After 3 h of treatment with 100% oxygen, the patient became alert and oriented; COHb was 23%. After 7 h, he was extubated, and a COHb of 13.4% was measured. The patient's medical profile was negative for coronary heart disease risk factors, such as smoking, hypertension, diabetes mellitus, and coronary artery disease. A coronary angiogram performed 1 week later failed to reveal evidence of coronary obstructive lesions.

Balraj (1984) reviewed all deaths that were certified by the Cuyahoga County Coroner's Office for the years 1958-1980 wherein asphyxia by CO was the primary cause of death and a natural disease was the "other" cause of death or vice versa. During the 23-year period, 38 certified deaths were divided into two groups: Group 1 consisted of 28 cases for which the diagnosis including the abnormal COHb was documented by complete postmortem examination. Group 2 consisted of 10 cases for which the diagnosis "other" condition was based on review of medical records, including results of coronary angiogram, serum enzymes, and clinical history; autopsy was not performed on these 10 cases. Group 3 served for comparison, and comprised all deaths of individuals 35 to 86 years of age in whom the COHb was 60% and more (n = 100). A complete autopsy had been performed in each of these cases.

Of the 28 cases in group 1, the primary cause of death was asphyxia by CO in 21 cases. The other condition in 19 of the cases was atherosclerotic coronary artery disease. Of these, eight had hypertensive cardiovascular disease and two had pulmonary emphysema in addition. In the remaining seven cases of group 1, the primary cause of death was atherosclerotic coronary artery disease and the other condition was asphyxia by CO. In group 2, atherosclerotic coronary artery disease was the primary cause of death and asphyxia by CO was the other condition in three cases. In the remaining seven cases, asphyxia by CO was the primary cause of death and in all but one of these cases, the other condition was atherosclerotic coronary artery disease; two of the individuals also had hypertensive cardiovascular disease. The results are presented in Table 2-4.

2.2. Nonlethal Toxicity

Nonlethal effects of CO on humans have been reported in experimental studies in both healthy individuals and in patients with coronary artery disease (see Section 2.2.1). Case studies (see Section 2.2.2) are presented for children and adults and identify children as another susceptible subgroup for nonlethal CO effects.

2.2.1. Experimental Studies

2.2.1.1. Subjects with Coronary Disease

A large number of studies investigated the effects of low CO exposure (COHb < 10%) on healthy individuals and high-risk groups. These experiments