

## YOUNG PATIENT WITH SUB-ACUTE BACTERIAL ENDOCARDITIS PRESENTING WITH EMBOLIC PHENOMENA

Ahmad Bilal Sarwar<sup>1</sup>, Kamran K. Chima<sup>2</sup>, Ammar Sarwar<sup>3</sup>, Mian M. Ali Akram<sup>4</sup>

### ABSTRACT

Subacute Bacterial Endocarditis presents a diagnostic challenge even in this day and age due to a variety of manifestations which can be difficult to spot in the early stages where the disease can be treated effectively. This report focuses on the neural and cutaneous manifestations of the disease in a single patient. It stresses the need to suspect endocarditis in young children who present with manifestations of stroke, transient ischemic attacks or peripheral vascular lesions. Delay in treatment is a major cause of mortality in this population and only a high index of suspicion can lead to an early life saving diagnosis and treatment.

**KEY WORDS:** Subacute Bacterial Endocarditis, Gangrene, Transient neurological deficits, Stroke.

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### INTRODUCTION

Subacute Bacterial Endocarditis is by no means an uncommon disease; however it frequently escapes recognition at its onset, although readily recognized in later stages by careful bedside observation.<sup>1</sup> A 1940 study showed very few patients with subacute streptococcus viridans endocarditis were admitted with the correct diagnosis. The credits for correct diagnosis went to a consultant and only occasionally did the general practitioner stumble on the correct diagnosis.<sup>2</sup>

Despite recent advances in medical diagnosis and treatment this enigmatic disease can still present in stages where it is too late for even the most heroic of measures to save the patients. One such case came to our institution with neurocutaneous embolic manifestations, as illustrated below. Mortality in these cases is usually due to cardiac, renal or multiple cerebrovascular accidents, most of the failure being due to delay in treatment secondary to either delayed diagnosis or inadequate treatment in patients with resistant organisms.<sup>3</sup>

### CASE REPORT

A 12 year old female was referred to our cardiac catheterization lab for emergent investigation of multiple gangrenous lesions on both her feet.

The girl was irritable and withdrawn as her mother related her history. She had a five month history of continuous low grade fever, with 3 episodes of very high fever and one episode spanning three days where the child lost the ability to speak for a period of three days. She did receive treatment with antibiotics but without much success. During this period she developed pain in individual digits of the lower

1. Dr. Ahmad Bilal Sarwar  
Postgraduate Trainee
2. Dr. Kamran K. Chima  
Consultant Pulmonary & Critical Care
3. Dr. Ammar Sarwar  
Postgraduate Trainee
4. Dr. Mian Muhammad Ali Akram

1-4: Doctors Hospital & Medical Centre /  
Lahore Medical College,  
Lahore.

Correspondence:

Dr. Ahmad Bilal Sarwar  
95-K Model Town, Lahore  
Pakistan.  
E-mail: drbilal@gmail.com

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extremity, the pain not being relieved by any standard pain medication. She was referred to a government hospital in Lahore by which time she developed frank gangrene in several digits of the feet. At this point she was referred to us for a catheterization study of her limbs.

On further questioning, there was history of protracted febrile illness in the girl a few years ago, but we were unable to get conclusive evidence of rheumatic heart disease from previous history. There was no history of tuberculosis in the patient or any of her family members (a previous chest x-ray taken about 3 months ago was clear). No other medical records were available.

The physical exam found an emaciated, irritable girl, curled in a fetal position, initially not allowing anyone to touch her. Her vitals showed a hypotensive, tachypneic female with a fever of 102° F and a pulse rate of 98 beats/min. The following positive findings were elicited from the minimal exam the girl allowed:

- Fingers showed splinter hemorrhages and tender nodes on fingers. (Osler's nodes).
- Small finger on each hand had a patch of gangrene in early stages.
- Right foot had all five toes gangrenous (dry)
- Left foot, the first 3 toes showed dry gangrene.
- Examination of the precordium revealed 3/6 holosystolic murmur on the 5<sup>th</sup> space in the apical area, radiating to the axilla consistent with mitral regurgitation.

