Introduction

Exhumations lie in the area of the forensic pathologist. Exhumations are carried out either under order of a public prosecutor, an insurance company, or the next of kin. In most cases the exhumation is ordered due to nagging rumors about mysteries surrounding the death. These allegations can only be cleared up by an autopsy with the determination of the cause of death. Very often the identification of the deceased, the connection between accident and death, accident reconstitution can only be established by an exhumation and the subsequent gathering of biological material as well as other traces.

In the public at large as well as in some medical circles, it is common knowledge that the decay of the corpse in a grave is so rapid that very soon after the burial no further information can be gathered from an exhumation with subsequent autopsy other than injuries to the skeletal systems as well as some intoxications. Ethical and aesthetic points of view are another reason for the rarity of exhumations.

Material and Methods:

All protocols of the autopsies carried out in the Institute of Legal Medicine in Hamburg, Germany, between 1971 and 2003 were searched for possible involvement of exhumation. All 41,917 protocols were screened and 162 exhumation cases (3.8%) were found. In 31 of these cases the expert reports were evaluated as well. The cases were classified according to Table 1 in order to be able to compare the data to the data collected from the legal occupations. Ethical and non-natural cause of death.

Of the 162 autopsies after exhumation 60 were legal autopsies, i.e. ordered by the public prosecutor. The remaining 102 were insurance related, of which 6 were ordered by private persons, i.e. next of kin. The professional association for industrial safety (BG) ordered 84 exhumations. A time-line is shown in Figure 1. 150/162 cases the autopsy was classified as a success, i.e. the question at hand could be answered. The cause of death could be diagnosed in 150/162 cases. In 88/162 the assumed cause of death from the death certificate could be confirmed, in 31/162 cases it could be refuted.

The gender distribution of the legal exhumations is nearly equal (female: 27, male: 33). All the insurance related exhumations concern male subjects (male: 102, female: 0).

Table 1: The data was evaluated using SPSS Vers. 12.0.

Table 2: Classification scheme for the different causes for exhumation.

Table 3: Classification scheme for the different causes for exhumation. Next to the great number of cases concerning occupational diseases (102/162); category VI: most prominent (37/162).

In spite of the rot found in exhumed corpses a multitude of inquiries regarding aspects of legal medicine can still be answered. The number of insurance related exhumations is related to the time necessary for the exposition of occupational hazards to result in severe enough a disease to possibly qualify for an occupational disease. The numbers have to be taken as case reports as they detail what we observed. Thus we can give no guarantee for those numbers. As stated, they reflect what we saw and what was reported in the literature. The late onset of the exhumations is related to the time needed for the exposition of occupational hazards.

In counts exhumations it has been proven that even after years of burial autopsies can lead to substantial diagnoses. The results obtainable depend on a multitude of factors: state of the deceased at the time of death, nature and duration of storage of the corpse between death and burial, the degree of decomposition, the flora and fauna on the corpse, the material of the coffin, the nature of the soil in which the coffin is buried, the state of the cemetary, the depth of the grave. In spite of the rot found in exhumed corpses a multitude of inquiries regarding aspects of legal medicine can be answered. In criminal law even a negative autopsy result can be of utmost importance. The same holds for autopsies for insurance companies.
Case Report 1: Suicide or Homocide

A 42 year old male was found dead in a hotel in Hamburg. An insulin surringe was found right next to the corpse. Mostly superficial wounds on both wrists and neck were diagnosed during the external examination. The wounds were contaminated with splinters of glas. The public prosecutor released the corpse for burial without autopsy, stating suicide as a cause of death: The man was supposed to have cut his wrists with a glass fragment from a broken picture frame and bled to death.

After a couple of mouth the mother of the deceased made claims of manslaughter. The glass splinters in the wound with no resultant injury of the fingers of the corpse from handling the glass made her suspicious. Her claims were substantiated by formed bleedings she said were clearly visible on the photos of the claves.

As a result of these allegations the public prosecutor ordered an exhumation with an autopsy as well as a thorough toxicological examination. The autopsy took place 256 days (8 mouth) after the death of the patient.

No signs of manslaughter were found during the autopsy. Detailed inspection of the fingers showed small superficial cuts on the surface of the skin. The toxicological examination diagnosed a non-toxical concentration of cocain in tissue. Furthermore an alcohol level of 0.063% was found in muscular tissue.

Cause of Death: Bleeding as a result of self-inflicted wounds to the wrists under the influence of alcohol and cocain.

Pictures:
- Digging up the coffin
- Pulling the coffin out of the grave
- Opened coffin
- Corpse just before the autopsy

Case Report 2: Manslaughter or Death of Internal Cause

A 70 year of women was found dead in her flat. Because of here long medical history (breast cancer, diabetes mell., hypertonia, hyperthyreosis, pyelonephritis) a natural cause of death was certified by an emergency medical doctor.

Due to some money missing form the purse of the deceased as well as the appearance of a serial killer specialising in old women in the region, the public prosecutor ordered an exhumation. The exhumation was carried out 22 days after the death of the woman. The coffin was buried for 16 days.

The autopsy confirmed the clinical diagnoses as well as an acute pneumonia. No signs of external force could be found. No bleedings in the conjunctivae could be diagnosed. A suffication with a soft cushion could not be absolutly ruled out.

Pictures:
- Preparation of the grave
- The lid of the coffin has already been dug up
- The lifting of the coffin out of the grave
- Side view of the head
- Examination of the left upper conjunctiva