



G61 Postmortem Tryptase Levels of Anaphylactic and Non-Anaphylactic Deaths

Marc D. Bollmann, MD*, Centre Universitaire Romand de Medecine Legale, Rue du Bugnon 21, Lausanne, CH-1011, SWITZERLAND; Olaf Drummer, Noel W.F. Woodford, MD, Victorian Institute of Forensic Medicine, 57-83 Kavanagh Street, Southbank, Victoria, 3006, AUSTRALIA; Bettina Schrag, MD, University Center of Legal Medicine Lausanne-Geneva, Bugnon 21, Lausanne, 1011, SWITZERLAND; and Dimitri Gerostamoulos, Victorian Institute of Forensic Medicine, 57-83 Kavanagh Street, Southbank, Victoria, 3006, AUSTRALIA

After attending this presentation, attendees will understand the importance and some limitations of the analysis of serum tryptase in the postmortem diagnosis of anaphylactic shock.

This presentation will impact the forensic science community by helping the forensic pathologists in the interpretation of postmortem serum tryptase levels. In addition to that, the number of anaphylaxis cases presented here is big, given the rarity of this cause of death.

Introduction: Anaphylactic reactions are encountered very rarely as cause of death in forensic practice and the postmortem diagnosis can be difficult, given the unspecific autopsy findings. The diagnosis is usually based on several criteria, including an elevated serum tryptase level. The established clinical normal values for serum tryptase can however not be used in the postmortem setting and need to be adapted for postmortem cases. The interpretation of postmortem serum tryptase levels may be tricky. So it is well known that some conditions other than anaphylaxis can lead to high tryptase levels and also false negative results can be encountered.

Aims: The presented study is aimed at describing the diagnostic criteria, including serum tryptase levels that were used to diagnose twelve anaphylactic deaths. Moreover, a postmortem normal value for serum tryptase from controls is computed and compared to the published data in the literature.

Methods: Twelve anaphylactic deaths, investigated in the Victorian Institute of Forensic Medicine in Melbourne (AUS), have been retrospectively analyzed concerning the diagnostic criteria, autopsy findings and postmortem serum tryptase levels. The findings and the serum tryptase levels were compared to those of a control group consisting of 33 cases with identified, non-anaphylactic causes of death. To better represent the reality of forensic practice, the control group has been increased by 17 individuals with unascertained causes of death, for a second comparison. The obtained cut-off level was compared to the published data.

Results: The postmortem diagnosis of anaphylaxis in the 12 cases was mainly based on the circumstantial information surrounding the death, the medical history, and the exclusion of other causes of death. Laryngeal oedema was found in 83% of the anaphylaxis cases and in 17% of the controls. None of them had a skin rash. The tryptase levels of the controls will be presented with known causes of death and of the increased control group after including unascertained cases. Some cases with surprisingly high or low levels will be discussed.

Conclusion: Serum tryptase obtained from peripheral blood is the strongest aid in the diagnosis of anaphylaxis as a cause of death. The majority of anaphylaxis cases have tryptase levels of well above 100µg/l, whereas the other causes of death had tryptase levels generally under 41µg/l. A grey zone clearly exists, and a number of elements should be present to make the diagnosis of anaphylaxis. Even a strongly positive tryptase result should not automatically lead to the diagnosis of anaphylactic shock. In most cases, other elements can be found to support or reject the diagnosis. Other conditions with elevated tryptase levels exist and should be considered in cases with high levels. **Tryptase, Anaphylaxis, Postmortem**