PRISE EN CHARGE PRE-HOSPITALIERE D'UN ARRET CARDIAQUE

DESIU URG MAR – MARSEILLE – 2023

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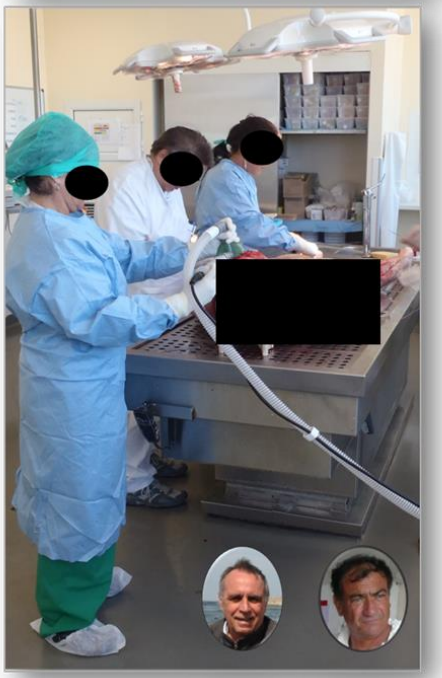
Société Nationale de Sauvetage en Mer - SNSM

URGENTISTE

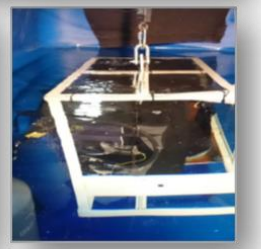
MEDECIN LEGISTE



EXPERT HYPERBARE

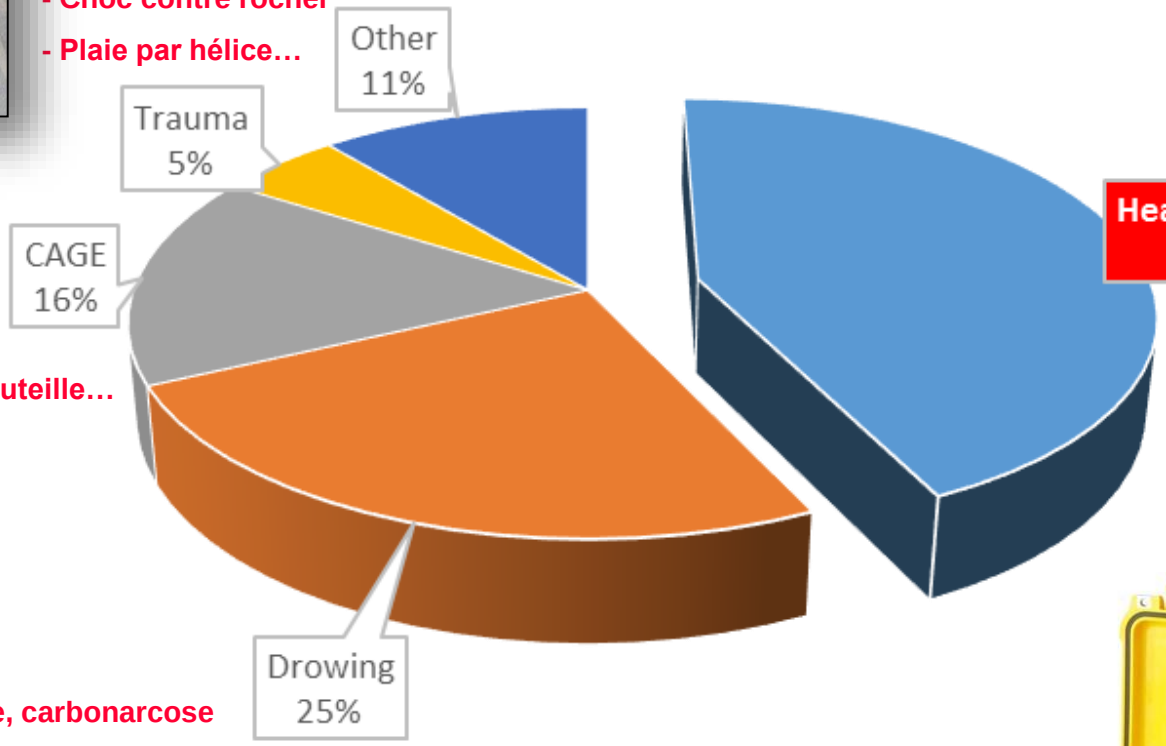
RADIOLOGUE

EXPERT TECHNIQUE



ETIOLOGIE

- Choc contre rocher
- Plaie par hélice…



- RSE +++
- Paniques
- Défaut ouverture bouteille…

vs 5 à 10%

Effort intense +++

(courant, palmage, capelet…)

+

Pathologie CV

- narcose, carbonarcose
- pb planification, panne d'air
- pb vêtement sec
- pb de direct system
- erreur de gaz
- pb orientation en cavité
- intox OH…

n = 86

Etude préliminaire sur les décès en plongée de 2007 à 2017 – Coulange et al.


