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Instituut voor hyperbare geneeskunde – Hoogeveen (NL)

Editorial

This year, we will finish the job...

This year the Education Committee will compete the job they began in 2004. The final presentation of the modules for the Education of each member of the HBO Team will be during the next EUBS meeting (8 – 15 September in Sharm El-Sheikh – Egypt). In order to prepare for this important event, the Committee headed by Steve McKenna is organising another workshop on 2 June 2007 in Brussels. The president of the ECHM (Prof Mathieu – France) will be present at this workshop. Invitation to this workshop will be advertised in the near future!

We are now in 2007 and a New Year brings new objectives ...We want to start the Safety Committee.

Therefore, during the EUBS meeting, on 12 September, EBAss will organise a satellite meeting (free entrance for members) about the safety aspects relating to HBO provision. We will propose a structure of the management of quality for HBO facilities and a specific method of risk analysis. So, don't hesitate; Dr Taher (who organised this meeting), has made a very real effort for us (registration fees) and a specific topic will be dedicated for EBAss. Of course, you are welcome to present some results on this topic.

For the practical aspects, and in order to organise the accommodation, Judith Geels will collect the names of interested parties and check local hotels availability. Interested? Please contact Judith on j.r.geels@amc.uva.nl

For the next EUBS meeting, please visit this website: www.eubs2007.org

For you, inside this issue, is a very good analysis concerning the comparison of incidence rates for both intensive care patients and non intensive care patients.

Also included is the first report of the personnel exchange program, completed by Miss Shaïda Salarbux from Amsterdam.

Concerning any questions you may have regarding the program of exchanges of personnel, please contact Mr Wintersdorf on danielwintersdorf@gmx.net for more information.

And, don't forget, if you need information or registration forms, etc visit your website at: www.ebass.org.

The pages are now available in English, in French (en français) in Italian (in Italiano) in German (auf Deutsch), in Dutch (in Nederlands), in Spanish (en Espanol) and in Greek.

I wish you good reading!

Robert HOUMAN

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COMPARISON OF INCIDENT RATES INTENSIVE AND NON-INTENSIVE CARE HBO ONE MONTH OBSERVATIONAL STUDY

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C. Mortensen, J. Perttala

COST B14 Action Working Group "HBO and Intensive Care"

Introduction

The aim of this observational study was to find the incident rate in HBO sessions conducted in intensive care settings in comparison to standard sessions (non intensive care).

In this protocol the term intensive care (IC) patient was used to describe patients:

- 1) with one or more organ failure or
- 2) with need for special monitoring or treatment (e.g. postoperatively).

In this protocol the monitoring period covers the following phases of any single HBO session:

- a. preparation of the patient for HBO
- b. transportation from the ICU to the chamber
- c. "installation" in the chamber
- d. compression phase
- e. plateau phases
- f. decompression phases
- g. taking patient out from the chamber
- h. transportation from the chamber to the ICU
- i. reassessment of the patient after HBO

In this protocol the incident means:

- a. any unplanned event in any phase listed above
Example: disconnection of infusion lines, ventilator circuit, etc.
- b. any situation which needed medical intervention induced by the HBO therapy in any phase listed above
Example: accidental extubation, removal of venous lines, etc.
- c. any negative clinical change during the HBO therapy (not necessarily induced by the HBO by itself) in any phase listed above
Example: oxygen convulsions, loss of consciousness, pulmonary oedema, arrhythmia, etc.

Material and methods

4 weeks of prospective observation

- 8 European HBO centres
(Austria, Belgium, Czech Republic, Denmark, Finland, Germany, Italy and Poland)
- Notification of incidents occurring in all phases of the HBO session (including transportation to and from the chamber)
- Every HBO session was classified as:
 - "intensive care HBO session" ▶ **IC-HBO**
 - "non-intensive care HBO sessions" ▶ **non IC-HBO**

Results

- In observation period 336 patients had 3,444 HBO sessions
- Mean age 51.5±17.9 [SD] years
- Males 62.5% / Females 37.5%
- Sessions:
 - **nonIC-HBO** ▶ 3,347 sessions (97.2%)
 - **IC-HBO** ▶ 97 (2.8%)

- Incidents were observed in 69 of all sessions (2.0%)
 - **nonIC-HBO** ▶ 51 incidents (1.5%)
 - **IC-HBO** ▶ 18 incidents (18.6%)

Fig.1 Nature of the incidents

IC-HBO (N=18)		Non IC-HBO (N=51)
55.6% (10/18)	Patient -related problems (p=0.008)	86.3% (44/51)
33.3% (6/18)	Device -related problems (p=0.004)	5.9% (3/51)
27.8% (5/18)	Clinical consequences (p=0.18)	13.7% (7/51)
5.6% (1/18)	Interruption of treatment (p=0.76)	7.8% (4/51)

