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Wolff-Parkinson-White Syndrome in Adults: Electrocardiographic Diagnosis and Management in a Resource-Limited Setting in Kisangani, Democratic Republic of Congo (DRC)

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Abstract

Background: Wolff-Parkinson-White (WPW) syndrome, a rare but life-threatening arrhythmia, is underdiagnosed in sub-Saharan Africa due to limited healthcare resources. This case highlights the regional uniqueness of managing WPW in Kisangani, DRC, where diagnostic and therapeutic gaps exacerbate patient outcomes. Catheter ablation, the gold standard, remains inaccessible here, necessitating reliance on pharmacotherapy. **Case Presentation:** A 43-year-old woman presented with three days of sudden-onset palpitations. Electrocardiography (ECG) revealed a PR interval of 90 ms, QRS duration of 130 ms, and delta waves with positive polarity in leads II, III, aVF, and V4-V6. Echocardiography confirmed normal cardiac structure (left ventricular ejection fraction: 65%, left atrial diameter: 34 mm). She was treated with sustained-release flecainide (150 mg/day) and bisoprolol (5 mg/day), achieving symptom resolution within one week. **Conclusion:** Strengthening arrhythmia care in resource-limited settings requires training, technology transfer, and

national registries. Long-term strategies must balance pharmacotherapy with advocacy for ablation access.

Keywords

Wolff-Parkinson-White Syndrome, Bundle of Kent, Resource-Limited Settings, Kisangani, Democratic Republic of Congo

1. Introduction

Wolff-Parkinson-White syndrome, caused by an accessory atrioventricular pathway, increases the risk of sudden cardiac death [1]. While its prevalence is 0.1% - 0.3% in high-income nations [2], data from sub-Saharan Africa remain scarce, likely reflecting underreporting rather than true rarity. In the DRC, cardiovascular diseases contribute to 11% of adult mortality [3], yet specialized arrhythmia care is virtually absent. Limited access to electrophysiological studies forces reliance on antiarrhythmics, which fail to mitigate long-term risks [4]. This report underscores the challenges of WPW management in Kisangani and proposes actionable solutions.

2. Case Report

2.1. Clinical Presentation

A 43-year-old woman with grade 1 obesity (BMI: 34.4 kg/m^2) presented with palpitations lasting three days, without chest pain or dyspnea.

2.2. Clinical Examination

Vital signs: blood pressure 133/71 mmHg, heart rate 105 bpm. Cardiovascular exam revealed irregular tachycardia.

2.3. Electrocardiographic Findings

ECG demonstrated sinus tachycardia with ventricular preexcitation: PR interval 90 ms, QRS duration 130 ms, and delta waves in leads II, III, aVF, and V4-V6 (**Figure 1**).

2.4. Echocardiography

No structural abnormalities (LVEF: 65%, left atrial diameter: 34 mm, LV end-diastolic diameter: 48 mm) (**Figures 2-4**).

2.5. Management and Outcome

Flecainide (150 mg/day) was chosen for its efficacy in blocking accessory pathways, while bisoprolol (5 mg/day) provided rate control. Adenosine and verapamil were avoided due to the risks of accelerating antegrade conduction. Follow-up ECG normalized within one week (**Figure 5**).

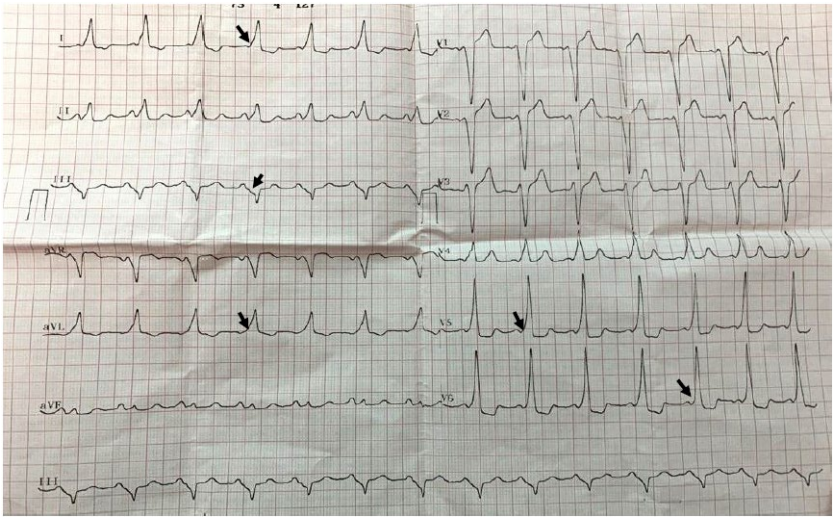

Figure 1. Emergency electrocardiogram showing typical WPW features.

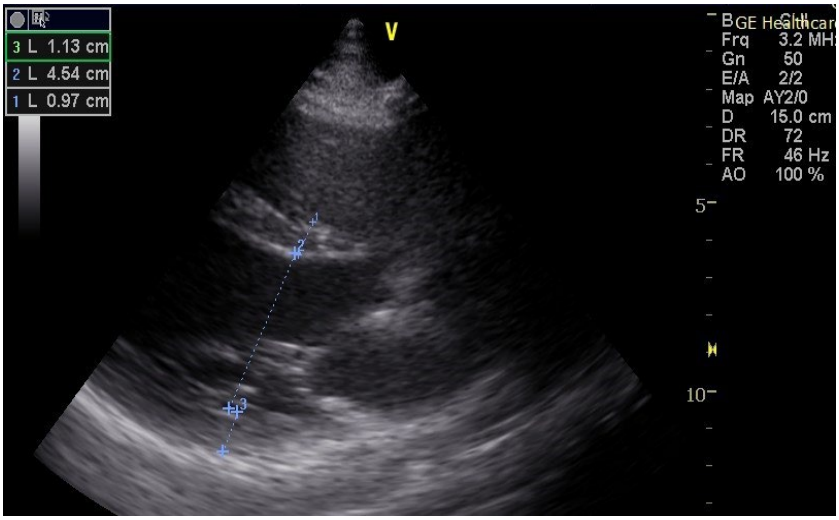

Figure 2. Echocardiography, parasternal long-axis view.