Profondeur [m]
Température [°C]
Durée [min]
0
5
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35
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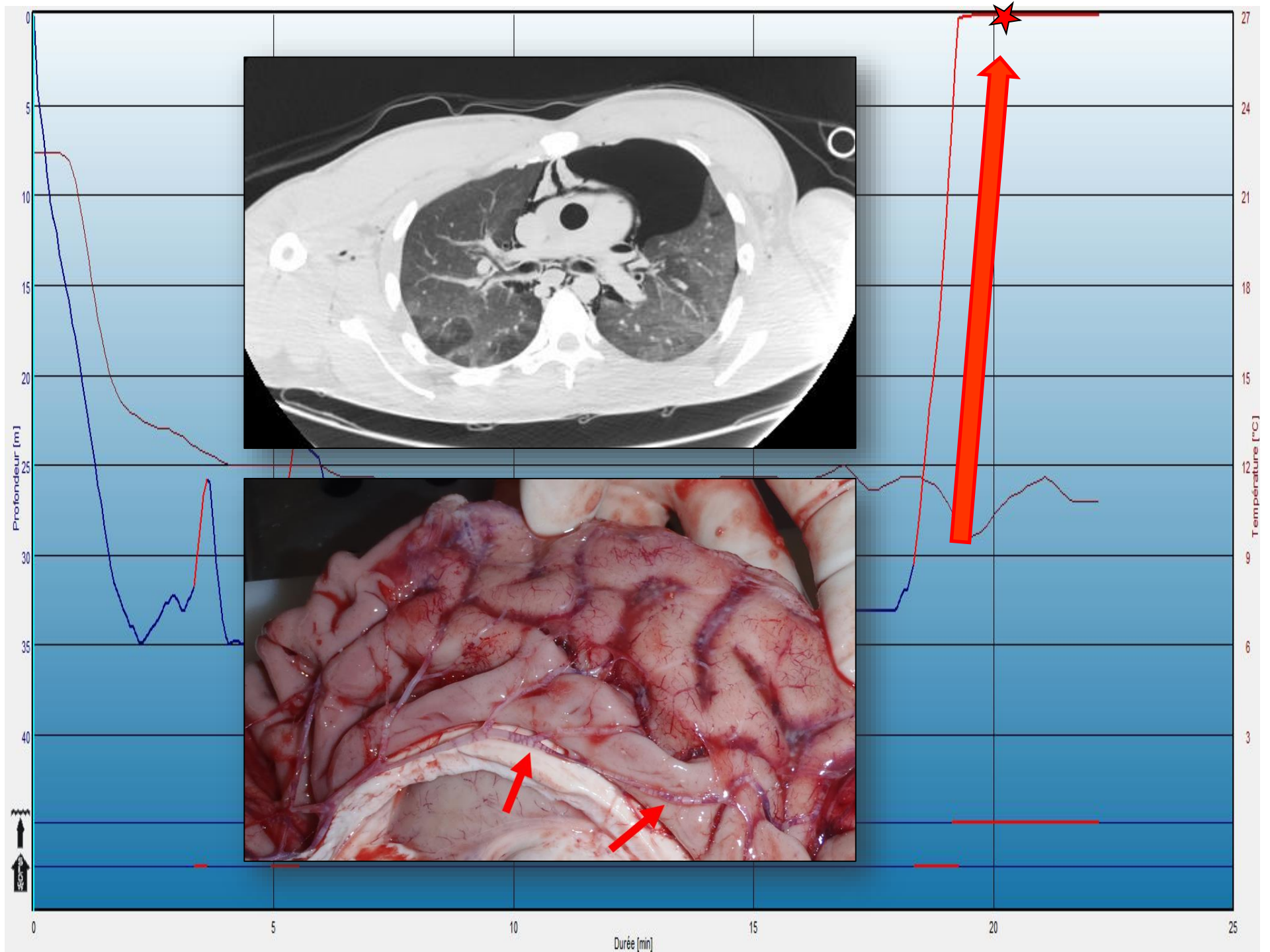
Profondeur [m]
0
5
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40
Température [°C]
27
24
21
18
15
12
9
6
3
0
5
10
15
20
25
Durée [min]

AU TOTAL

Un plongeur en arrêt est un **accident cardiaque**,
± **noyé** avec un **pneumothorax** et un **dégazage massif**

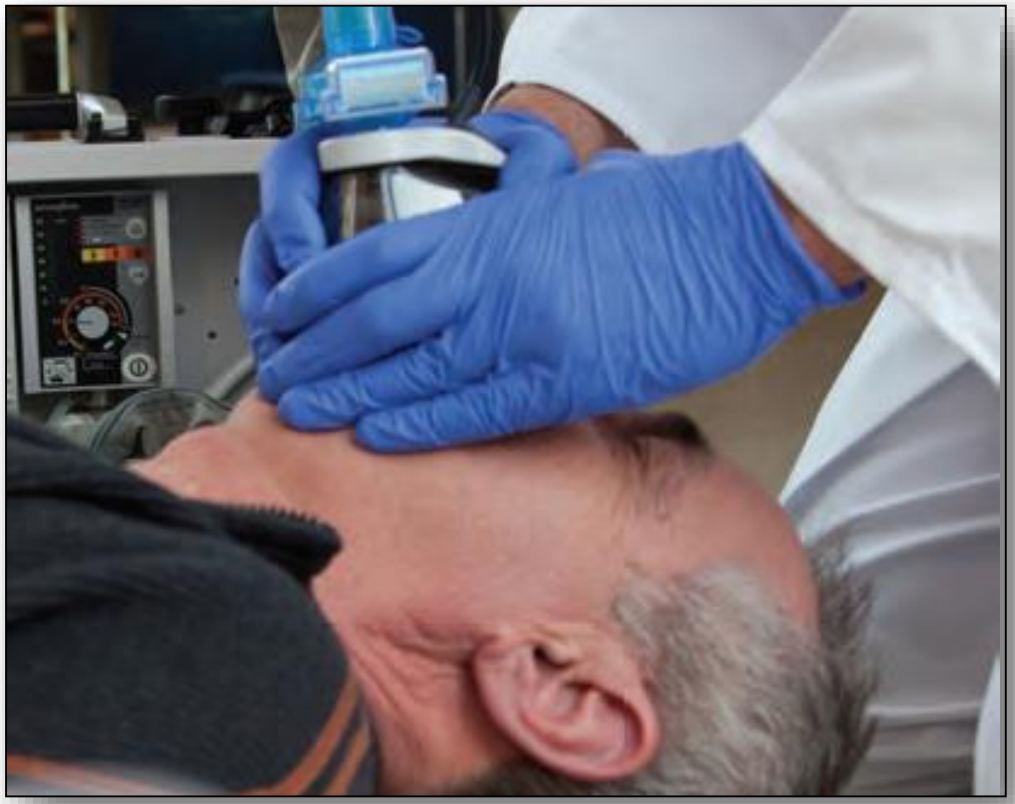
5 INSUFFLATIONS

COMPRESSIONS + INSUFFLATIONS

CHOC ELECTRIQUE PRECOCE

MEDICALISATION

PRIVILEGIER LE VECTEUR NAUTIQUE ?



