

## Cerebral Atrophy and High Blood Pressure in a Population of Industrial Guards: Case Report and Review of the Literature

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**Summary:** The cerebral atrophy refers to a decrease of the brain in weight and/or volume. It is a common feature of most of the diseases affecting the brain. The authors report a series of 5 cases of cerebral atrophy in the field of HTA in the Congolese population of industrial guards. The aim is to describe the pathology, and attract the attention of the scientific opinion to put extensive studies in order to understand the occurrence of this pathology.

**Key-words:** cerebral atrophy, hypertension, population, industrial guards

### INTRODUCTION

The cerebral atrophy refers to a decrease of the brain in weight and/or volume ;or still in an increase in the difference between the volume of the brain and the ability cranial, including the volume of the cerebrospinal fluid [1].Several studies found that the age is associated with the cerebral atrophy[1-4].In effect, it is known that a high blood pressure increases the risk of vascular lesions in the brain[5-7].The obviousness of the relationship between blood pressure and cerebral atrophy is less clear but some studies reveal that a high blood pressure during the period of the average age of the life (midlife) drives to cerebral atrophy later[8-9]. In our environment, there is no data relating to the cerebral atrophy. The purpose of this work is to describe this pathology in the Congolese population of industrial guards, and attract the attention of the scientific opinion to put extensive studies in order to understand the occurrence of this pathology.

### METHODS

It is a retrospective study on 5 cases of cerebral atrophy in the field of hypertension collected in a service of Occupational Medicine of a company in Lubumbashi. It is carried out on a period of one year (1 January-31 December 2014).Only the hypertensive patients with a cerebral scanner have been selected. The anthropometric data, clinical, epidemiological, diagnostic and therapeutic have been collected based on their records.

### RESULTS

The sociodemographic characteristics and clinical trials of our patients have been detailed respectively: the average age was 61.2 (extreme 58-70 years), BMI was 22.2 (extreme 21-23 kg/m<sup>2</sup>), the seniority was 24.4 (extreme 19-35 years), the

duration of the work was 24 hours. With regard to smoking, 60% of patients were smokers and 80% took the alcohol on a regular basis. All patients were under antihypertensive and had presented alterations in their cognitive function. Three of them have developed stroke. The cerebral Scanner performed in patients had revealed 3 cases of cerebral atrophy (**Fig1,2,3**) and 2 cases of cerebral atherosclerosis with cerebral atrophy (**Fig. 4.5**). Concerning the level of education, our patients have not completed primary school (less than 6 years of studies) and are monitored regularly for their hypertension within the unit of occupational medicine and by a cardiologist.

### DISCUSSION

The cerebral atrophy is the common characteristic of most of the diseases affecting the brain. It is known that high blood pressure causes cerebral atrophy [10].Our series of case illustrates this observation. The mechanism of the cerebral atrophy in hypertension and in pathologies of the small vessels are not very well understood and/or clear. However, the hypothesis of the increase in blood pressure which can lead to changes micro vascular disease causing a loss of brain tissue [11-13] allows you to explain the cerebral atrophy in our patients. Two studies have examined the relationship between the change in the blood pressure and cerebral atrophy but the results were not significant [14-15]. On of the study has not found the association [14] but the other has found that a decrease in diastolic blood pressure after a certain period of time increased the risk of cerebral atrophy [15].In effect, the cerebral atrophy in patients chronic alcoholism has been demonstrated by pneumoencephalographic and tomodesimetric studies [16-19], and this is currently accepted. The anomalies of the cerebral function including the specific cognitive deficits and usually dementia are in direct relation with an abuse of chronic

alcoholism [20]. This could also explain the existence of the cerebral atrophy in 80% of our patients and some events that were submitted by the latter.

In our study, it is difficult to criminalize the use of tobacco as a factor favoring or causing the brain atrophy. Furthermore, the link between the cerebral atrophy and the cocaine was mentioned for the first time by Pascual [21]. In the literature, cerebral atrophy is a potential consequence of the abusive use of solvents or volatile substances [22]. Our patients have never used cocaine. Since, several investigations reveal the association between the age, sex and the cerebral atrophy. Our results concerning patient age support the hypothesis of the relationship between the brain atrophy and the age demonstrated by other studies [1,23-26]. In addition, all our patients were male. According to our observation it is difficult for us to confirm the reduced influence of age on the development of the brain atrophy in women is probably due to the protective effect of female hormones [1]. As well, it is important that studies concerning the relationship between the brain atrophy and potential pathogenic factors including: race, profession, the intellectual level, the quality of sleep, alcohol, tobacco, avitaminosis, the taking of antihypertensive drugs and the liver diseases should be done in order to understand the occurrence and the management of cerebral atrophy in our patients.

## CONCLUSION

The cerebral atrophy is a frequent complication of hypertension or micro cerebral vessels diseases must be investigate among hypertensive patients (with or without Stroke) and those presenting cognitive disorders. Of this fact, the use of the scanner is important in our context where resources are often limited and unavailable.