Fig 2 Review of the incidents

IC-HBO (N=18)		nonIC-HBO (N=51)
<ul style="list-style-type: none"> • Middle ear equilibration problems (3x) • Event of fever (3x) • Hyperoxia • Hyperventilation • Hypertension • Subcutaneous emphysema 	Patient -related problems	<ul style="list-style-type: none"> • Middle ear equilibration problems (32x) • Excitation (4x) • Hypertension (4x) • Vomiting (2x) • Others (2x)
<ul style="list-style-type: none"> • Failure of breathing unit (2x) • Failure of ventilator (2x) • Failure of infusion pump • Failure of monitoring system 	Device -related problems	<ul style="list-style-type: none"> • Problems with breathing units (2x)
<ul style="list-style-type: none"> • Introduction of prohibited material • Non-optimal ventilation of patient 	Procedure-related problems	<ul style="list-style-type: none"> • Introduction of prohibited material (4x) • Overpressurisation

Conclusions

- ▶ The overall incident rate during HBO sessions was 10 times greater for sessions with intensive care modalities (**IC-HBO**) in comparison to standard sessions (**nonIC-HBO**).
- ▶ This increase of incident occurrence in **IC-HBO** was related with usage of medical devices.
- ▶ Clinical consequences of those incidents were slightly more often (but without statistical significance) observed in **IC-HBO**, but the rate of treatment interruptions was similar.

Contribution

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Publish with the Authorisation of Dr J. Kot - Working group "HBO and Intensive Care".

COMPARATIVA DE INCIDENTES EN OXÍGENOTERAPIA HIPERBÁRICA CON CUIDADOS INTENSIVOS Y NO INTENSIVOS. UN MES DE ESTUDIO OBSERVACIONAL

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COST B14 Grupo de acción de trabajo de "Oxígeno terapia hiperbárica y Cuidados Intensivos"

Traducción por Oscar Mora

INTRODUCCIÓN

La meta de este estudio de observación fue encontrar el porcentaje de incidentes en las sesiones de Oxígeno terapia hiperbárica que precisaron de cuidados intensivos respecto a las sesiones estándar (sin cuidados intensivos).

En este protocolo, el término de paciente de cuidados intensivos (IC) fue usado para describir a los pacientes:

- 1) con fracaso de uno o más órganos, ó
- 2) con necesidad de monitorización especial en el tratamiento (por ejemplo en los postoperatorios).

En este protocolo el período de monitorización abarca las siguientes fases de cualquier sesión de Oxígeno terapia hiperbárica :

- a. La preparación del paciente para la Oxígeno terapia hiperbárica .
- b. El transporte desde la unidad de cuidados intensivos hasta la cámara.
- c. "La instalación" del paciente en la cámara.
- d. La fase de compresión.
- e Las fases de la "meseta"(hablando en presión).
- f Las fases de la descompresión.
- g Sacar al paciente de la cámara.
- h El transporte desde la cámara hasta la unidad de cuidados intensivos.
- i. La nueva valoración del paciente después de la Oxígeno terapia hiperbárica

En este protocolo, el incidente significaría:

1. Cualquier acontecimiento imprevisto en cualquier fase del listado de arriba
Por ejemplo: La desconexión de las líneas de infusión, del circuito del ventilador, etc.
2. Cualquier situación que necesitase intervención médica inducida por la terapia HBO en cualquier fase del listado de arriba
Por ejemplo: La extubación accidental, la salida de los accesos venosos, etc.
3. Cualquier cambio clínico desfavorable durante la sesión de Oxígeno terapia hiperbárica (no necesariamente inducida por la Oxígeno terapia hiperbárica en sí misma) en cualquier fase del listado de arriba
El ejemplo: Convulsiones por oxígeno, pérdida del conocimiento, el edema pulmonar, arritmias, etc.