The Echocardiogram revealed several vegetations scattered throughout the left ventricular chamber, especially on the mitral leaflets and a ruptured chordae. No congenital heart defects were found. A preliminary diagnosis of Subacute Bacterial Endocarditis was made and a blood sample was drawn for culture.

The girl was admitted to the ICU and empiric treatment was begun with penicillin and gentamycin intravenously, pending blood culture results. The pathology report revealed *Streptococcus Viridans* resistant to penicillin G. Unfortunately her condition deteriorated rapidly and she died, two days after presenta-

tion due to septic shock. The family refused an autopsy.

## DISCUSSION

This case illustrates several issues relating to sub-acute bacterial endocarditis in particular and the clinical practice in detection of this disease in general.

The key findings in this case were, the presence of multiple ischaemic lesions and the temporary loss of her ability to speak for a few days. Both these findings point to an embolus disrupting blood supply in respective areas. An embolus from the left heart will naturally carry to the lower limbs (through the aorta and femoral arteries) which probably provide the path of least resistance, hence explaining the magnitude of peripheral lesions. The other phenomenon is typical of an embolus originating from the left heart and ending up in the middle cerebral artery circulation, which supplies the Broca's area. Hence we can conclude that this patient presented in what is known as the embolic stage of the disease, with the clinical course being divided into either pre-embolic or embolic stage of disease based on clinical findings.<sup>4</sup>

Dr. William Osler had recognized the association between endocarditis and neurological complications more than a century ago, and was the first to suggest that neurological complications can be the initial manifestation for endocarditis.<sup>5,6</sup> As illustrated by the aphasia in this case, endocarditis is an important cause of stroke in the young.<sup>5</sup> A study published in 2001 by Patel FM et al, stated that the most common complication was cerebral infarction (consistent with findings of Pruitt et al)<sup>7</sup> and the middle cerebral artery territory was the most common site of infarction.<sup>5-8</sup> Thus despite advancement in chemotherapeutic measures, overlooking this diagnosis in the initial stages may result in a clinical picture of neurological complications, very similar to that described in the pre-antibiotic era.<sup>9-11</sup>

The second issue is the presence of multiple foci of gangrene in this girl's extremities.

Nathan D. Wilensky et al used the term Simultaneous Quadrilateral Gangrene in a 1953 study, and cited endocarditis as a major concern amongst other etiologies.<sup>12</sup> The term acronecrosis was suggested by Walter Pagel, defined as cyanosis followed by necrosis of extreme parts of the periphery (acra) in subacute bacterial endocarditis.<sup>13</sup> Multiple peripheral gangrene of this sort has been defined as rapid and practically simultaneous development of necrosis of the distal portions of two or more widely separated external appendages.<sup>14</sup> Thus any such presentation especially in populations with high rates of rheumatic heart disease should have a high index of suspicion for endocarditis. It is well known that a valve damaged once by rheumatism is more liable to subsequent infection, especially with non-hemolytic streptococci.<sup>15</sup>

### CONCLUSION

Ischemia in the extremities and transient neurological deficits in the younger population are rare. Nevertheless when encountered, should warrant a thorough physical examination of the cardiovascular system, which will point to the diagnosis before its too late to intervene.

This is especially important with regards to developing countries which have a higher incidence of rheumatic heart disease and congenital heart lesions (which remain uncorrected), and may present in complicated stages due to poor facilities especially in rural areas.

It is suggested that all young patients with manifestations of peripheral vascular disease or transient ischemic events be referred to a tertiary care hospital<sup>2</sup> for expedited diagnosis and treatment of possible underlying endocarditis. Delay in diagnosis and treatment leads to high mortality rates, as outlined above.<sup>3</sup>

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