



116 Postmortem Prolactin in Suicides: Is it an Indicator of Antemortem Stress?

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After attending this presentation, the attendees will be able to recognize if postmortem prolactin levels are raised and possibly associated with antemortem stress in suicides.

This presentation will impact the forensic science community by developing an understanding of the possible trend and association of postmortem serum prolactin levels with antemortem stress and successful or completed suicides.

Stress is inevitable in today's life. A relationship between psychological stress and deliberate self-harm is well-established. Every year, over one million people commit suicide, and around 10 to 20 million non-fatal attempted suicides are reported worldwide. The World Health Organization estimates completed suicides as the 13th leading cause of death worldwide. Prolactin is a hormone secreted by lactotrope cells located in the anterior pituitary gland. It is mainly responsible for lactation, sexual arousal, myelination of neurons, surfactant synthesis in fetal lungs in humans, and is thought to play a significant role in the human stress response. The present research studies the postmortem plasma prolactin levels in completed suicides and tests the hypothesis that postmortem hyperprolactinemia is related to antemortem stress. This preliminary investigation is done to study the relationship between completed suicides and serum prolactin, and to find if postmortem prolactin levels are raised in completed suicides.

The present prospective autopsy-based study for the biochemical estimation of serum prolactin was conducted at the Department of Forensic Medicine at Kasturba Medical College in Mangalore. An approval was received from the institutional ethical committee prior to conducting the study. Suicidal death among males during May and July 2010 were included in the study. Postmortem blood samples were collected from the right femoral vein before the start of autopsy and *in vitro* quantitative analysis of a non-hemolyzed blood sample was performed using electrochemiluminescence. The normal range of serum prolactin in males (according to the chemiluminescence technology) ranges between 4.8ng/ml and 15.2ng/ml. All adult male autopsy cases of suicide with a survival period of less than 12 hours and postmortem interval of less than 24 hours were included in the study. Cases with other associated causes of hyperprolactinemia and hemolyzed blood samples were excluded from the analysis.

All the victims of suicide included in the study were males aged between 21 and 60 years. The mean age of the victims was 39.10±10 years. Most (90%) of the victims were married. Hanging was the preferred method of suicide (90%). Serum prolactin levels in cases of suicides ranged from 6.3ng/ml – 34.0ng/ml. The mean serum prolactin level among the cases was found to be 15.7±8.3ng/ml. A mean serum prolactin level of 14.97±8.3ng/ml was observed in the cases of suicidal hangings. The serum prolactin levels in cases of suicides were arbitrarily grouped into three categories: less than 10ng/ml, 10ng/ml to 15ng/ml, and more than 15ng/ml. It is observed that only 20% of the suicidal victims had a serum prolactin level < 10ng/ml, 40% had a prolactin level between 10ng/ml to 15ng/ml, and 40% had a serum prolactin levels > 15ng/ml.

The prolactin levels using postmortem blood samples in completed suicides were successfully determined. The mean postmortem serum prolactin level was found to be marginally higher in suicidal deaths, suggestive of a possible association between serum prolactin, stress, and suicides. The preliminary investigation is suggestive of a possible trend and an association of postmortem serum prolactin levels with antemortem stress and completed suicides. It is difficult to avoid stress, but suicide as the result of stress can be prevented by the early diagnosis of signs and symptoms of stress, with specific interventions toward preventing suicide. The association, however, is not strong and needs to be studied further in future studies.

Prolactin levels can be successfully determined using postmortem blood samples. This research emphasizes the importance of forensic pathologists in establishing causes of suicides at autopsy.

Suicide, Antemortem Stress, Prolactin