East African Medical Journal Vol. 78 No. 4 April 2001
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HYDROQUINONE NEUROPATHY FOLLOWING USE OF SKIN BLEACHING CREAMS: CASE REPORT

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SUMMARY

A 30-year old black woman presented with gradual onset of weakness of the legs associated with burning sensation in the feet for two months. She had been using two hydroquinone - based skin bleaching creams (MGC by M. G. C. International, MEKAKO by Anglo Fabrics BOLTON Ltd) for about four years. Her BP was 80/40mm Hg supine with un-recordable diastolic pressure on standing. She had decreased power (Grade 3/5), loss of deep tendon reflexes and impairment of deep sensation in the lower limbs. A complete blood count, urinalysis, serum electrolytes, serum creatinine and uric acid were all normal. Oral GTT, VDRL and brucella tests were negative. Chest and abdominal radiographs did not show any abnormalities. A diagnosis of peripheral neuropathy with autonomic neuropathy possibly due to hydroquinone toxicity was made and she was advised to stop using hydroquinone based skin bleaching creams. Four months later she was asymptomatic, her BP was 120/ 80mmHg supine and standing, and neurological examination was normal. The case raises the question of whether hydroquinone based skin bleaching creams could be a cause of peripheral neuropathy and underscores the need for research on hydroquinone based skin bleaching creams and neuropathy particularly in black women involved in the sale and/or use of skin bleaching creams.

INTRODUCTION

Hydroquinone (benzene-1,4-diol) is one of the most effective inhibitors of melanogenesis and is widely used for the treatment of melanosis and other hyper-pigmentary disorders(1). It is also used in many skin bleaching creams and lotions. Hydroquinone and the related quinoline derivatives are however known to be toxic. Between 1956 and 1970, clioquinol (5-chloro-7-iodo-8-quinolinol) was reported to have caused an epidemic of sub-acute myelo-optico neuropathy (SMON) in more than 10,000 people in Japan(2). Toxicity of clioquinol and other halogenated hydroquinolines was also reported in other countries(3-6). There followed widespread reaction resulting in litigation in Japan, Switzerland and Sweden and calls for the withdrawal of the drugs(7,8).

The mechanism by which hydroquinolines and hydroquinone cause neuropathy is not well understood. Clioquinol treated dogs developed dysymmetric leg movements accompanied by failure to support body weight in the hind quarters, but similar forelimb involvement occurred in severely affected dogs. Neurological lesions were demonstrated in the rostral dorsal funiculus and distal aspects of the optic nerve fibres, with minimal to mild degenerative changes in the distal aspects of the corticospinal and spinocerebellar tracts of the dogs(9). A recent study suggests that clioquinol combines with zinc to form a potent mitochondrial toxin and that it is the clioquinol-zinc chelate which may have been the ultimate toxin in SMON(10).

CASE REPORT

A 30-year old black woman and retailer of cosmetic products was seen in July 1999 complaining of gradual onset of weakness of the legs associated with burning sensation in the feet for two months. She walked with great difficulty and only when supported. She did not have fever, cough or weight loss. She denied history of alcohol ingestion or medication prior to the onset of her illness. She had been on treatment with vitamin B complex, neurorubin, folic acid, and analgesics for about one month but with no response. A review of her cosmetics revealed that she had been using two hydroquinone based skin bleaching creams (MEKAKO, MGC) for about four years. She applied MEKAKO cream to the face and MGC lotion to the rest of the body twice daily. Physical examination revealed a young woman in good nutritional state and with a very light skin complexion of the whole body. Her BP was 80/40mmHg supine with un-recordable diastolic pressure on standing. As the BP was being taken, she experienced severe pain and sweating in the right forearm. She had decreased power (Grade 3/5), loss of deep tendon reflexes and impairment of deep sensation in the lower limbs. A complete blood count, urinalysis, serum electrolytes, serum creatinine and uric acid were all normal. Oral GTT, VDRL and brucella tests were negative. Chest and abdominal radiographs did not show any abnormalities. It was not possible to do a lumbar puncture,

EMG or HIV serology. She was thought to have peripheral neuropathy with autonomic neuropathy possibly due to hydroquinone toxicity. She was advised to continue taking the vitamins and analgesics but to stop using hydroquinone based skin bleaching creams.

RESULTS

Four months later she was asymptomatic except for slight paraesthesia over the medial aspect of the feet. She was able to walk well without support. Her BP was 120/80mmHg supine and standing. She no longer experienced pain and sweating in the right forearm as the BP was being taken. Neurological examination was normal. She denied history of change in medication.

DISCUSSION

The patient presented with chronic, symmetric sensorimotor polyneuropathy and autonomic neuropathy. Diabetes mellitus was considered since it is the most common cause of distal symmetric polyneuropathy(11). However, the patient did not have the typical symptoms of diabetes mellitus and oral GTT was normal. Other chronic metabolic diseases including hepatitis and renal disease were also considered and excluded. It was not possible to do HIV serology on the patient. However, she did not have clinical stigmata suggestive of underlying HIV infection. Peripheral neuropathy has been reported in 44% of HIV infected individuals. Distal symmetric polyneuropathy occurs in twenty two per cent of all cases of HIV peripheral neuropathy(12).

We were alerted to the possibility of hydroquinone neuropathy by the very light skin complexion of the patient and the finding of hydroquinone-based skin bleaching creams among her cosmetics. Hydroquinone neuropathy could have arisen because the patient was using two hydroquinone based creams at the same time; she applied the creams over her whole body twice daily contrary to the instructions on the packaging to apply the creams only to a small area; and she had been using the creams for a period of about four years. Finally, the patient improved when she stopped using the hydroquinone-based skin bleaching creams.

Similar to the SMON patients, our patient was a young female and presented with impairment of deep sensation, weakness in the lower limbs, and autonomic neuropathy(13). However, in contrast to the SMON patients, our patient's illness was chronic and she did not have abdominal symptoms preceding neurological symptoms nor visual or mental impairment. Whereas SMON patients had used clioquinol or other halogenated hydroquinolines, our patient used hydroquinone based creams. The route of administration was oral in the SMON patients while it was topical in our patient. Unlike the SMON patients, our patient improved on withdrawal of hydroquinone based creams. However, since the follow up period was short, the improvement could have been a temporary remission which is also a feature of SMON.

The evidence that hydroquinone was associated with peripheral neuropathy in our patient is circumstantial, and it is not possible to exclude the role of other factors in the aetiology and progression of her peripheral neuropathy. This case does however raise the question of whether hydroquinone-based skin bleaching creams could be a cause of peripheral neuropathy. Black women especially those involved in the sale of skin bleaching creams may be at greater risk of exposure to hydroquinone-based skin bleaching creams because of the popularity of skin bleaching and easy access to skin bleaching creams(14). The problem may be compounded further in countries such as Uganda where regulatory measures for the sale and use of hydroquinone-based skin bleaching creams are inadequate. The case underscores the need for research on hydroquinone-based skin bleaching creams and neuropathy particularly in black women involved in the sale and/or use of skin bleaching creams.

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