ORIGINAL RESEARCH PAPER

General Medicine

DOPPLER FINDINGS IN DIABETIC FOOT PATIENTS: A RETROSPECTIVE STUDY FROM A TERTIARY CARE CENTER IN MAHARASHTRA, INDIA

KEY WORDS:

Dr. Abhishek Lambhate* Junior Resident, Department of General Medicine, Dr D.Y. Patil Medical College & Hospital, Nerul, Navi Mumbai *Corresponding Author

Dr. Saurabh Kothari Associate Professor, General Medicine, Dr D.Y. Patil Medical College & Hospital, Nerul, Navi Mumbai

ABSTRACT

Diabetic foot is a major complication of Diabetes Mellitus, frequently associated with peripheral arterial disease (PAD). This study was conducted at a tertiary care hospital in Maharashtra, India, to assess arterial flow using Doppler ultrasonography in patients with diabetic foot. Data from 20 patients were analyzed for waveform patterns, ankle-brachial index (ABI), and the need for intervention. 55% showed monophasic waveforms, 30% biphasic, and 15% triphasic. Monophasic patterns correlated with lower ABI and higher intervention rates. Doppler ultrasonography is a valuable tool in early PAD detection and clinical decision-making in diabetic foot care.

INTRODUCTION

Diabetic foot represents a major health burden in India, with peripheral arterial disease (PAD) being a leading contributor to limb-threatening ischemia. Delayed diagnosis of PAD increases the risk of non-healing ulcers, infections, and amputations. Doppler ultrasonography provides a non-invasive, cost-effective way to evaluate lower limb vascular status, especially in resource-limited settings. This study evaluates Doppler findings and their correlation with ABI and intervention needs among diabetic foot patients in Maharashtra.

MATERIALS AND METHODS

A retrospective observational study was carried out at a tertiary care center in Maharashtra, India, over 6 months. Twenty diabetic foot patients were included. Parameters assessed were age, HbA1c, ABI, Doppler waveform pattern, and required interventions. Doppler studies evaluated dorsalis pedis, posterior tibial, popliteal, and femoral arteries. Waveforms were classified as triphasic, biphasic, or monophasic.

RESULTS

Of 20 patients, 13 (55%) had monophasic, 5 (30%) biphasic, and 2 (15%) triphasic waveforms. The mean ABI in monophasic cases was approximately 0.75. Intervention was required in 12 patients (60%), predominantly among those with abnormal waveforms. Figure 1 shows the waveform distribution. Figure 2 illustrates the relationship between ABI and HbA1c. Figure 3 displays the distribution of interventions.

DISCUSSION

The majority of diabetic foot patients in our study exhibited abnormal Doppler waveforms, reflecting underlying PAD. Monophasic flow patterns correlated with lower ABI and higher HbA1c, consistent with advanced vascular compromise. These findings align with national and global studies on the vascular burden in diabetic foot. Doppler evaluation serves as an essential tool for triaging cases and planning vascular interventions.

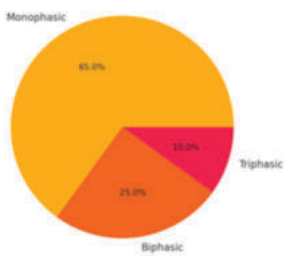

Figure 1: Distribution of Doppler Waveform Types Among Diabetic Foot Patients.

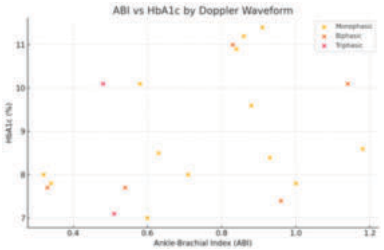

Figure 2: Scatter Plot Showing ABI vs HbA1c by Doppler Waveform Classification.

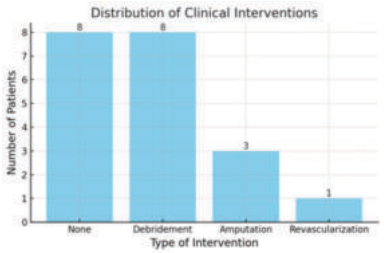

Figure 3: Distribution of Clinical Interventions Based on Doppler Findings.

CONCLUSION

Doppler ultrasonography is an effective, non-invasive diagnostic tool for detecting PAD in diabetic foot patients. Monophasic and biphasic waveforms correlate strongly with clinical severity and intervention needs. Routine Doppler screening should be integrated into diabetic foot care protocols in high-prevalence regions like Maharashtra.

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