MATERIAL Y MÉTODOS

- 4 semanas de observación prospectiva
- 8 centros europeos en HBO (Oxígeno terapia hiperbárica)
(Austria, Bélgica, República Checa, Dinamarca, Finlandia, Alemania, Italia Y Polonia)
- Notificación de los incidentes ocurridos en todas las fases de las sesiones de HBO
(incluyendo transporte hacia y desde la cámara)
- Cada sesión HBO fue clasificada como:
"Sesión hiperbárica de cuidado intensivo" * **IC-HBO**
"Sesión hiperbárica de cuidado no intensivo " * **non IC-HBO**

RESULTADOS

- En el período de observación, 336 pacientes fueron sometidos a 3,444 sesiones de Oxígeno terapia hiperbárica
 - Promedio de edad de 51.5±17.9 años
 - Varones 62.5% / Mujeres 37.5%
 - Las sesiones fueron:
 - **non IC-HBO** 3,347 sesiones (97.2 %)
 - **IC-HBO** 97 (2.8 %)
- Solo se observaron incidentes en 69 de todas las sesiones (2.0 %)
- **non IC-HBO** 51 incidentes (1.5 %)
 - **IC-HBO** 18 incidentes (18.6 %)

Fig.1 Naturaleza de los incidentes

IC-HBO (N=18)		Non IC-HBO (N=51)
55.6% (10/18)	Problemas relacionados por los pacientes (p=0.008)	86.3% (44/51)
33.3% (6/18)	Problemas generados por los dispositivos (p=0.004)	5.9% (3/51)
27.8% (5/18)	Consecuencias clínicas (p=0.18)	13.7% (7/51)
5.6% (1/18)	Interrupción del tratamiento (p=0.76)	7.8% (4/51)

Fig.2 Relación de los incidentes

IC-HBO (N=18)		nonIC-HBO (N=51)
<ul style="list-style-type: none"> • Problemas de equilibrio en el oído medio (3x) • Proceso febril(3x) • Hiperoxia • Hiperventilación • Hipertensión • Enfisema subcutaneo 	Problemas relacionados por los pacientes	<ul style="list-style-type: none"> • Problemas de equilibrio en el oído medio (32x) • Excitación (4x) • Hipertensión (4x) • Vómitos (2x) • Otros (2x)
<ul style="list-style-type: none"> • Fallo de la unidad respiratoria (2x) • Fallo del ventilador (2x) • Fallo de la bomba de infusión • Fallo del sistema de monitorización 	Problemas de los dispositivos	<ul style="list-style-type: none"> • Problemas con las unidades respiratorias (2x)
<ul style="list-style-type: none"> • Introducción de material prohibido • Ventilación no correcta del paciente 	Problemas relativos a los técnicos	<ul style="list-style-type: none"> • Introducción de material prohibido(4x) • Sobrepresurización

CONCLUSIONES

- La tasa global de incidentes durante las sesiones de Oxígeno terapia hiperbárica fue 10 veces superior para sesiones de tipo de cuidados intensivos (IC-HBO), que para las sesiones tipo estándar (IC-HBO).
- Este incremento de la frecuencia de incidentes en las IC-HBO está relacionado con el uso de dispositivos médicos.
- Las consecuencias clínicas de estos incidentes fueron ligeramente más frecuentes (aunque sin grado de significación estadística) en las IC-HBO, pero la tasa de interrupciones de tratamiento fue similar.

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- Bélgica, Bruselas, Centro Hiperbárico del Hospital Militar
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Publicado con la autorización del Dr. J. Kot -miembro del grupo de trabajo "Oxígeno terapia hiperbárica y Cuidados Intensivos".

CONFRONTO DI ALCUNI INCIDENTI AVVENUTI DURANTE LE SEDUTE DI HBO IN PAZIENTI TRATTATI DI TERAPIA INTENSIVA E NON, IN UN MESE DI STUDIO DI OSSERVAZIONE.

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COST B14 Action Working Group "HBO and Intensive Care"

Traduzione di Valeria Campanaro

Introduzione

Lo scopo di questo studio d'osservazione era di individuare quali incidenti avvengono durante le sedute di HBO confrontandole tra quelle standard e quelle di terapia intensiva.

In questo protocollo il termine terapia intensiva (IC) è stato usato per descrivere i pazienti:

- 1) con uno o più organi compromessi*
- 2) che necessitano di particolari monitoraggi o trattamenti (per esempio interventi post operatori)*

In questo protocollo il periodo controllato concerne il susseguirsi delle varie fasi di alcune singole sedute di HBO

- a. preparazione del paziente alla terapia di HBO
- b. trasporto dall'ICU (unità di terapia intensiva) alla camera
- c. ingresso in camera
- d. fase di compressione
- e. fase in quota
- f. fase di decompressione
- g. uscita del paziente dalla camera
- h. trasporto dalla camera all' ICU
- i. rivalutazione del paziente dopo la terapia di HBO

In questo protocollo sono contemplati i seguenti incidenti:

