

met by a lot of small sparkling lights in the water, that turned out to be the lights on the life jackets on the persons in the water. The helicopter doctor decided to give priority to the persons lying alone with their heads above the water. The helicopter dropped fuel to gain capacity. When full, the helicopter went to the shore to land the persons at the arrival point established by the health personnel from the hospital.

The incident and rescue operation is documented and evaluated through a report from a governmental assessment group. The lessons learnt are:

1. A decentralised health care system integrated with the public SAR-services guarantees a rapid response and makes use of local general and specialised health care. However, this same integration may complicate the alerting process a bit. Therefore, this must be described clearly through written procedures and incorporated into the training;
2. There is a need to make medical prioritising on scene, and demonstrates the need for the transport of competent medical personnel to the point of the accident as soon as possible after the incident. A highly qualified medical practitioner should be available on scene as soon as possible, with first helicopter;
3. There also is a need for a superior organisation of local and regional medical emergency dispatch centres to ensure prioritising and quality assurance of the medico-professional sides of an operation of this kind. This is a professional medical task, not a task for the joint rescue coordination centre that focuses upon the coordination of resources of all kinds on scene;
4. Even though personnel with much experience provide good professional performance under difficult and uncommon conditions, the need for thorough debriefing is obvious.

After the incident, many of the rescue personnel were invited to and engaged in events arranged by the survivors and their relatives. This is a new and increasing phenomenon in Norway. There is not a tradition for emergency personnel to take part in psychosocial follow-up after large accidents. The role of and effects on emergency personnel taking part in post-incident follow-up of survivors and relatives is new, and should be assessed thoroughly before it is developed any further.

Key words: boat; debriefing; doctor; experience; helicopter; rescue; sea; search and rescue; triage

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Alcoholic Ketoacidosis: Prospective Study of ACTH, Cortisol, Insulin, and Glucagon Seric Levels

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Introduction: Alcoholic ketoacidosis is an unrecognised syndrome in Europe, whereas in USA, it is involved in 20% of the cases with ketoacidosis. The physiopathology of alcoholic ketoacidosis still is obscure. A relative deficiency

in insulin and an increase of glucagon have been suggested. However, the levels of these hormones never has been studied together. The aim of this study was to clarify the hormonal profile of alcoholic ketoacidosis before treatment.

Methods: The levels of cortisolaemia, ACTH, insulineaemia, and glucagoneamia were assessed by radioimmunoassays; glycemia was measured at the same time. Blood sampling was done at admission into the Emergency Department. The inclusion criteria were: (1) a past history of alcoholism, (2) absence of known diabetes, (3) metabolic acidosis with an increased anion gap and ketosis detected in the urine, (4) ketoacidosis correction without insulin, and (5) hospital discharge without antidiabetic medicine. The results are expressed as mean \pm DS. Seven women and two men, average age 48.5 ± 12.5 years, were included during 10 episodes of alcoholic ketoacidosis.

Results: All patients recovered after hydration, with correction in arterial pH within 10 ± 2 hours, and correction plasma bicarbonate concentration within 24 to 48 hours. Insulin infusion never was necessary. The average levels of insulineaemia (normal range 5 to 15 mU.l⁻¹) and glucagoneamia (normal range 60 to 200 pg.ml⁻¹) were respectively to 7.25 ± 4.7 mU.l⁻¹ and 369.4 ± 161 pg.ml⁻¹; the glycemia was 7.3 ± 4.3 mmol.l⁻¹ (range: 2.2 and 15.9 mmol.l⁻¹). The cortisolaemia (normal range 220 to 610 nmol.l⁻¹) were increased to $1,240.4 \pm 778.6$ nmol.l⁻¹ and the plasma ACTH levels (normal range 9 to 52 pg.ml⁻¹) were very low to 5.3 ± 7.6 pg.ml⁻¹ (non-detectable levels in four cases).

Discussion: These results confirm an increase of glucagoneamia and a non-adapted insulin concentration. Other ketogenetic factors were present in these patients: recent weaning from alcohol, starvation, and hypovolemia. The extracellular fluid volume contraction related to the conjugated action of vomiting and decrease of oral intake could stimulate the sympathetic system and the "stress" hormones secretion (cortisol, glucagon, GH). The cortisolaemia was always high. These hormones activate the adipocyte lipase inducing an excessive release of free fatty acids and glycerol into the circulation. The increase of glucagon/ insulin ratio in the portal circulation together with an excessive flow of free fatty acids to liver are important factors for ketone bodies production in man. The ACTH levels were variable, but it was very low in four cases. Although, there was no cirrhosis, the alteration of liver functions in these heavy drinkers could alter the normal course of different metabolic pathways and favour ketogenesis in the liver.

Conclusion: Hormonal profile of alcoholic ketoacidosis is unremarkable. Nevertheless, it is possible that starvation, diminution of alcoholic intoxication and alcoholic hepatitis induce a deviation of liver metabolism in favour of ketogenesis.

Key words: ACTH; alcohol; cirrhosis; glucagonemia; hormonal profile; insulinemia; intoxication; ketoacidosis;

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