



CASE REPORT: Decompression illness, hernia, and patent foramen ovale in a saturation diver with previous bleomycin treatment



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INTRODUCTION

Patent foramen ovale (PFO), hernia and previous bleomycin may be considered contraindications for diving and all were encountered in a saturation diver.
* (with written consent from patient)

CLINICAL REPORT

DIVER / PATIENT

- A healthy 32 year old male
- Passed commercial dive medical elsewhere
- Experienced commercial diver
- New to saturation diving
- Working offshore Newfoundland and Labrador, in Eastern Canada for the first time

SATURATION DIVE # 1

- Storage depth of 110 metres, with excursions to 127 metres
- Developed pain behind his knee during decompression
- Recompression initiated by diving supervisor
- Three periods breathing treatment mix
- Full resolution, uneventful decompression
- Assessed by hyperbaric physician
 - Cleared to return home by air and to return to diving for next shift
 - Despite relatively cautious industry decompression profile, concluded deep excursions likely contributed

SATURATION DIVE # 2

- Developed gastroenteritis while at storage depth
- Large ventral hernia developed due to severe retching

SATURATION DIVE # 2 continued

- Photos of hernia emailed to hyperbaric physician
 - Decision to decompress with diver medic - uneventful
- Dive company requesting assessment for PFO, diver reluctant on advice of colleagues

HYPERBARIC PHYSICIAN ASSESSMENT

- Ventral hernia related to laparotomy 10 years previously for staging of testicular cancer
 - Had received bleomycin also
 - Due to possible risks of bleomycin pulmonary toxicity (BPT) and elevated oxygen exposure in saturation diving and treatment of decompression illness:
- Referral to:
 - General surgeon
 - Laparoscopic hernia repair
 - Cardiologist
 - Trans-thoracic echocardiogram was normal
 - Trans-esophageal echo demonstrated PFO
 - Successful percutaneous balloon closure of PFO
 - Respirologist
 - Benign lung lesion on Chest x-ray and CT scan
 - No pulmonary fibrosis seen on CT scan
 - Initial poor arterial pO2 likely postoperative atelectasis
 - Subsequent exercise pulmonary function tests and pulse oximetry were normal

DISCUSSION

- PFO may predispose to decompression illness and therefore to the need for hyperbaric oxygen treatment, which may increase pulmonary oxygen toxicity after bleomycin.
- Diving is suggested to be contraindicated after Bleomycin
 - The period of pulmonary risk following bleomycin is ill-defined
 - Onset of bleomycin pulmonary toxicity (BPT) within 1 year
 - Incidence is reported as 5 – 11%
 - BPT is fatal in 1% or more of cases
 - Appropriate investigations may include:
 - Pulmonary function (including diffusion capacity for CO)
 - Chest x-ray
 - Chest CT scan
 - Arterial blood gas analysis
 - Exercise pulmonary function / oxygen saturation
 - Saturation diving involves exposure to elevated oxygen partial pressures (especially if treatment mix is used)
 - If investigations, symptoms and signs do not demonstrate BPT years after exposure then diving may be approved
 - Continued surveillance for BPT is warranted
 - Following hernia repair and correction of PFO this diver was approved for return to saturation diving

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