONNECTING TYPES OF TREATMENT WITH TYPES OF HYPOTHERMIA

a. IMMERSION - HOT BATH + WARM O₂; POSSIBLY WARM IV

b. MOUNTAIN - HOT BATH IF AVAILABLE
- WARM O₂ + HOT PACKS + IV
(N.B. HIGH HEAT EXCHANGE AREAS)

c. CHRONIC - INSULATED TRANSPORT DUE TO LONG-TERM ELECTROLYTE IMBALANCE + ADAPTATION; WARM O₂ PROBABLY OK

d. GENERAL CAUTIONS

- HYPOTHERMIC HEART IS IRRITABLE
SO, NO (WHAT?)

- BOUNCING

- INTUBATION ETC.

- METABOLISM IS DOWN. IF NO PULSE, CPR; IF PULSE (DIFFICULT TO DETECT) ASSIST / VENTILATE WITH WARM O₂ / CO₂

- "THEY AREN'T DEAD TILL THEY'RE WARM + DEAD"

- DRUGS + DEFIBRILLATION DON'T WORK ON HYPOTHERMICS (UNTIL LATER)
ESP. IM DRUGS

- VERY DELICATE BALANCE OF CIRCULATION.
↑ HOB ⇒ SEIZURES.

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10. a. OUTDOOR PEOPLE HAVE A VERY DYNAMIC HEAT BALANCE: HIGH HEAT LOSS, HIGH HEAT PRODUCTION, COMPARED W/ US, NOW.

b. SMALL Δ IN ONE WILL CAUSE BIG ΔT°
(E.G. COLD FEET WHEN YOU STOP)

c. ADD - FATIGUE, EXHAUSTION, DEHYDRATION, SICKLE, ANXIETY, TREMOR

\Rightarrow PRESTO \Leftarrow INSTANT HYPOTHERMIA!

d. WARM INSPIRED O_2/CO_2 ELIMINATES A NATURAL SOURCE OF HEAT LOSS, SO IT IS PREVENTIVE AS WELL AS TREATMENT.

C. VITAL SIGNS

- EXPLAIN GCS

- SEE CHECKLIST