EXTRACTION DE SAUVETAGE

EXTRACTION DE SAUVETAGE

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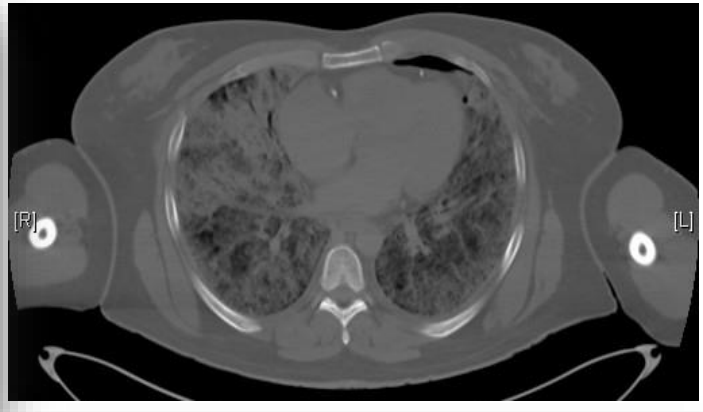
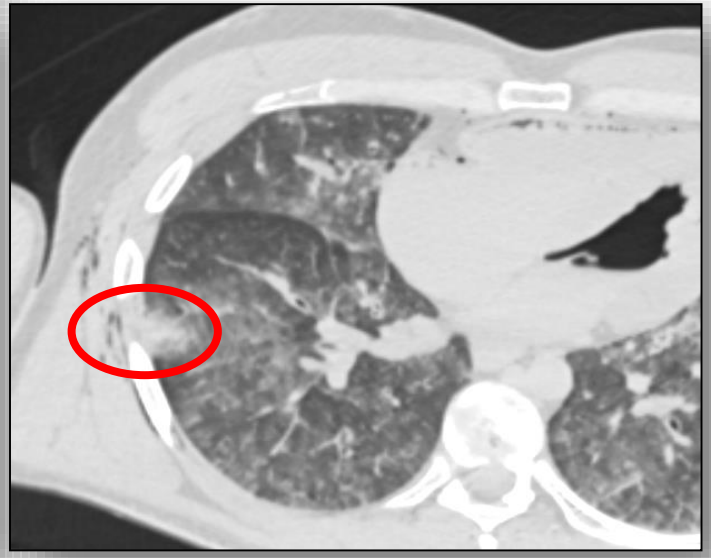




EXSUFFLATION A L'AVEUGLE ???