## Contributions of the authors

Léon Kabamba Ngombe: Design and Drafting  
 Katumbo Mukemo: Design and Drafting  
 Mwamba Kabamba Twite C : design, drafting and translation of the summary in English,  
 Evelyne Ngoy Kapoya: design, selection of cases and drafting  
 Simplice Fwana Ilunga: Design and Drafting  
 Nyembo Mukena C: Correction  
 Oscar Luboya Numbi: Correction

**" Conflicts of Interest : none "**

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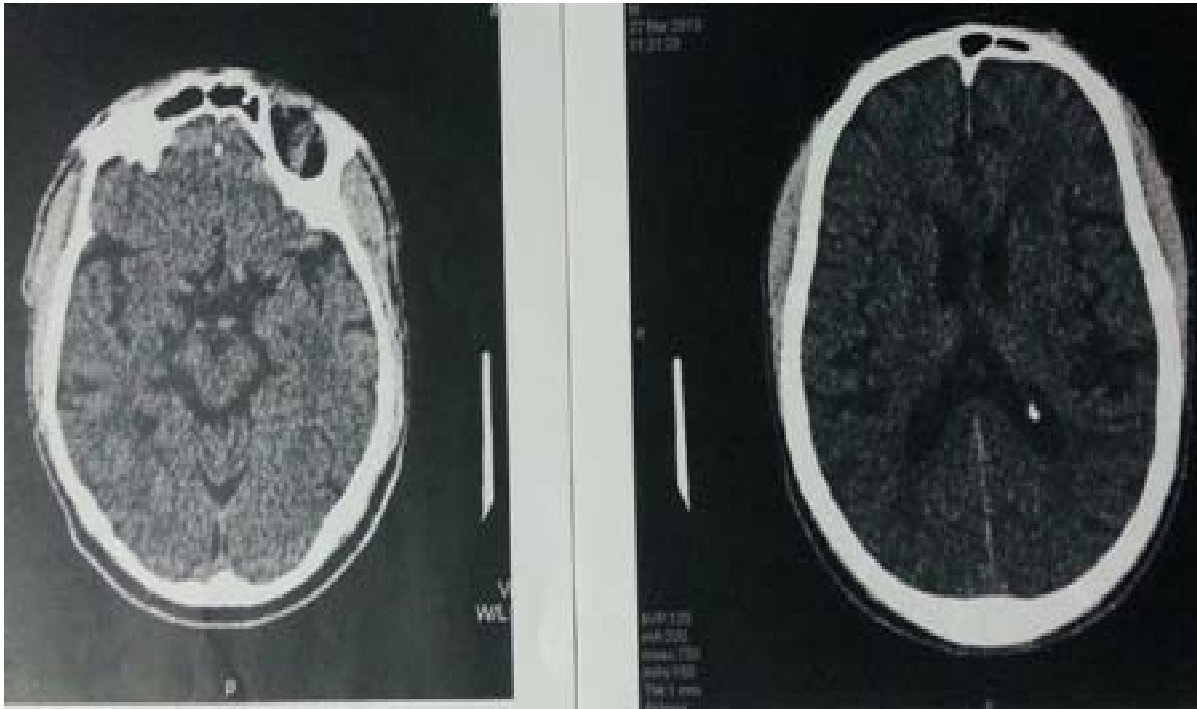


Figure. 4(left): Multiple micro-brain infarcts with cerebral atrophy secondary on bottom of cerebral arteriosclerosis and Fig. 5(right): cerebral atrophy on cortical cerebral atherosclerosis.



Figure. 1(left) and Fig. 2(right) : cerebral atrophy

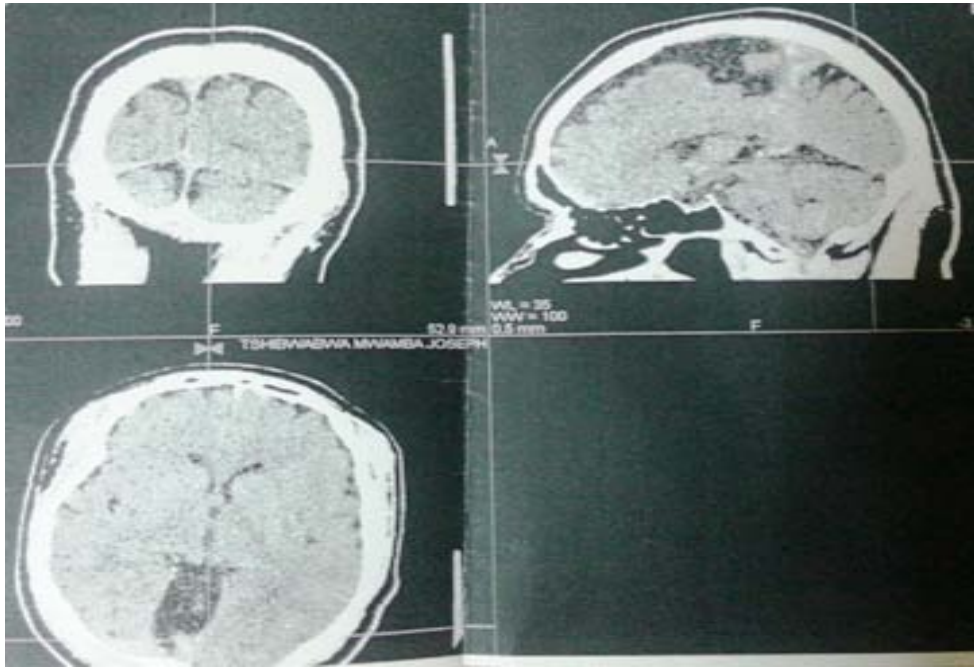


Figure 3: cerebral atrophy more accentuated to right