

Utility of CT and HBO therapy following high concentration peroxide ingestions: 2001-2011

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Background:

High concentration peroxide ingestions have been associated with embolic events.

The utility of CT and hyperbaric oxygen (HBO) therapy in these cases has not been studied

Objectives:

To examine the use of CT, early HBO, and late HBO in symptomatic peroxide ingestions with a concentration >10%.

Methods:

NPDS was queried from 2001-2011 for ingestions coded as a peroxide product: with concentration >10%, HBO as a treatment, or an outcome code of moderate/major effects or death.

Poison control center charts were obtained from all 57 open and 3/6 closed US centers.

The primary outcome of embolic event was defined as seizure, altered mental status, respiratory distress, hypoxia, hemodynamic instability, pathologic EKG findings, radiographic evidence of emboli or infarct, focal neurologic deficit, or elevated troponin.

Results:

After elimination of low concentration product ingestions, 294 cases were available. 14% (CI 10-18%) of included calls demonstrated evidence of embolic events. 7% (CI 4-10%) of included calls died or had residual disability at the time the chart was closed, with 5 deaths.

13/19 (68%) with an embolic event and 6/10 (60%) with a focal neurologic deficit had an initial normal head CT. 3/9 (33%) with a CT chest were positive for pneumomediastinum without other gas emboli identified.

6/33 (18.2%) with an initial CT abdominal-pelvic demonstrating extraluminal (mesenteric or intrahepatic) gas went on to experience an embolic event compared to 35/261 (13.4%) with a negative or missing CT ($p=0.47$).

4/12 with a negative CT abdominal-pelvic had embolic sx's (33.3%).

31/249 without a CT abdominal-pelvic had embolic sx's (12.4%).

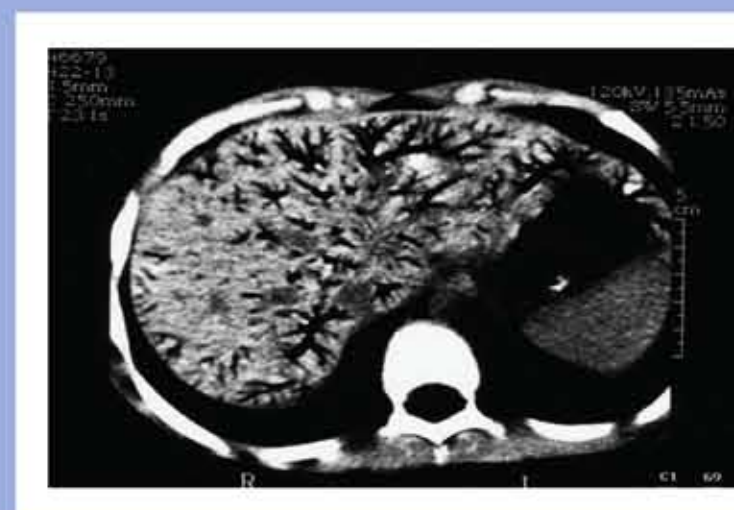
1/17 (5.9%) patients who had HBO prior to embolic symptoms later developed embolic symptoms compared to 34/271 (12.6%) of patients who did not undergo HBO ($p=0.70$).

In patients with a CT abdominal-pelvic with extraluminal gas, 1/17 (5.9%) who underwent HBO prior to embolic symptoms developed embolic symptoms compared to 3/14 (21.4%) patients who did not get HBO ($p=0.30$).

The 1 patient who developed symptoms after initiation of HBO had a seizure, but recovered completely.

3/6 (50.0%) who underwent HBO after developing embolic symptoms died or had permanent disability compared to 17/33 (51.5%) of patients who did not get HBO ($p=1.00$).

HBO was initiated in patients who made a full recovery at 4, 5.5, and 14 hours after ingestion compared to 14, 15, and 36 hours in those who did not recover.



ABD CT: large bubble burden



ABD CT: small bubble burden



Hyperbaric oxygen therapy

Conclusion:

A CT head that is initially normal does not rule out a CNS insult. CT chest may be useful to identify pneumomediastinum.

A CT abdominal-pelvic without extraluminal air is not a good screening test for the development of embolism.

The strategy of early HBO in those with a CT abdominal-pelvic that reveals extraluminal air demonstrated a lower incidence of progression to embolism. However, this was not statistically significant.

In symptomatic patients with evidence of embolism who underwent HBO, only those treated early in their course recovered fully.