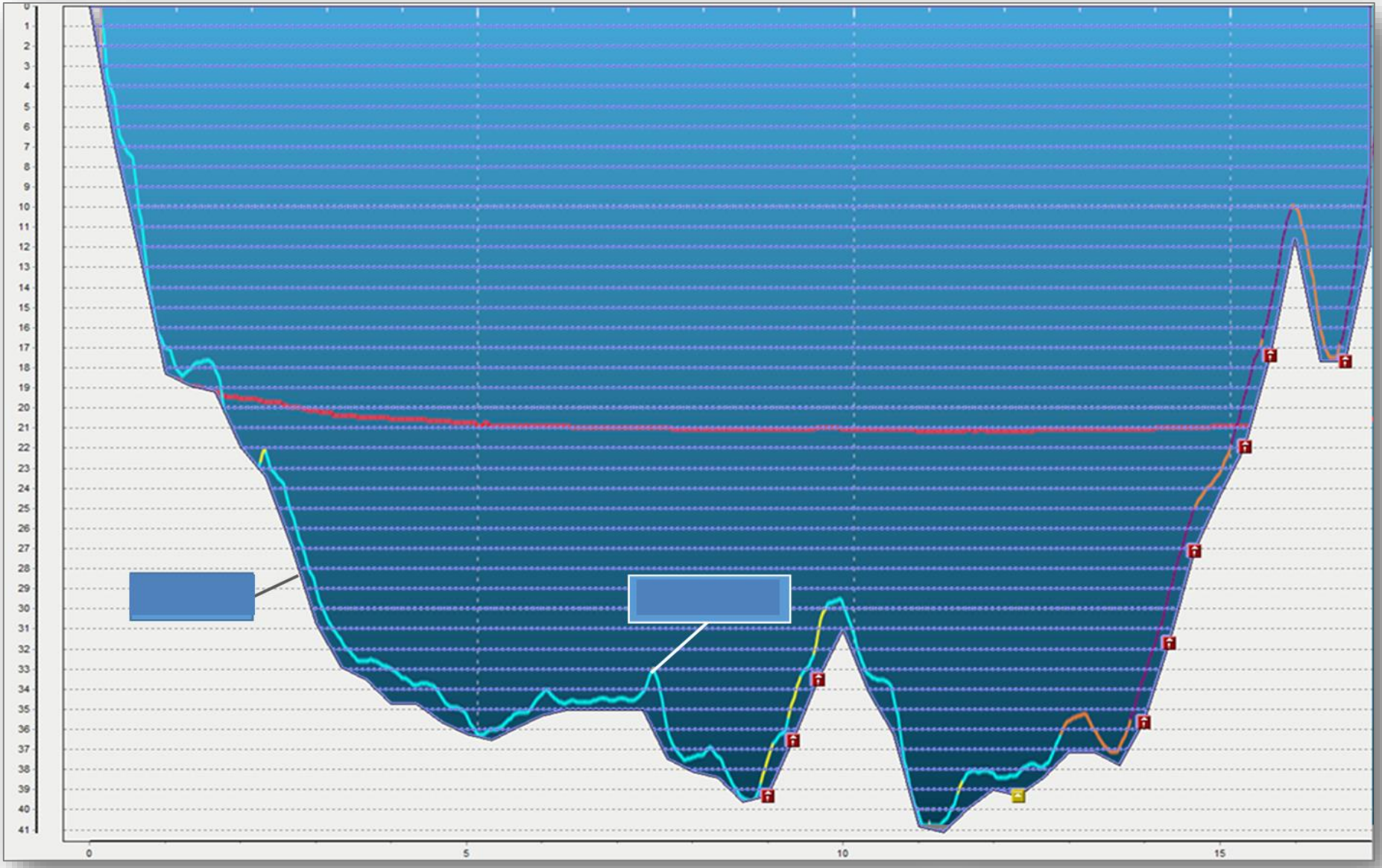
Délai d'intervention

- Entourage : **1 min** [0 à 11 min]
- 1ers secours : **25 min** [0 à 74 min]
- SMUR : **37 min** [10 à 65 min] - **Hélico** (51%), Nautique (6%), NR (43%)

OU LA JONCTION A TERRE…

RECOMPRESSION EN ACR ???

MAIS SURTOUT NPO L'ENTOURAGE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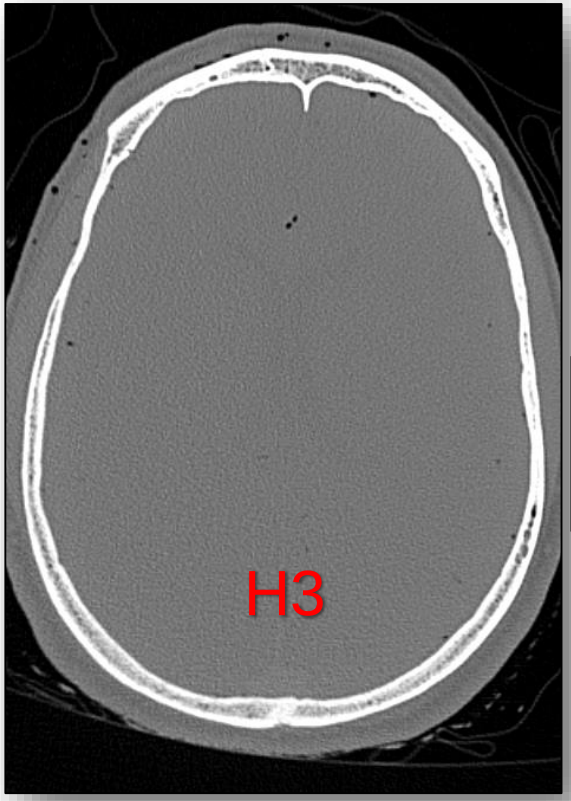
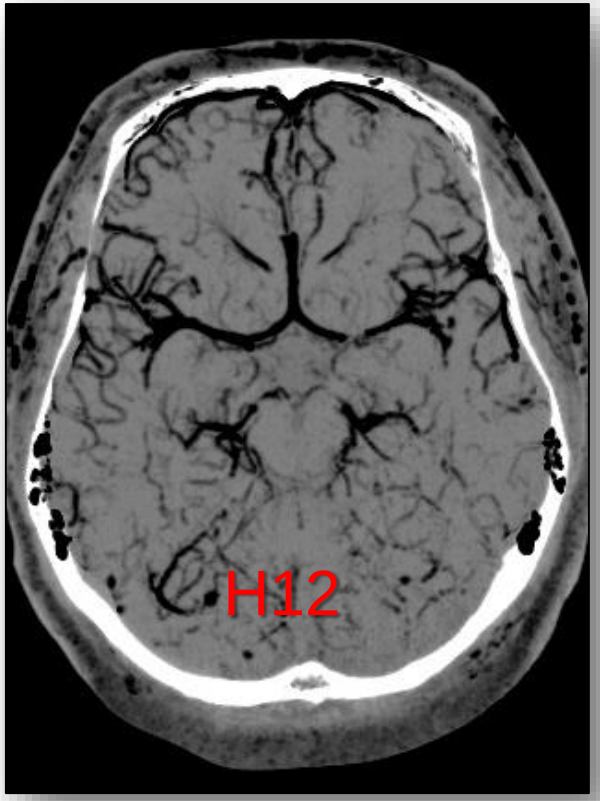
CRIME SCENE
CRIME SCENE
CRIME SCENE
CRIME SCENE
CRIME SCENE

URGENCE RADIOLOGIQUE …





Postmortem CT Appearance of Gas Collections in Fatal Diving Accidents

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Keywords: decompression illness, embolism, fatal diving accident, gas, postmortem CT, virtopsy

DOI:10.2214/AJR.13.12063

Received October 7, 2013; accepted after revision January 17, 2014.

Presented at the 2013 Congress of the International Society of Forensic Radiology and Imaging, Zurich, Switzerland.

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AJR 2014; 203:468–475

0361–803X/14/2033–468

OBJECTIVE. The purpose of our study was to define the postmortem CT semiology of gas collections linked to putrefaction, postmortem "off-gassing," and decompression illness after fatal diving accidents and to establish postmortem CT diagnostic criteria to distinguish the different causes of death in diving.

SUBJECTS AND METHODS. A 4-year prospective study was conducted including cases of death during diving. A hyperbaric physician analyzed the circumstances of death and the dive profile, and an autopsy was performed. Subjects were divided into three groups according to the analysis from their dive profile: decompression illness, death after decompression dive without decompression illness, and death after nondecompression dive without decompression illness. Full-body postmortem CT was performed before autopsy.