- a. *qualche evento non previsto in una delle fasi descritte sopra
esempio: via di infusione disconnessa, circuito ventilatorio, etc.*
- b. *qualche situazione che prevede un intervento medico provocato dalla terapia HBO in una delle fasi descritte sopra
esempio: estubazione accidentale, fuoriuscita dalle vie venose, etc.*
- c. *qualche evento negativo clinico avvenuto durante l'HBO (non necessariamente collegato alla stessa terapia) in una delle fasi descritte sopra
esempio: convulsioni per iperossia, perdita di coscienza, edema polmonare, aritmia, etc.*

Materiali e metodi

- 4 settimane di osservazione
- 8 centri di terapia iperbarica europei
(Austria, Belgio, Repubblica Ceca, Danimarca, Finlandia, Germania, Italia and Polonia)
- Annotazioni degli incidenti occorsi in tutte le fasi delle sedute di HBO (incluso il trasporto alla e dalla camera)
- Ogni seduta è classificata come:
 - "trattamento di terapia intensiva" > **IC- HBO**
 - "trattamento non intensivo" > **non IC - HBO**

Risultati

- In questo periodo sono stati osservati 336 pazienti in 3,444 sedute di HBO
- Media di età 51,5 +/- 17,9 anni
- Maschi 62,5% / Femmine 37,5%
- Sedute:
 - **non IC - HBO** > 3,347 sedute (97,2%)
 - **IC - HBO** > 97 sedute (2,8%)
- Incidenti occorsi in 69 casi tra tutte le sedute osservate (2,0%)
 - **non IC - HBO** > 51 incidenti (1,5%)
 - **IC - HBO** > 18 incidenti (18,6%)

Fig. 1 Natura degli incidenti

IC - HBO (N=18)		Non IC-HBO (N=51) Non IC - HBO (N=51)
55,6% (10/18)	Problemi correlati ai Pazienti (p=0,008)	86,3% (44/51)
33,3% (6/18)	Problemi correlate ai dispositivi (p=0,004)	5,9% (3/51)
27,8% 5/18)	Conseguenze cliniche (p=0,18)	13,7% (7/51)
5,6% (1/18)	Interruzione del trattamento (p=0,76)	7,8% (4/51)

Fig 2 Elenco degli incidenti osservati

IC-HBO (N=18)		nonIC-HBO (N=51)
<ul style="list-style-type: none"> • Problemi causati dalla compensazione dell'orecchio medio (3x) • Episodi febbrili (3x) • Iperossia • Iperventilazione • Ipertensione • Enfisema sottocutaneo 	Problemi correlati ai Pazienti	<ul style="list-style-type: none"> • Problemi causati dalla compensazione dell'orecchio medio (32x) • Agitazione (4x) • Ipertensione (4x) • Vomito(2x) • Altro (2x)
<ul style="list-style-type: none"> • Circuito respiratorio difettoso (2x) • Circuito ventilatorio difettoso(2x) • Pompa infusione difettosa • Sistema di monitoraggio difettoso 	Problemi correlati ai dispositivi	<ul style="list-style-type: none"> • Problemi con il circuito respiratorio (2x)
<ul style="list-style-type: none"> • Introduzione di materiale proibito • Ventilazione dei pazienti non ottimale 	Problemi causati dalle procedure	<ul style="list-style-type: none"> • Introduzione di materiale proibito (4x) • Sovrapressurizzazione

Conclusioni

- ▶ Tra gli incidenti osservati nelle sedute di HBO, quelle con modalità (**IC-HBO**) sono risultate 10 volte superiori in confronto a quelle standard (**nonIC-HBO**).
- ▶ Questo aumento di incidenti occorsi in **IC-HBO** è stato causato dall'uso di dispositivi medici.
- ▶ Le conseguenze cliniche di questi incidenti sono state lievemente maggiori (senza tuttavia segnalare significative statistiche) in **IC-HBO**, ma il campione dei trattamenti interrotti è stato simile.

Contributi

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Publicato con l'autorizzazione del Dr J. Kot - Working group "HBO and Intensive Care".

COMPARAISON DU NOMBRE D'INCIDENTS ENTRE PATIENTS DE SOINS INTENSIFS ET NON SOINS INTENSIFS EN HYPERBARIE. UN MOIS D'OBSERVATION

J. Kot, M. Hajek, R. Houman, H. Klemen, A. Kemmer, H. Kirchner, P. Longobardi,

C. Mortensen, J. Perttila

COST B14 Action Working Group "HBO and Intensive Care"

Introduction

Le but de cette étude a été de déterminer le nombre d'incidents en milieu OHB entre patients de soins intensifs en comparaison aux traitements standard (non intensif).

