

Analysis of X-Ray Heart Areas of 30 Patients With Endemic Fluorosis

Li Yueming, Shang Zhihong, Guo Yang
Liaoning Institute of Endemic Disease Control, Shenyang

I. Targets and methods Based on diagnosis standards formulated at the 1981 Shijiazhuang National Prevention of Endemic Fluorosis Meeting, 30 patients were chosen, 15 men and 15 women with an average age of 45, average height of 1.63 meters, and average weight of 54 kilograms, and all with clinical diagnoses of early sclerosis. Upon a clinical comprehensive physical examination and biochemical examination, no cardiovascular diseases were found. Conditions for taking the frontal heart X-rays: fasting and end of inspiration, 2 meters distance, voltage 70KV. Two personnel simultaneously measured the X-ray heart area, and the average of the two measurements was used. Anticipated heart areas were calculated based on height and weight.

$$\text{Anticipated area (cm}^2\text{)} = 0.62 \times \text{height} + 0.67 \times \text{weight} - \text{constant } 42.79$$

$$\text{Measured area (cm}^2\text{)} = 0.7 \times \text{length-diameter} \times \text{width-diameter} + \text{constant } 2.09$$

II. Results and conclusion Table 1 results show the measured heart areas are significantly greater than the anticipated areas, with an increase of 12.2%. The effect of fluoride on the cardiovascular system are already reported:

X-ray heart area in 30 patients with endemic fluorosis		
Anticipated area (cm ²)	Measured area (cm ²)	Rate of increase
87.8 +/- 2.3	98.5 +/- 1.9	12.2

Chronic fluorosis can cause atherosclerosis and calcification, and adding fluoride to tap water can cause an increase in the mortality rate of cardiac disease; fluorosis can cause harm to the heart; there are also reports of a significant increase in the rate of EKG abnormalities for fluorosis patients. The results of the aforementioned reports and this report are the same, which means that apart from chronic fluorosis causing heart damage and myocardial electrophysiological abnormalities, there are greater changes in heart morphology. But for the vast majority of endemic fluorosis patients, none of these changes caused clinical heart function abnormalities. Further research must be done on whether there is a potential effect on heart compensatory capabilities.