RESULTS. The presence of intraarterial gas associated with death by decompression illness had a negative predictive value (NPV) of 100%, but the positive predictive value (PPV) was only 54% because of postmortem off-gassing. The PPV reached 70% when considering pneumatization of the supraaortic trunks. Pneumothorax, subcutaneous emphysema, and intraarterial gas, all of which are classic criteria for decompression illness diagnosis, are not specific for decompression illness.

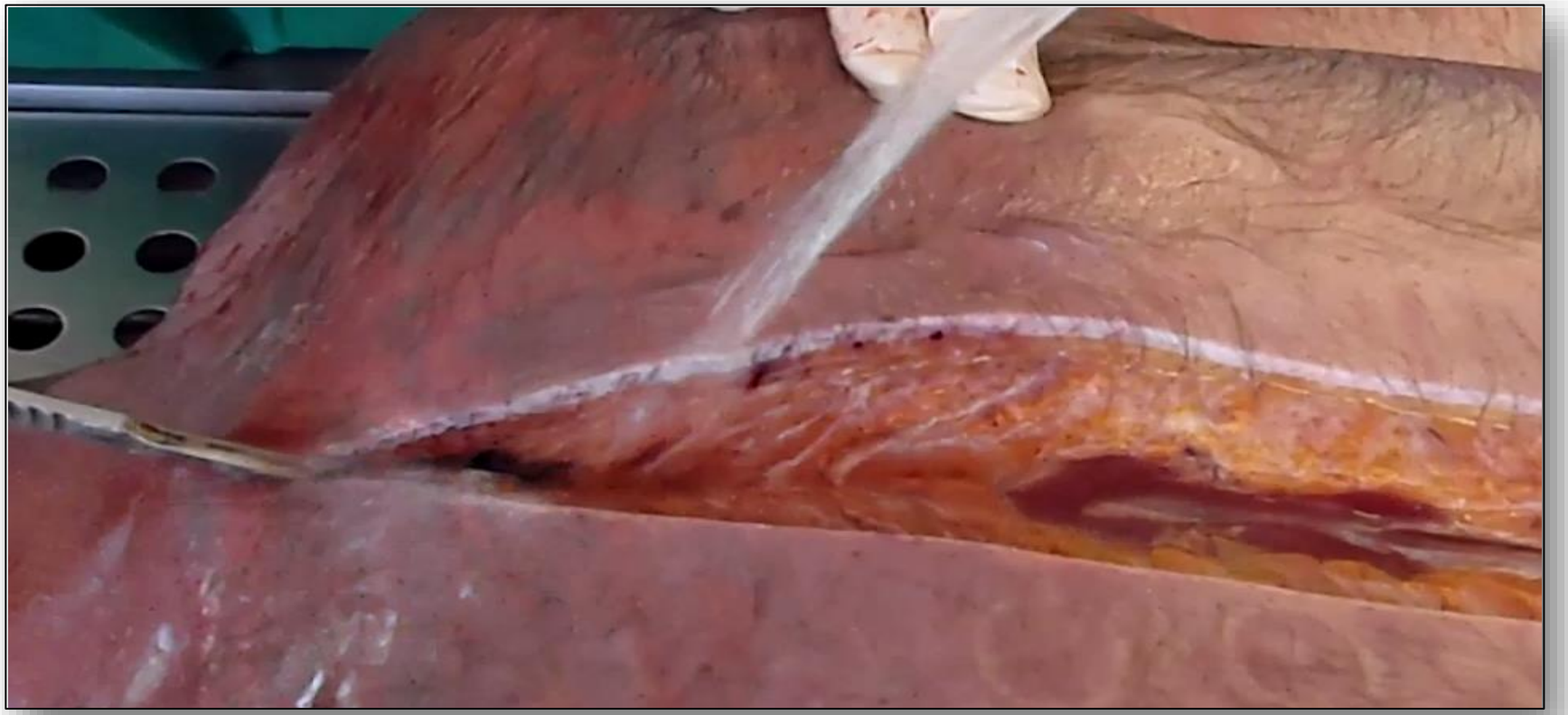
CONCLUSION. This study is the first to show that pneumothorax, subcutaneous emphysema, and intraarterial gas, all of which are classic criteria for decompression illness diagnosis, are not specific for decompression illness. Complete pneumatization of supraaortic trunks is the best postmortem CT criteria to detect a fatal decompression illness when CT is performed within 24 hours after death.

