G52 Sudden Unexpected Death Associated With Undiagnosed Lymphocytic Thyroiditis: Report of a Case and Literature Review

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After attending this presentation, attendees will have a better understanding of the significance of pathological changes in the thyroid gland in determining the cause of death, since in many patients thyroid dysfunction remains undetected during life, due to the lack of clinical signs and symptoms characterizing some nosographic entities, such as silent (painless) thyroiditis, or the Hashimoto disease.

This presentation will impact the forensic science community by emphasizing the importance of taking all natural diseases into proper account when investigating sudden deaths, even if clinical records are not indicative or when the anamnesis is poor.

In this perspective a careful gross examination and an adequate sampling of the thyroid gland are mandatory. Findings obtained by histology and updated tissue analyses should be always interpreted in relation to complex data coming from a multidisciplinary approach, finally leading *per exclusionem* to the diagnosis of sudden death due to an episode of transient thyrotoxicosis. Silent (painless) thyroiditis is regarded as follicular destruction-induced hyperthyroidism resulting in the release of stored thyroid hormones in the circulation. The above mentioned disease is characterized by a transient hyperthyroidism with spontaneous resolution in two to five months, even though cases of relapse can occur quite often. The thyrotoxic phase of this syndrome is short and requires no, or only symptomatic therapy, but it is assumed that untreated thyrotoxicosis might lead to sudden death by several mechanisms (cardiac arrhythmia, hyperpyrexia, electrolyte disturbances, and epileptic seizures). Macroscopically the thyroid glands are normal sized and non tender; histologically, focal, or diffuse lymphocytic thyroiditis is present. In some cases anti-thyroid antibodies can be detected, indicating an autoimmune pathogenesis and postmortem dosage of thyroid hormones, when interpreted in relation to the histological findings, can provide further information about the functional status during life.

In the present case a previously healthy 18-years-old woman was found dead prone near the entrance of her house, where she was living alone. The crime scene investigation did not offer any significant finding, and external examination of the body showed a single contusion at the forehead, consistent with an accidental fall from the standing position. Clinical history was unremarkable, but information regarding a possible family history of thyroid disease was not available.

Full autopsy was carried out including a detailed macroscopic/microscopic cardiac examination, tissue molecular analyses for viral detection, chemical analyses, and toxicology. At the autopsy all internal organs were unremarkable and the thyroid gland was macroscopically normal. The one relevant pathological finding was a prominent lymphocytic infiltration with follicular disruptions, rare oxyphilic changes and low grade fibrosis. Since the histological picture was consistent with lymphocytic thyroiditis, immunophenotype characterization and lymphocyte clonality analyses were performed in order to rule out the diagnosis of hematologic malignant neoplasm.

In this case the lymphocytic thyroiditis could by exclusion offer a reasonable explanation of the sudden unexpected death occurred during an episode of transient thyrotoxicosis, cardiac arrhythmia being the most likely mechanism of death.

In consideration of the autoptical findings, further investigation into the medical history was carried out, revealing that the deceased a few days before death complained chest pain to the general practitioner; moreover, three months before she required the prescription for psychoactive drugs, due to the recent onset of insomnia and unexplained anxiety; contemporaneously, she was noticed loosing weight.

Since the young woman had one sister and one brother, at the end of the medico-legal investigation a clinical diagnostic protocol on the relatives was recommended to the general practitioner.

In conclusion: the presented case highlights to forensic pathologists the importance of sampling and careful studying the thyroid gland to evaluate the possible role of a thyrotoxic episode related to a silent thyroid disease, as a cause of sudden death in otherwise unexplained fatalities. Review of the literature reported only a few cases of lymphocytic thyroiditis as a possible cause of death, but in such cases a full multidisciplinary approach (with special regard to biomolecular and chemical analyses) was not carried out.

Furthermore, the present case investigation, first aiming to the solution of forensic concerns, also

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represented the start up for diagnostic protocol on the relatives, at that time still asymptomatic, with final possible positive outcome on their health care.

Silent Thyroiditis, Sudden Death, Thyrotoxicosis

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