Dans ce protocole, le terme soins intensif (IC) a été utilisé pour décrire les patients qui:

1. a une déficience d'un ou plusieurs organes,
2. nécessite l'aide d'un monitoring spécial (p.e. post opérés)

Ce protocole contient les étapes suivantes qui couvrent toute session OHB :

- a) Préparation du patient pour la session OHB
- b) Transport de l'unité de soins vers la chambre hyperbare
- c) Installation dans la chambre hyperbare
- d) Phase de compression
- e) Phase plateau
- f) Phase de décompression
- g) Sortie du patient de la chambre hyperbare

- h) Transport de la chambre hyperbare vers l'unité de soins
- i) Réévaluation du patient après l'OHB

Dans ce protocole, la définition d'un incident a été la suivante:

- Tous évènement non planifié à l'intérieur d'une phase de la liste ci avant (p.e. déconnection d'un pousse seringues, circuit du respirateur artificiel,...)
- Toute situation qui nécessite une intervention médicale induite par le traitement OHB dans une phase de la liste ci avant (p.e. extubation accidentelle,...)
- Toute modification clinique négative durant le traitement OHB (pas nécessairement induite par le traitement OHB) durant une phase de la liste ci-avant (p.e. convulsions d'oxygène, perte de conscience, œdème pulmonaire,...)

Materiel et méthode

4 semaines d'observation prospective

8 centres OHB européens (Austria, Belgium, Czech Republic, Denmark, Finland, Germany, Italy and Poland)

Notifications de tous les incidents se déroulant durant toutes les phases de sessions OHB.

- Chaque session OHB était classifié comme:
 - "session de soins intensifs" ▶ **IC-HBO**
 - "sessions de non intensif" ▶ **non IC-HBO**

Résultats

Durant cette période d'observation, 336 patients ont reçus 3.444 sessions d'OHB.

Age moyen 51.5±17.9 [SD] ans

Males 62.5% / Femelles 37.5%

Sessions:

nonIC-HBO ▶ 3,347 sessions (97.2%)

IC-HBO ▶ 97 (2.8%)

Des incidents ont été observés dans 69 sessions (2.0%)

- **nonIC-HBO** ▶ 51 incidents (1.5%)
- **IC-HBO** ▶ 18 incidents (18.6%)

Fig.1 Nature des incidents

IC-HBO (N=18)		Non IC-HBO (N=51)
55.6% (10/18)	Problèmes relatifs aux patients (p=0.008)	86.3% (44/51)
33.3% (6/18)	Problèmes relatifs aux appareils (p=0.004)	5.9% (3/51)
27.8% (5/18)	consequences Cliniques (p=0.18)	13.7% (7/51)
5.6% (1/18)	Interruption du traitement (p=0.76)	7.8% (4/51)

Fig 2 Revue des incidents

IC-HBO (N=18)		nonIC-HBO (N=51)
<ul style="list-style-type: none"> • Équilibre de l'oreille moyenne (3x) • Fièvre (3x) • Hyperoxia • Hyperventilation • Hypertension • Emphyseme Subcutane 	Problèmes relatifs aux patients	<ul style="list-style-type: none"> • Équilibre de l'oreille moyenne (32x) • Excitation (4x) • Hypertension (4x) • Vomissements (2x) • Autres (2x)
<ul style="list-style-type: none"> • Défaillance de la distribution du gaz respiratoire (2x) • Défaillance du respirateur artificiel (2x) • Défaillance du pousse seringue • Défaillance du monitoring 	Problèmes relatifs aux appareils	<ul style="list-style-type: none"> • Défaillance de la distribution du gaz respiratoire (2x)
<ul style="list-style-type: none"> • Introduction de matériel interdit • Ventilation du patient non-optimale 	Problèmes relatifs aux procédures	<ul style="list-style-type: none"> • Introduction de matériel interdit (4x) • surpression

Conclusions

- Les risques d'incidents Durant une sessions d'OHB sont 10 fois supérieurs pour une session de soins intensifs en comparaison avec une session standard.
- Cette augmentation des incidents est en relation avec l'utilisation pour les soins intensifs d'appareils médicaux
- Les conséquences cliniques de ces incidents observées en **IC-HBO** étaient un petit peu plus importantes fréquentes (mais sans signifiante statistique), mais le nombre de traitements interrompus étaient similaires.

Contribution

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Publish with the Authorisation of Dr J. Kot - Working group "HBO and Intensive Care".