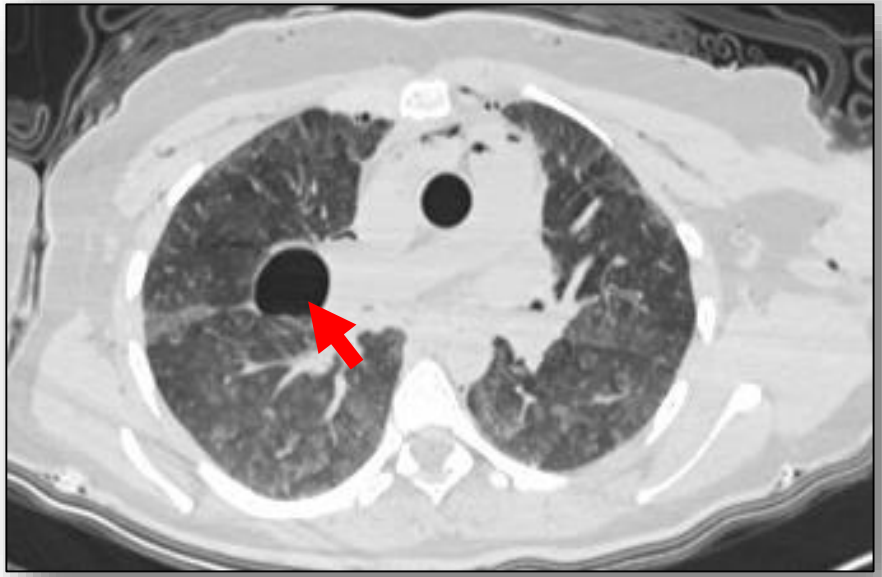
Cross-sectional imaging has experienced an increasingly important role in legal medicine over the past 10 years [1, 2]. In the case of diving accidents, postmortem CT [3] has facilitated the visualization of intravascular gas collections, which are difficult to detect in autopsies [4]. The most frequent cause of death in diving accidents is cardiovascular disease. Cold water leads to a redistribution of blood volume, with an increase in cardiac work and sometimes cardiac decompensation [5, 6]. Drowning is also a frequent cause of diving fatalities but is often secondary to technical incidents [7] or diving accidents. The third cause is decompression illness. Decompression illness includes decompression sickness and arterial gas embolism secondary to pulmonary barotrauma [8]. Decompression sickness is caused by bubble formation (off-gassing) from dissolved inert gas. The solubility of the inert gas in the blood decreases during ascent [9–11]. When recommended decompression procedures are not performed, off-gassing can be violent and can cause bubbles to circulate in the body [9–13].

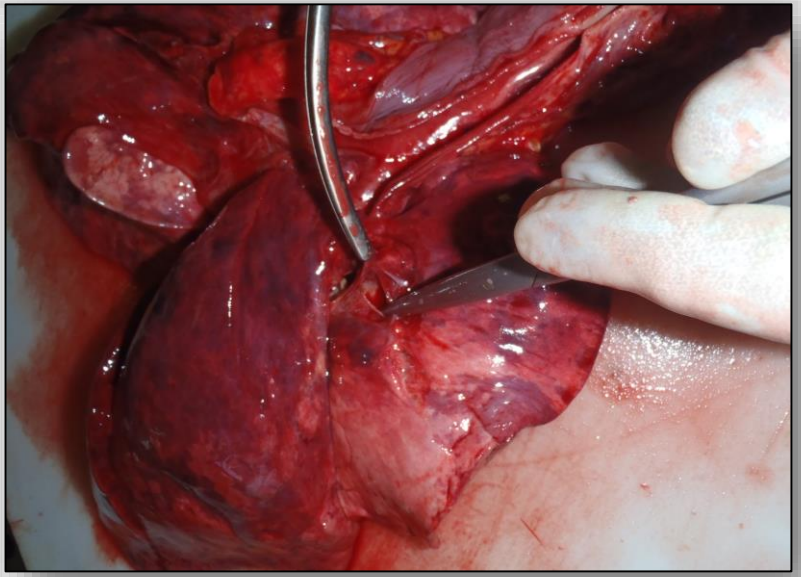
Gas embolisms can also affect the arterial circulation (paradoxical embolism) [14–16] by means of a patent foramen ovale [8, 17, 18], by a right-to-left intrapulmonary shunt [14, 19], or by breaking through the pulmonary capillary filter [20, 21]. Pulmonary barotrauma is linked to an increase in gas volume during ascent (Boyle law). Pulmonary barotrauma can lead to a pneumothorax, pneumomediastinum, subcutaneous emphysema, or cerebral arterial gas embolism (CAGE) [13, 22, 23].

Autopsies and imaging strive to detect the presence of intravascular gas in victims of diving accidents [23–27]. These postmortem gas collections, whether intra- or extravascular, are characterized by their topography,

DELAI < 4 H !!!







