Death due to traumatic tracheo-brachiocephalic artery fistula: an autopsy case

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SUMMARY
Tracheo-brachiocephalic artery fistulas were rarely reported lesions often described in cases with tracheostomy procedures. Reported case was 26 year-old male drainage worker, trapped under the stony soil while excavating drainage canal. Rescue operation was performed, but he was reached dead. Provincial prosecutor mandated autopsy after crime scene investigation. Autopsy examination revealed traumatically formed tracheo-brachiocephalic fistula. We aimed to report an interesting case of traumatic tracheo-brachiocephalic artery fistula identified in forensic autopsy.

Keywords: trauma – tracheoarterial fistula – autopsy

Tracheo-brachiocephalic artery fistulas were extremely rare diagnosed (1,2). As unusual lesion tracheo-arterial fistula often described in cases with tracheostomy procedures and post-intubation period, was not included among the differential diagnosis of massive hemoptysis (3,6). Reported is the traumatic tracheo-brachiocephalic fistula case identified in forensic autopsy.

CASE REPORT
Presented case was 26 year-old male drainage worker. According police investigation document co-workers claimed that while victim was working in 4.5 m deep drainage canal with co-worker a small landslide of soil underwent and two workers were trapped under the stony soil while excavating drainage canal. Rescue operation was performed, first worker was rescued alive in few minutes but the second was reached dead after 8 minutes. Provincial prosecutor mandated autopsy after crime scene investigation. Desceased was, 180 cm in height and 85 kg in weight men. On gross external examination dust and soil covering face, bleeding from the mouth and nose were detected. Cyanosis of the nail beds, wide bruises on chest and left lumbar region were observed. Autopsy macroscopic investigation revealed blood aspiration areas on lung surfaces, left lung weighed 750 gr, right lung weighed 610 gr, intra-parenchymal blood aspiration areas on lung dissection were also examined. Tracheal examination showed intensive massive bleeding, 1.5 cm ecchymotic laceration area in trachea situated 5.8 cm below the rima glottidis was inspected (Figure 1), in correspondence with these lesion on aortic dissection, 2.3 cm laceration area in the lumen just above on division of truncus brachiocephalicus, traumatically formed tracheo-brachiocephalic fistula was determined (Figure 2). The direct cause of bleeding was detected tracheal and brachiocephalic arterial injury with coexistence of fistula. Microscopic examination of the internal organs was unremarkable, only lungs revealed blood in the lumina of peripheral bronchi and pulmonary alveoli. Investigation of the blood, urine, and organ specimens revealed none of the substances screened in systematic toxicological analysis. After autopsy the death was reported as massive bleeding caused by traumatic tracheo-brachiocephalic artery fistula.

DISCUSSION
Tracheo-brachiocephalic artery fistulas were diagnosed between 0.6% to 0.7% in post tracheostomy patients within one month...
after application of the endotracheal tube (1,2). In the differential diagnosis of massive hemoptysis pulmonary contusion, bronchiectasis, bronchitis and malignancies were often reported (3), whereas the tracheoarterial fistula which presented with bleeding prior to onset in 30% to 50% of cases, were not traditionally included among differential diagnosis (1). Post-traumatic carotid artery injuries were rarely defined important lesions with high mortality and morbidity risks (4), especially tracheo-brachiocephalic artery fistula cases (1). It was exposed that early diagnosis and intervention after blunt traumatic carotid artery injury was extremely important in association with involvement of adjacent chest organs or structures (4,7). Under emergency conditions immediate operative approaches were mandated, but proper localization of tracheobronchial system bleeding was stressed significant for decision of medical procedure (1,7). For identification of anatomical relationship between the trachea and brachiocephalic artery, contrast-enhanced computed tomography study was reported as useful (1), besides Dellinger et al. (3) stated that endotracheal tube application was a significant maneuver for initial bleeding control. Emergency tracheobronchoscopy for diagnosis and early surgical repair which requires the resection of the vascular segment involved were described as mandatory (1,2,7). Among trauma cases with massive hemoptysis, tracheo-brachiocephalic artery fistula development should be noted as differential diagnosis. From medico legal aspect, autopsy identification and scientific description of these entry will also contribute for proper clinical intervention of the pathology.

REFERENCES