EINMONATLICHER VERGLEICH DER ZWISCHENFÄLLE BEI INTENSIV UND NICHT-INTENSIV-PATIENTEN IN DER HBO

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COST B14 Action Working Group "HBO and Intensive Care"

Übersetzung Daniel Wintersdorff

Einleitung

Das Ziel dieser Beobachtungsstudie ist es heraus zu finden wie hoch die Anzahl der Zwischenfälle während HBO-Sitzungen unter Intensivbedingungen ist, im Vergleich mit Standart Sitzungen (nicht Intensiv-Patienten)

In dieser Studie werden Intensivpatienten (IC) folgendermaßen definiert:

1. einfach- oder Multi-Organsversagen
2. benötigt spezielles Monitoring oder Behandlung

Diese Arbeit berücksichtigt die folgenden Phasen einer HBO-Sitzung:

1. Patientenvorbereitung auf die HBO-Sitzung

2. Transport von der Intensivstation zur Druckkammer
3. Installation des Patienten in der Kammer
4. Kompressionsphase
5. Isopressionsphase
6. Dekompressionsphase
7. Patient aus der Kammer nehmen
8. Rücktransport aus die Intensivstation
9. Reevaluation des Patienten nach der HBO-Therapie

In dieser Studie bedeutet "Zwischenfall":

1. jedes ungeplante Ereignis während den oben beschriebenen Phasen
Beispiel: Diskonnektion einer Infusionleitung, Beatmungsgerät,...
2. jedes durch die HBO-Behandlung hervorgerufene Ereignis während er oben genannten Phasen welches ein ärztliche Eingreifen erfordert Situation die
Beispiel: unbeabsichtigte Extubation, herausziehen von Venenzugängen
3. Jede klinische Verschlechterung des Patientenzustandes, nicht zwingend durch die HBO-Behandlung hervorgerufen, während einer der oben genannten Phasen.
Beispiel: Hyperoxischer Krampfanfall, Lungenödem, Arrhythmien, ...

Methode

- 4 Wochen Beobachtung
- In 8 europäischen HBO-Zentren (Österreich, Belgien, Tschechien, Dänemark, Finnland, Deutschland, Italien, Polen)
- Notieren von Zwischenfällen während jeder Phase der HBO-Behandlung (beinhaltend den Transport zur und von der Kammer)
- Jede HBO-Sitzung wurde klassifiziert als
Intensivbehandlungs HBO-Sitzung -> IC-HBO
Nicht-Intensivbehandlungs HBO-Sitzung -> non IC-HBO

Resultate

- In der Beobachtungsperiode erhielten 336 Patienten 3.444 Behandlungen
- Durchschnittsalter: 51.5 +- 17.9 Jahre
- Männer 62.5%, Frauen 37,5%
- Sitzungen
 - nonIC-HBO -> 3.347 Sitzungen (97,2%)
 - IC-HBO -> 97 Sitzungen (2.8%)
- Zwischenfälle wurden bei 69 Sitzungen beobachtet (2.0%)
 - Non-IC-HBO -> 51 Zwischenfälle
 - IC-HBO -> 18 Zwischenfälle

Fig.1 Natur der Zwischenfälle

IC-HBO (N=18)		Non IC-HBO (N=51)
55.6% (10/18)	Patienten betreffende Zwischenfälle (p=0.008)	86.3% (44/51)
33.3% (6/18)	Geräte betreffende Zwischenfälle (p=0.004)	5.9% (3/51)
27.8% (5/18)	Klinische Konsequenzen (p=0.18)	13.7% (7/51)
5.6% (1/18)	Abbruch der Behandlung (p=0.76)	7.8% (4/51)

Fig 2 Zwischenfälle

IC-HBO (N=18)		nonIC-HBO (N=51)
<ul style="list-style-type: none"> • Mittelohr-Druckausgleichs Probleme (3x) • Fieber (3x) • Hyperoxie • Hyperventilation • Hypertonie • Subkutanes Emphysem 	Patienten betreffende Zwischenfälle	<ul style="list-style-type: none"> • Mittelohr-Druckausgleichs Probleme (32x) • Erregung (4x) • Hypertonie (4x) • Erbrechen (2x) • Andere Ursachen (2x)
<ul style="list-style-type: none"> • Ausfall der Atmungseinheit (2x) • Ausfall des Beatmungsgerätes (2x) • Ausfall der Infusionspumpe • Ausfall des Monitoringsystems 	Geräte betreffende Zwischenfälle	<ul style="list-style-type: none"> • Probleme mit der Atmungseinheit (2x)
<ul style="list-style-type: none"> • Mitnehmen von Verbotenem Material • Nicht optimale Beatmung des Patienten 	Ablauf bedingte Probleme	<ul style="list-style-type: none"> • Mitnehmen von Verbotenem Material (4x) • Zu hohe Druckerwartung

Zusammenfassung

- Die Anzahl der Zwischenfälle war unter Intensivbehandlungs (IC-HBO) Bedingungen 10 mal höher als unter normalen Therapiebedingungen (nonIC-HBO).
- Die Zunahme von Zwischenfällen unter Intensivbehandlungs Bedingungen ist durch den Gebrauch von medizinischen Geräten bedingt.
- Die klinischen Folgen dieser Zwischenfälle wurde öfters bei Therapien unter Intensivbehandlungs Bedingungen gesehen, jedoch war die Therapieabbruchrate gleich.