EN CAS DE RECUPERATION

TARDIVE

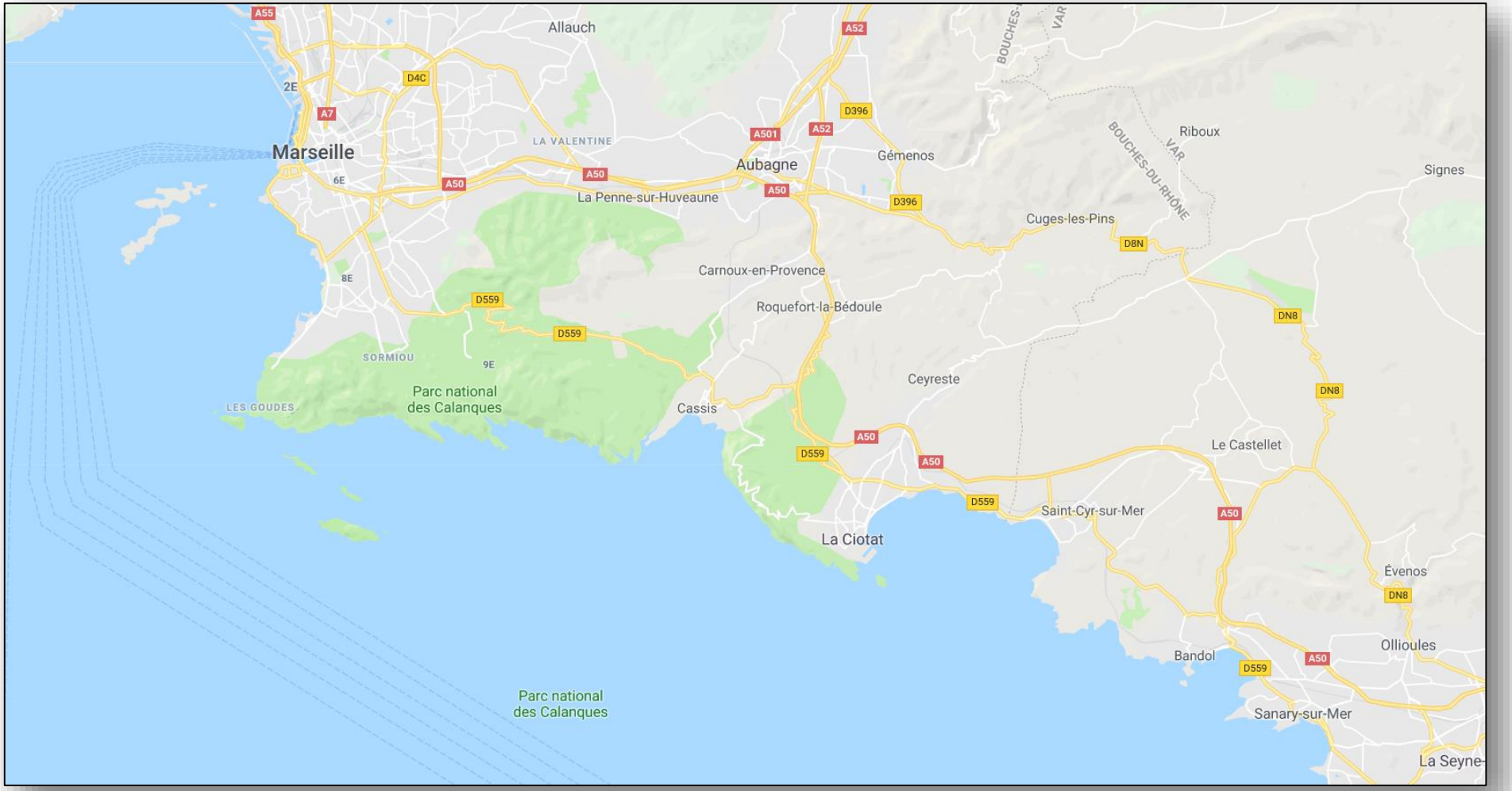
NOTION DE PROMPT SECOURS < 1 H

- L'ACR en plongée est un **accident cardiaque**, potentiellement **noyé**, avec un **pneumothorax** et un **dégazage massif**

- Débuter par **5 insufflations** (OPI et Noyade) puis **RCP** (table automassante)
- Faire un **choc électrique précoce** avec les spécificités du milieu humide
- Discuter :
  - ✓ une **exsufflation** droite voire bilatérale au moindre doute
  - ✓ une **extraction rapide** du milieu maritime
  - ✓ une **recompression** malgré l'arrêt

- NPO le **binôme** (recompression préventive ?)

- En cas de décès, **obstacle médico-légal** + **virtopsie** en moins de 4 h
- En cas de récupération tardive : notion de **prompt secours jusqu'à 1 h** (>6°C)
- **Sd post traumatique**…


