PNEUMATOSIS INTESTINALIS

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Background

The incidence of pneumatosis intestinalis (PI) is unknown but is increasing because of the more frequent use and improvement in imaging modalities. PI can be seen at any age but usually affects patients > 50 years old. 15% of cases are idiopathic, 85% of cases secondary to a wide variety of gastrointestinal and non-gastrointestinal diseases. PI is usually asymptomatic in most cases but may clinically present in a benign form or less frequently in fulminant forms. Symptoms include abdominal distension, abdominal pain, diarrhea, constipation and flatulence. Standard treatment includes antibiotics, elemental diets and surgery for severe forms.

Rationale for HBO use

PI is characterized by the presence of gas (gas cysts) in the wall of the small intestine and colon. HBO will increase the oxygen window, allowing the emptying of native gas (mainly nitrogen). Using Heliox could give better results than oxygen, because of counterperfusion phenomens and pressure effect on the cysts volume with compression at 4 ATA (Comex 30 table).

Evidence – Based review of HBO use

There are no controlled studies evaluating HBOT in PI. Several case reports show positive results. The level of evidence is low grade D. The literature lists 37 cases, with a resolution rate or improvement of 89%, without side effects. 23 additional cases were the subject of a thesis (DIU de médecine subaquatique et hyperbare P Terdjman, Lyon 2006) with a success rate of 78% (better results with Heliox).
1 additional successfull case is reported by the Hyperbaric Center of Ravenna (Dr P Longobardi, personnal communication).

Patients sélection for HBO

Symptomatic patients without signs of intestinal necrosis or infection.

Current protocol

The protocols in the literature vary widely in duration of HBO sessions, absolute pressure and total duration of treatment. In addition the use of Heliox seems better than oxygen.
We recommend performing an abdominal CT before the start of HBOT, which will begin with a Comex 30 table (Heliox,) followed by a table at 2.5 ATA (90 min) 1 x / day. The total duration of HBO may vary between 7-14 days.
An abdominal CT control will be performed at the end of HBOT.

Cost impact

There are no data on the cost/benefit ration of HBO in the management of PI.

References

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Costa M., Morgado C., Andrade D., Guerreiro F., Coimbra J.

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Conclusions : Recommendation

We strongly recommend the use of HBOT in symptomatic patients (Level 1), despite the level of evidence (Grade C), because of the very positive results of case series and the absence of side effects.

Table for literature analysis report
Pneumatosis intestinalis

Study (authors, year)	Type	Nb patients	Aim(s) / Evaluation criteria	Inclusion / Exclusion criteria	HBO protocol (pressure, time, nb of session)	Results	Conclusion / comment
Frossard JL 2011	Case report	1 patient	Clinical and radiological improvement	Symptomatic	Comex 30 then 2.5ATA /90 min daily for 14 days	Healed	Favor HBO efficacy Low level of evidence
Feuerstein JD 2014	Litterature review of case reports	35 patients	Clinical improvement	Symptomatic	Varied	88% healed or improved	Favor HBO efficacy Low level of evidence
Costa M 2015	Case report	1 patient	Clinical and endoscopic improvement	Symptomatic	2.5 ATA/90 min 80 sessions 5/ week	Improved	Favor HBO efficacy Low level of evidence