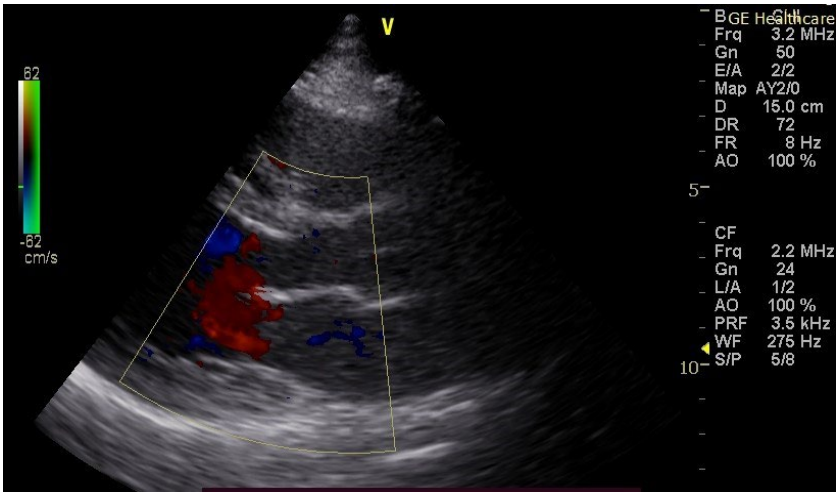

Figure 3. Echocardiography, parasternal long-axis view with color Doppler.

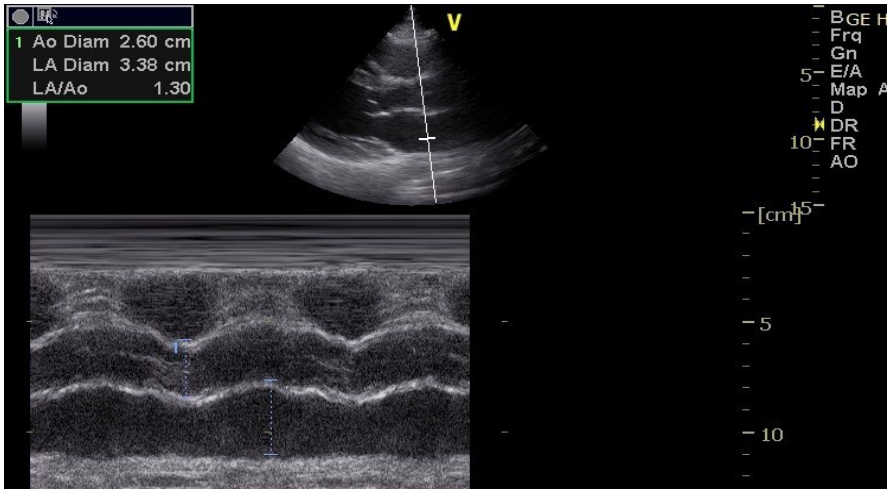

Figure 4. Echocardiography, parasternal long-axis view.

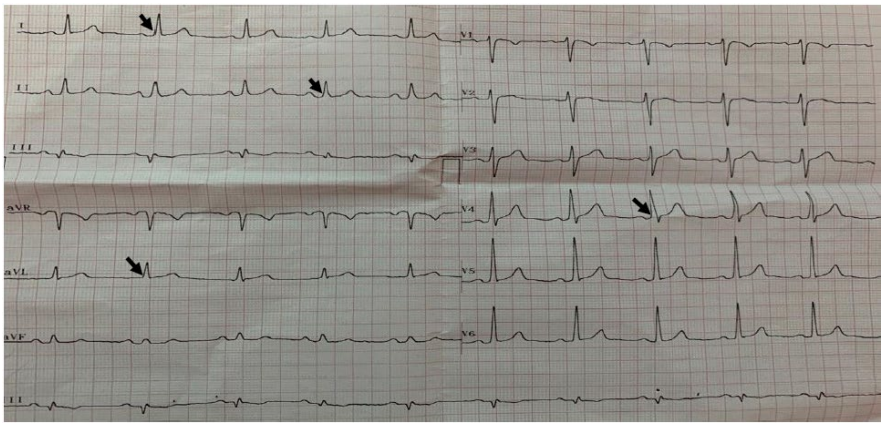

Figure 5. Electrocardiogram after resolution of the crisis with treatment.

3. Discussion

This case reflects systemic challenges in sub-Saharan Africa. Flecainide offers short-term symptom control, but long-term sudden death risks persist, necessitating ablation. Similar barriers are reported in Nigeria, where <10% of WPW patients access catheter ablation [5], and Uganda, where arrhythmia care is limited [6]. Recent Nigerian studies emphasize underdiagnosis due to ECG scarcity [5], while Indian research supports flecainide's safety in resource-limited settings [7].

4. Recommendations

1) Training programs for ECG interpretation and arrhythmia management.
2) Partnerships to subsidize ablation technologies.
3) National registries to track WPW epidemiology and advocate for resources.

5. Limitations

Lack of electrophysiological confirmation and single-case design restricts generalizability.

6. Conclusion

WPW management in Kisangani relies on ECG and pharmacotherapy. Sustainable solutions require infrastructure investment, training, and global collaboration.

Conflicts of Interest

None declared.

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