Decompression Sickness Case Study One

Chief Complaint: Right Arm and hand weakness, and nausea

History of Present Illness: The patient is a 20-something year old Active Duty, Airman who works as a chamber technician at a local Physiologic Training Unit. Patient was an inside attendant for a Type 4 hypobaric chamber ride at 13:00 and completed the training 14:30 with a maximum altitude obtained of 25000 feet. Symptoms began at 15:15 with right arm heaviness and right forearm paraesthesias on the ventral aspect. Nausea was experienced shortly after this time. She reported symptoms to her supervisors and was placed on 100% surface oxygen by aviators mask at 15:45 and the symptoms began to improve. Patient denied any confusion or clouded thinking, although she did feel unusually fatigued. Patient was transported via ambulance on 100% oxygen via an aviators mask to the treatment facility. When she arrived at the treatment facility she was only experiencing finger and hand heaviness on the right side with mild tingling in the medial aspect of her 2^{nd} through 4^{th} fingers. She had no other sensory deficit or weakness and her nausea had cleared. Patient reports no problems with urination or defecation and reports normal sensation to her perineum.

The patient has worked as a chamber technician for 2 years without any other similar episode.

Past Medical History: Unremarkable

Habits: Not currently smoking, quit six months ago, occasional use of alcohol products

Allergies: None

Medications: None

Review of Systems: No history of seizures, fevers, cataracts, ear surgery, trouble “clearing ears”, sinus surgery or chronic sinus infections, recent dental work, chronic lung disease, emphysema, pneumothorax, chest surgery, myocardial infarction, heart failure, claustrophobia. The patient has not used the following medications: Bleomycin, Adriamycin.

Physical Examination

General Appearance: Healthy thin female, cooperative and pleasant

Vitals: BP: 124/76 Pulse: 76 Resp. Rate: 20 Temperature 98.2

SKIN: No rash or other abnormality

EYE: Sclera White, No limbic injection, No Cataracts, Fundi discs normal

ENT: TMs normal landmarks; clear, non thickened membrane, light reflex manubrium and umbo seen, mobile, patient can Valsalva, sinus passage normal, tongue midline, uvula raise symmetrical, throat normal.

CHEST: Symmetric unlabored respiration, good breath sounds auscultated

CARDIOVASCULAR: Regular Rhythm, Rate 90, No murmur or gallop

ABDOMEN: Benign, Non tender to palpation,

NEUROLOGIC:
Patient is oriented to person, place, and time. She knows the current President. The patient can spell "World" forward and can spell it backward. She can subtract with serial sevens to 72. Patient's speech is clear and well articulated. Vocabulary is adequate.

CRANIAL NERVES:
CN 1 Recognizes smells of cinnamon and peppermint
CN 2 Pupils round, 4 mm, accommodates and are reactive, Visual normal fields to confrontation
CN 3,4, 6, EOM intact,
CN 5, clenches teeth firmly, no sensory deficit on face, Tongue midline,
CN 7 No facial asymmetry, wrinkles forehead evenly, squints
CN 8 Hearing is grossly normal. AC>BC, no lateralization
CN 9,10 uvula midline
CN 11 Shoulder shrug normal
CN 12 Tongue Midline

Motor Exam: gait normal, toe heel walking normal, no past pointing, two footed Romberg negative

Muscle strength (0-5, 0 no movement, 5 normal strength)

Upper Body

Muscle	Left	Right
Deltoid	5	5
Latissimus	5	5
Biceps	5	5
Triceps	5	5
Forearms	5	5
Finger Abduction	5	5
Grip	5	5

