

# BISMUTH POISONING

## A CASE REPORT

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Absorption of bismuth salts in toxic quantities is a rare occurrence today. Half a century ago a few cases were observed by various investigators, and the clinical and radiological aspects of bismuth poisoning were recorded. Symptoms of neuritis and oedema were generally present.

Following Röntgen's discovery, insoluble bismuth and barium salts, which have high densities, were used as contrast media in X-ray examinations of the gastro-intestinal tract. On one or two occasions within recent years fatalities following the use of contrast meals have been recorded, when the poisonous soluble salts were administered by mistake. That it is possible for toxic amounts of bismuth to be absorbed from externally applied bismuth pastes will be evident from the findings in the following case.

On 6 May 1962 a Malay child aged 13 months and weighing 13 lb., was seen at Karl Bremer Hospital suffering from evident malnutrition accompanied by severe stomatitis, and passing urine loaded with albumin. A pitting oedema of the legs was present, the face and eyes were swollen, and râles were present over the lung bases. The Wassermann reaction was negative.

The child was treated for a protein-losing gastro-enteropathy, but despite nutritional aids and antibiotic medication, little response was noted and the oedema of the legs degenerated into patches of open ulceration.

On 11 May X-ray examination (Fig. 1) showed a marked soft-tissue swelling, but there was no evidence of any bony, periosteal or epiphyseal changes.

Operative drainage measures were adopted. Pus was evacuated and bismuth paste (BIPP) was applied to the exposed muscle tissues, as can be seen in the X-ray taken on 23 May (Fig. 2). This BIPP application was repeated 4 days later and antibiotics were continued, but despite the apparent satisfactory response noted in the healing of the wounds, the oedema and pains in the legs increased and a mild pyrexia was recorded with occasional exacerbations.

Further X-ray records on 10 June (Fig. 3) showed remnants of the bismuth paste remaining in the muscle tissues, but there was still no evidence of any bony changes. A lymph-angitis was now suspected and 'orenzyme' was administered.

On 27 July, approximately 9 weeks after the application of BIPP, X-ray examination (Fig. 4) showed dense transverse bands across the metaphyseal ends of the long bones. Bismuth had been absorbed and deposited in the areas of maximum growth, and clinically the pains in the legs had increased.

Although the neuritic symptoms gradually subside, these sclerotic bone changes, like the frequently observed dense lines of arrested growth occurring during the more severe illnesses of a child, remain a permanent feature in the architecture of the affected bones of the individual.

## SUMMARY

A case of bismuth poisoning is recorded. Absorption took place from externally applied bismuth paste and was visible in the bony tissues in 9 weeks. The dense metaphyseal bands in the growing long bones remain a permanent feature.



Fig. 1. Oedematous soft tissues with no indication of bony changes. Fig. 2. BIPP paste introduced into exposed muscle tissues.  
Fig. 3. Remnants of BIPP paste still present one month later, but no noticeable bony changes.  
Fig. 4. Dense metaphyseal bands as a result of bismuth absorption shown 9 weeks after the BIPP application.