Allauch
Marseille
LA VALENTINE
Aubagne
Gémenos
La Penne-sur-Huveaune
Riboux
Signes
Cuges-les-Pins
Carnoux-en-Provence
Roquefort-la-Bédoule
SORMIOU
LES GOUDES
Parc national
des Calanques
Cassis
Ceyreste
Le Castellet
Saint-Cyr-sur-Mer
La Ciotat
Évenos
Ollioules
Bandol
Sanary-sur-Mer
La Seyne
Parc national
des Calanques
A55
A7
A50
A501
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D4C
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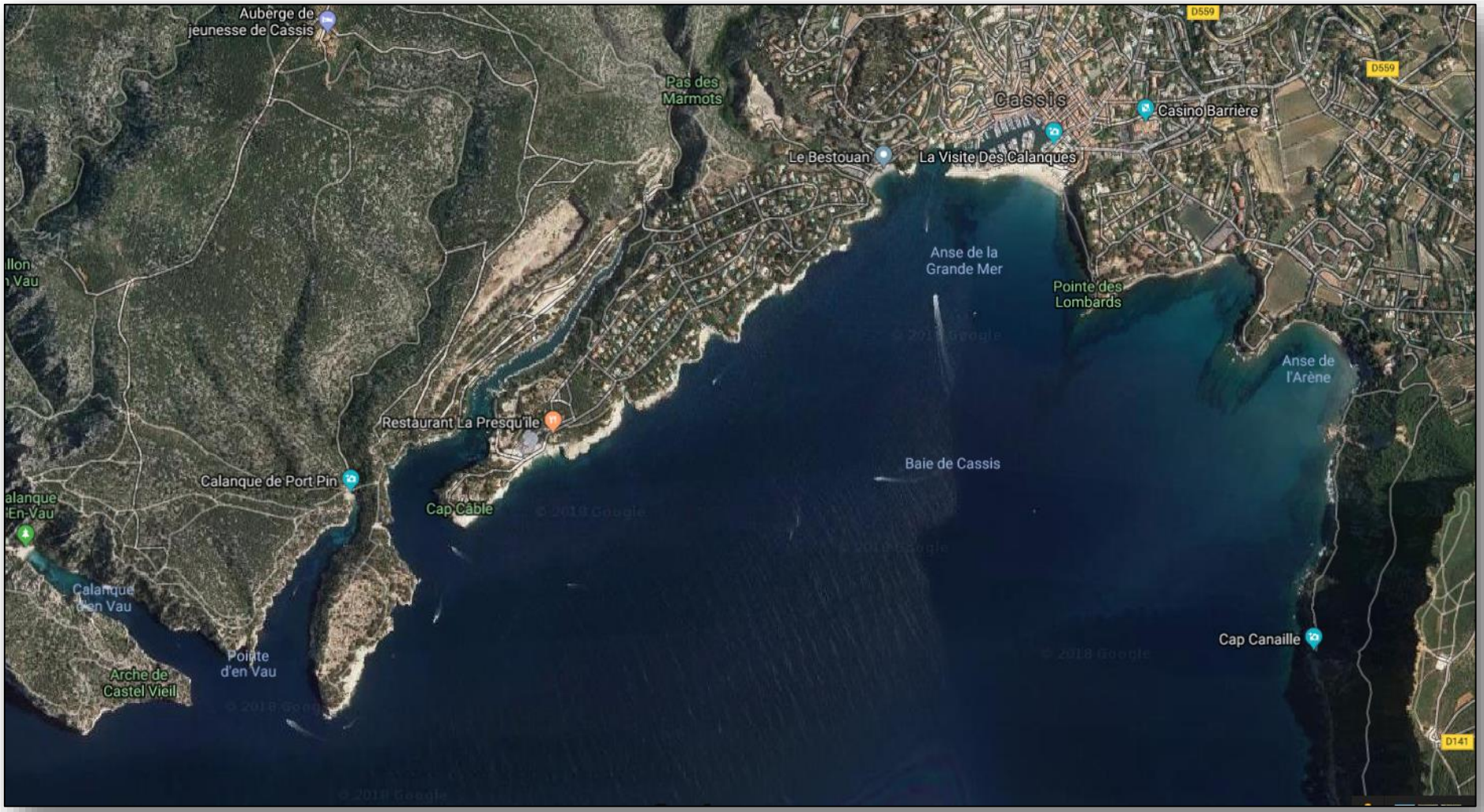
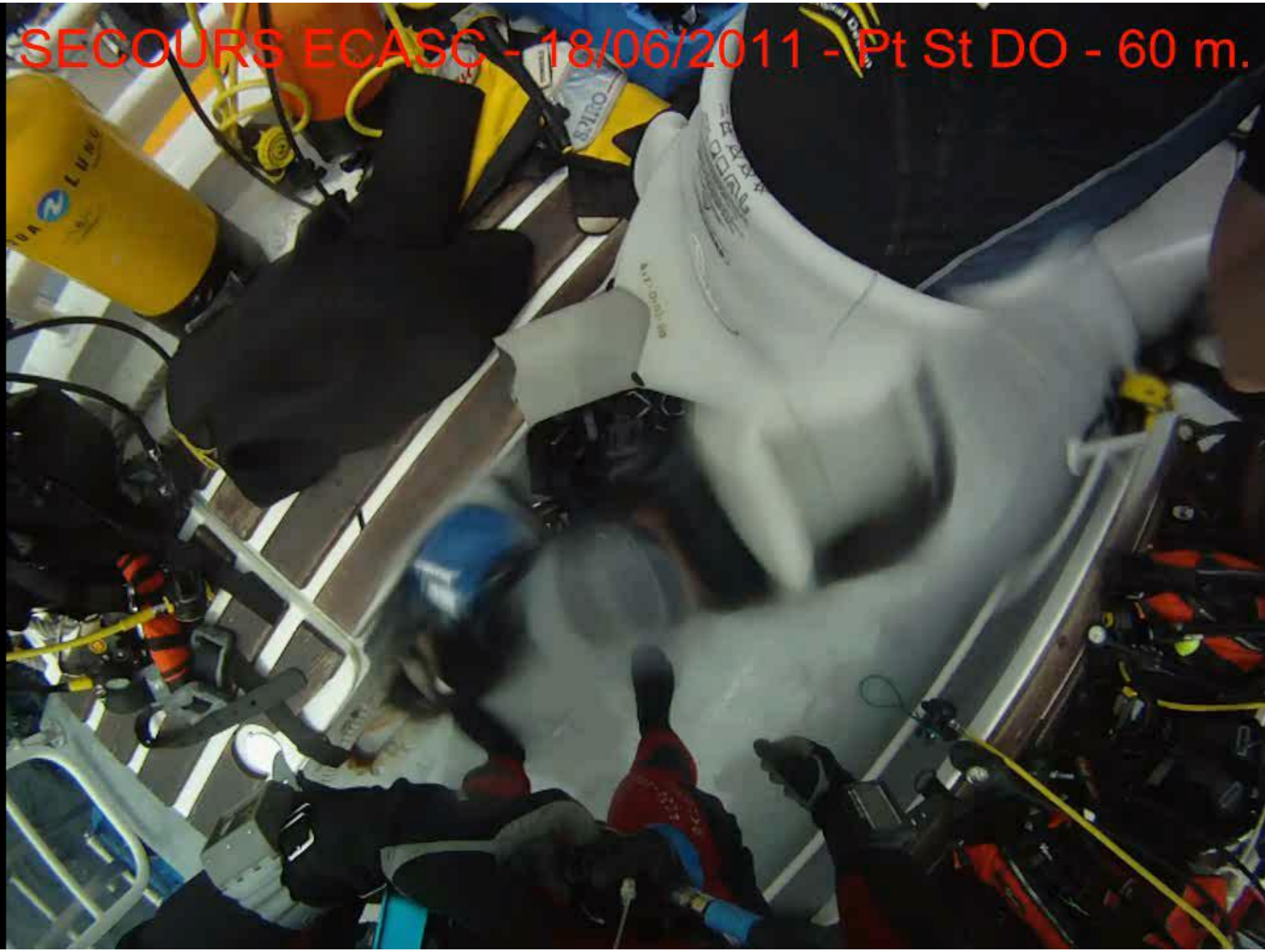
D8N
D559
DN8
2E
6E
8E
9E
BOUCHES-DU-RHÔNE
VAR


Auberge de jeunesse de Cassis
Pas des Marmots
D559
Cassis
Casino Barrière
Le Bestouan
La Visite Des Calanques
Anse de la Grande Mer
Pointe des Lombards
Anse de l'Arène
Restaurant La Presqu'île
Calanque de Port Pin
Cap Câble
Baie de Cassis
Calanque d'en Vau
Pointe d'en Vau
Arche de Castel Vieil
Cap Canaille
D141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