Lower Body

Hips	Left	Right
Flexion	5	5
Extension	5	5

Abduction	5	5
Adduction	5	5

Knee	Left	Right
Flexion		
Extension		

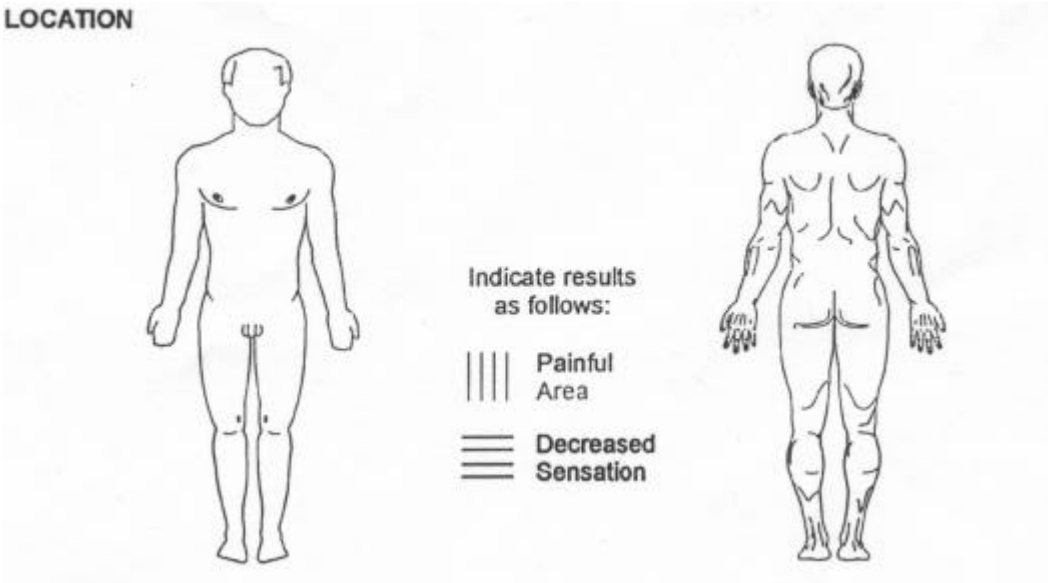
Feet	Left	Right
Dorsiflexion	5	5
Planter flexion	5	5
Inversion	5	5
Eversion	5	5
Toes	5	5

Reflexes

Location	L	R
Triceps	1	1
Biceps	1	1
Brachioradial	1	1
Knee	1	1
Ankle	1	1

Sensation:

Light Touch: normal
Vibratory: Decreased medial right malleus and toe (1st MTP Joint)
Areas of Numbness or Paresthesia: None
Rectal/Genital Anesthesia: None



Extremities: No gross deformities or limitations to range of motion

IMPRESSION:

1.) HIGH ALTITUDE NEUROLOGIC DCS WITH INCOMPLETE RESOLUTION OF SYMPTOMS ON SURFACE LEVEL OXYGEN (SLO2)
2.) DECREASED VIBRATORY SENSE Rt LOWER EXTREMITY

HYPERBARIC OXYGEN (HBO2) PLAN:

1. TREATMENT TABLE SIX (TT-6) WITH EXTENSIONS IF NEEDED
2. HYDRATION

CLINICAL COURSE:

Patient was treated with a USAF Treatment Table 6 (table 5 is not an option for neurological hit). Upon passing 50 feet of sea water depth, patients right extremity abnormalities resolved. Vibratory sensation became symmetric and normal shortly after beginning oxygen at 60 FSW. The patient completed treatment without incident and was referred back to local flight surgeon. She resumed normal work activities 3 days following conclusion of her treatment.

DISCUSSION:

This is a fairly straight forward case of neurological DCS. The alert practitioner will note that although the presenting symptoms involved the upper extremities, additional clinical signs were uncovered in the lower extremities using the 128 Hz tuning fork (vibratory sensation), highlighting the importance of a thorough neuro exam. Even if symptoms had completely cleared on SLO2, HBO2 (TT-6) would still have been required as this was a neurological hit. As the patient is alert, responsive, and appropriate, enforced oral rehydration (8 oz during air breaks) is acceptable. As all symptoms cleared completely during the treatment, no waiver is required. In fact, as the person involved is special operational duty only, a clearing neurologist exam (required for FC-II flight crew) is not required and the local RAM has RTFS approval authority (telephone discussion is OK). Had this person been a rated flight crew member, a normal clearing exam by a neurologist would have been required and RTFS could have been accomplished after telecom concurrence by Brooks AFB Hyperbaric Medicine and MAJCOM/ SGPA.