Zu dieser Arbeit beigetragen haben:

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Dr Jacek Kot

Publiziert mit freundlicher Genehmigung von Dr J. Kot - Working group "HBO and Intensive Care".

EXCHANGE PROGRAMME 2006

Report of a visit to the hyperbaric chamber Azienda Policlinico Umberto in Rome

By Shaida Salarbux

With thanks to Professor Paulo Pietropaoli, director of the anesthesiology department.

My observations are based on differences that exist between the hyperbaric facilities in Amsterdam and in Rome.

Observations were made on the following topics:

- The chamber
- The situation inside the chamber
- The surroundings of the chamber
- The control of the chamber
- Patient information
- The administration (medical charts etc.)
- The job description of the personnel
- The organization of the work

- The type of patients
- The location of the hyperbaric chamber in the hospital

The chamber

The hyperbaric chamber in Rome consists of 2 pressure vessels that are interconnected at the end by means of a lock. In addition, the 2 treatment areas have a small medical lock.

In chamber 2 the regular patients are treated and the complicated patients are treated in chamber 1. Chamber 1 and 2 are pressurized at the same time in case there is a patient for chamber 1.

There are 5 sessions per day; from 8 am till 6 pm. Chamber 1 has a capacity of 11 patients for therapy.

The situation inside the chamber

Only the complicated patients are tended to. The masks are easy to put on. Patients are wearing their own cloths during a treatment. Hoods are not used. The patients are treated at 2.4 ATA, without air breaks. The treatment lasts for 70 minutes. In the decompression phase of the treatment the patients take their mask off at 0.6 ATA to prevent expiration resistance. Patients have their own mask, but not their own hoses.

IV pumps are not used inside the chamber. Any necessary medication is given to the patient according to weight, length and age before the treatment. Only an IV with 0.9% NaCl is allowed inside the chamber.

When a patient has to be locked out during a treatment, a staff member is accompanying the patient. The personnel lock can be pressurized in 45 seconds. The patients are monitored with cameras. There are no blankets inside the chamber. There is a stretcher for patients who need to lay down.

The chamber is pressurized with compressed, filtered outside air. The oxygen is taken from the hospital system. The cleaning of the hyperbaric chamber is done by the staff themselves.

At regular intervals the patients are asked via microphone how they are doing. During the treatment, music is played through loudspeakers.

The surroundings of the chamber

Across the room from the hyperbaric chamber is the control console. This is where the video monitors are.

As in our chamber, there is a desk where the administration is done and where patients can go if they have questions.

An examination room is also present, although with minimum equipment. Wounds are not taken care of here. Documentation (pictures) and checkup of wounds are principally done in the hospital by the referring physician. The hyperbaric medicine department is seen as a treatment center to aid the referring specialty.

The waiting room for the patients is separate from the chamber room.

The control of the chamber

During a session there are always 4 people present. A nurse and 3 operators/technicians. They strive to have always 1 person at the console. Guarding the patients is done by 2 cameras with black and white video monitors. There is good audio contact with the patients.

The answering of medical questions is exclusively done by the nurse or physician.

In case of technical difficulties, a technician enters the chamber.

Medical problems are handled by the nurse and/or physician.

The control and safety devices are similar to our chamber in Amsterdam.

The administration (medical charts etc.)

Charts are kept current by the physician. The patient is presented with a list of contra indications and must read and sign off on this (with legal aspects in mind).

Also a day-to-day treatment documentation is performed. The medical charts are kept at the hyperbaric medicine department and are not integrated with the chart of the referring physician. The amount of sessions per month is 840, per year 8000. This data is not put in a database.

Patient information

There is a pamphlet that is simple, yet very clear for the patient. What I think is better than at our facility is that the patients are presented with a list of contra indications to prevent mishaps. Otherwise, the information presented to the patient is not different than at our facility.

The job description of the personnel

As already mentioned above there is always a nurse present. He or she works part of the day and is then relieved by a colleague.

At the hyperbaric medicine facility in Rome, technicians are very important because they do not use an outside company to perform maintenance or repairs. Everything is done, as with many chambers in the world, by their own technical staff.

The head of the facility is a physician, who resorts under the anesthesia department.

