

WORLD CONGRESS ON DROWNING

Szpilman D, Elmann J & Cruz-Filho FES; Dry-drowning - Fact or Myth? World Congress on Drowning, Netherlands 2002, Poster presentation, Book of Abstract pg 176, 5.2.

Title: Dry-drowning - Fact or Myth?

Authors: David Szpilman, MD, Joseph Elmann, MD, Fernando E. S. Cruz Filho, MD

Organization: Miguel Couto Municipal Hospital and Lourenço Jorge Municipal Hospital - Emergency Departments and Intensive Care Units. <szpilman@ccard.com.br>

ABSTRACT

Purpose: It has been reported that 10-15% of drowning victims do not aspirate water. Since then, many researchers have found similar results analyzing autopsies. Recently, this "scientific fact" has been questioned and attributed to a possible in-water sudden-death. Our purpose is to investigate whether "dry-drowning" is real or a myth.

Method: We analyzed all hospital drowning from 1992-to-2000 which was attended by the authors. The inclusion criteria were: data consisting of chest X-ray within the 12h of the incident and not having previous or associated pulmonary disease. All cases were classified based on grade of severity of drowning (Szpilman D.Chest,1997;112(3):660-5). We excluded cases with insignificant-water-quantity aspiration (grade1=pulmonary auscultation with coughing and no death. Two different, case-blinded radiologists analyzed the pulmonary X-ray. They filled out the form as follows: Normal (N) or Abnormal (A). If abnormal, which pattern is predominant: Interstitial (I), Alveolar (A), Bronchi-alveolar (B), Mixed(M), or Others(O); how broadly are the quadrants 1-to-4 affected; and if water has any predilection for lung-side. We also evaluated, sex, age, type of water and the first mean oxygen arterial pressure/inspire oxygen fraction (PFm).

Results: There were 69 cases selected. Average age was 20.6(SD+/-14), 81% were males, and 78% were salt water. The mortality rate was 17%. Fifty seven cases (83%) were released From hospital (89%-No sequels, 5.3%-Severe, and 5.3%-persistent vegetative state). Two grade1 cases (PFm=360) with normal X-rays were excluded (no deaths). From 67 cases, chest X-ray was normal in a one-year-old boy (1.5%), grade 6, pool submerged, and successfully resuscitated in the hospital (PF=545). Sixty six were abnormal (98.5%) with PFm of 238(+/-99). By quantity, the abnormality most frequent was 4 quadrants affected (36%) followed by 2(29%) and then 3(17%). The predominantly abnormal lung pattern was, A(37.9%), followed by M(27.3%) and then B(24.2%). Considering the preference side of aspiration, the right side was more affected (71%) than the left(13%)(RR=5.44(2.91-10.20)).

Conclusions: Different From previous autopsy reported studies, only 1.5% (1) of living human researches could be considered as "dry-drowning" although We are not able to exclude small aspiration in this case. The lack of a high sensitivity/specificity method for "post-mortem" drowning diagnosis was the reason for this forensic error in the past. Additionally If there is no signs of water in the lungs, another diagnostic should be suspected.

Topic codes: 501, 507