The organization of the work

The technicians maintain the chamber in all aspects, i.e. placing and removal of the masks, cleaning, adjusting of the breathing resistance etc. They also maintain instructions to the patients.

The technicians also work in shifts.

The nursing staff has the medical responsibility of the patient.

The type of patients

The type of patient treated at this facility largely corresponds with ours with only minor differences, depending on the local medical circumstances.

The location of the hyperbaric chamber in the hospital

The signs to the hyperbaric facility are bad. It is not clear where the facility is, which gave me the idea that hyperbaric medicine in Italy is looked upon the same way as in the Netherlands.

Conclusion

I can truly say that my horizon has been broadened by this exchange program. By observing colleagues at a different facility than my own raises questions and answers others which is good for a critical self analyses. For any hyperbaric staff in particular I can advice this program wholeheartedly. I am therefore grateful to EBAss for having given me this opportunity to be the first one to participate in the EBAss exchange program.

I would like to thank the EBAss chairman, Robert Houman and Valeria Campanaro for her unforgettable hospitality and of course the staff of the hyperbaric facility Azienda Policlinico Umberto in Rome. They are more than welcome at our facility.

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**EBAss have the pleasure to announce
the organisation of a meeting on 2 June 2007 in Brussels - Belgium**

General information

The ECHM consensus conference of 2004 made, as a type 1 recommendation, the necessity to develop, in collaboration with the ECHM, a programme for the education and training of Nurses, Technicians and health care professionals as hyperbaric staff. This task was undertaken by EBAss.

A special committee started this task and proposed on the EUBS 2005 meeting a first general structure of work.

During the meeting on 2 June (2 - 6 PM), the Education committee conducted by Mr McKenna will continue and terminate the discussion in order to present a report to the ECHM and the EUBS in 2007.

This workshop will be presided by Professor D. Mathieu president of the ECHM.

Registration - Organisation

ONLY by the local organiser:

Rob HOUMAN

Email: Robhouman@yahoo.fr

Used languages: English

Satellite meeting in EUBS 2007 in Sharm el Sheikh (Egypt)

During the next EUBS meeting (8 - 15 September), the safety committee organises a **satellite meeting** dedicated to Safety on Hyperbaric Environment where we will review a part of the Code of Good Practice of HBO concerning the identification of risks and propose a structure of the management of quality inside HBO facilities and a specific method of risk analysis. The responsible is Mr. Neiryneck, president of EBAss Safety Committee (Yoerik.Neiryneck@mil.be).

Also, during the meeting, thanks to Dr Taher (who organized this edition), a specific topic will be dedicated for EBAss.

For information, please visit: www.eubs2007.org

Important information for the members,

In order to organize the accommodations, Judith Geels will collect the names of interested parties and check local hotels availability. You are concerned? Please contact Judith on j.r.geels@amc.uva.nl

Instructions for author's

Acceptance of a manuscript is based on originality and quality of the work as well as the clarity of presentation. All manuscripts will be evaluated for significance, soundness, and conformance to journal format by two or more members of the Editorial Board or guest referees.

After manuscripts have been accepted, authors are asked to submit the final version of the paper electronically or on computer diskette.

Preparation of Manuscripts

Title: A cover sheet which gives the title of the paper, the names and affiliations of the authors; a short title (running head); and the name, address, telephone and fax numbers, and e-mail address (if any) of the corresponding author must accompany the manuscript.

Text: Except in unusual situations, the manuscript should be divided into Introduction, Methods, Results, and Discussion. The overriding principles are that the composition is correct and unambiguous, clear, and concise. The active voice is usually preferable to the passive voice. Parallel construction of groups of like items or concepts aids in comprehension. Figures should be uncomplicated and legible. Abbreviations and acronyms should not be overused, should be clearly defined at their first appearance in the abstract and in the text, and should be avoided in the title. Specific items of information should appear only once in the manuscript; there should not be verbatim repetition in the text of material that appears in a table or figure, duplication of data in graphs and tables, or repetition in Discussion of information that appears in Results.

All accepted manuscripts are subject to final editing in the Editorial Office to improve readability and to conserve space.

References: Authors are responsible for verifying references against the original documents. References must be numbered consecutively in the order in which they first appear in the text, and identified in the text by Arabic numerals in parentheses.

Example:

Mannens, C., Houman R. - A Hyperbaric Pan-European Technician, Operator and Nurses Association: a necessity ?
Proceedings of the 28th Annual Scientific Meeting of the European Underwater and Baromedical Society. Germonpre P.,
Balestra C., Eds. Bruges, Belgium. 2002 p 115

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