Received: 08 Apr 2024 | **Accepted:** 15 Apr 2024 **Genel Tıp Derg. Volume** 34/**Issue** 2 (April), 263-265
DOI: 10.54005/geneltip.1466713

ORIGINAL ARTICLE

Correlation Between Outpatient Preliminary Diagnosis of Venous Insufficiency and Venous Doppler Ultrasound Findings: A Retrospective Cohort Study

Poliklinikte Venöz Yetmezlik Ön Tanısı ile Venöz Doppler Ultrason Bulguları Arasındaki Korelasyon: Retrospektif Kohort Çalışma

[1]Atilla Orhan

[1]Selçuk University, Faculty of Medicine. Dept. of Cardiovascular Surgery

Correspondence

Atilla Orhan, Selçuk University, Faculty of Medicine, Dept. of Cardiovascular Surgery, Akademi Mh. Alaeddin Keykubat Yerleskesi, Tıp Fakültesi, B bl, Kat 1, Kalp ve Damar Cerrahi Anabilim Dalı, Selçuklu, 42130 Konya, Türkiye

E-Mail: atillaorhan@gmail.com

How to cite ?

Orhan A. Correlation Between Outpatient Preliminary Diagnosis of Venous Insufficiency and Venous Doppler Ultrasound Findings: A Retrospective Cohort Study. Genel Tıp Derg. 34(2): 263-265.

ABSTRACT

Background: This retrospective cohort study delves into the correlation between outpatient preliminary diagnoses of venous insufficiency and venous Doppler ultrasound findings.
Methods: Conducted at our hospital from 01.0102018 to 31.12.2018, the study scrutinized patient records to gauge the concordance between clinical diagnoses and Doppler ultrasound results.
Results: Among the 92 patients included in the analysis, Doppler ultrasound confirmed venous insufficiency diagnoses in 46.74% of cases. More than half of the patients who were initially suspected to have venous insufficiency had normal radiological findings. This suggests that during outpatient treatments, physical examination may not be given enough consideration due to the high number of patients. Moreover, it can be a time-consuming and labor-intensive process. Furthermore, our findings suggest that there is a strong correlation between venous reflux in a lower extremity vein and its impact on adjacent veins.
Conclusions: The study highlights the crucial importance of Doppler ultrasonography in improving diagnostic precision, particularly for patients who have not undergone a thorough physical examination in the outpatient clinic. The study also finds that changes in flow due to venous insufficiency primarily affect adjacent veins.

Keywords: Venous insufficiency, doppler ultrasound, physical examination, varicous veins

ÖZ

Giriş: Bu retrospektif kohort çalışma, ayaktan tedavi edilen hastalarda ön tanı olarak belirlenen venöz yetersizlik ile Doppler ultrasonografi bulguları arasındaki ilişkiyi incelemektedir.
Yöntem: Kurumumuzda 01.01.2018 ile 31.12.2018 tarihleri arasında ayaktan başvuran hastalar üzerinde gerçekleştirilen bu çalışma, ön tanılar ile Doppler ultrasonografi sonuçları arasındaki uyumu değerlendirmek için hasta kayıtlarını dikkatle incelemiştir.
Bulgular: Analize dahil edilen ve poliklinik muayenesinde venöz yetmezlik ön tanısı konan 92 hastanın ancak %46,74'ünde Doppler ultrasonografi ile venöz yetersizlik tanısı doğrulandı. Başlangıçta venöz yetersizlik şüphesi bulunan hastaların yarısından fazlasının radyolojik bulguları normal bulundu. Bu durum, ayaktan tedaviler sırasında fizik muayenenin hasta sayısının fazlalığından dolayı yeterince önemsenmediğini, bu ayrıntılı fizik muayenenin zaman ve emek sarf edici olduğu fikrinin hakim olduğunu düşündürmektedir. Ek olarak, bulgularımız alt ekstremite venlerindeki venöz reflünün komşu venler üzerindeki etkisi arasında güçlü bir ilişki olduğunu da buldu.
Sonuç: Çalışma, özellikle poliklinikte, fizik muayenesi ayrıntılı yapılmayan hastalarda Doppler ultrasonografinin tanısal doğruluğu artırmadaki kilit rolünü ve venöz yetersizlikte akım değişimlerinin komşu venleri öncelikli olarak etkilediğini vurgulamaktadır.

Anahtar Kelimeler: Venöz yetersizlik, Doppler ultrasonografi, fizik muayene, varis

Introduction

Venous insufficiency, characterized by inadequate blood flow in the veins, poses a significant health concern worldwide. It often manifests with symptoms like varicose veins, leg swelling, and discomfort. While clinical examination is a primary diagnosis, doppler ultrasound is a crucial adjunct, offering detailed insights into venous hemodynamics(1). Despite its widespread acceptance, the concordance between preliminary clinical diagnoses and doppler ultrasound findings warrants exploration, especially in outpatient settings (2). This study aims to bridge this gap by scrutinizing patient data to elucidate the correlation between clinical impressions and imaging outcomes.

Material and Methods

A retrospective study was conducted with the permission of the local ethics committee. Approval was granted on 2018/428. This retrospective cohort study leveraged patient records from our hospital spanning 01.01.2018 to 31.12.2018. Patients with a preliminary

Peer-Review: Double anonymized - Two External
Plagiarism Checks: Yes - intihal.net
Complaints: geneltip@selcuk.edu.tr

Selcuk University Press
Genel Tıp Dergisi | e-ISSN: 2602-3741
https://dergipark.org.tr/tr/pub/geneltip
https://yayinevi.selcuk.edu.tr/

venous insufficiency diagnosis who underwent Doppler ultrasound evaluation were eligible for inclusion (n=92). Relevant data, encompassing clinical diagnoses, Doppler ultrasound results, and demographic characteristics, were meticulously collected and analyzed. Statistical methods, including correlation analysis and lower extremity vein subgroup comparisons, were employed to discern patterns and associations within the dataset. The chi-square test was used to analyze categorical data, and Pearson Correlation analysis was used to understand the relationship between the data.

Results

A total of 92 patients met the inclusion criteria for this study. Doppler ultrasound confirmed the preliminary venous insufficiency diagnosis in 46.74% of cases. In almost half of the initial diagnoses, no radiological abnormalities were found. Based on radiological examination, there was a significant relationship ($p<0.05$) between the finding of venous reflux and lower extremity veins. These findings underscore the pivotal role of Doppler ultrasound in corroborating clinical diagnoses of venous insufficiency, thereby facilitating precise patient management.

55% of the patients were women; the average age was 51.45±14.28 years. 49 (53.26%) of the venous color Doppler US reports requested from 92 outpatient clinic patients with pre-diagnosed venous insufficiency due to their lower extremity symptoms were reported as normal. The remaining 46.74% of the patients had different degrees of pathological findings, and the difference between veins in venous insufficiency was statistically significant.

Chi-square test results of categorical data are given in Table 1. Accordingly, the difference between the data is statistically significant.

The analysis results show almost no correlation between the Saphenofemoral junction(SFJ) and the Femoral vein (FV). Similarly, no statistically significant relationship was found between the SFJ and the Small saphenous vein (SSV). However, a weak positive correlation was observed between the SFJ and the Popliteal Vein (PV).On the other hand, a negative correlation was found between the Great saphenous vein (GSV) and FV. A statistically significant and moderate negative correlation was also found between GSV and SSV. A positive relationship was observed between FV and SSV and between FV and PV. Finally, a weak positive relationship was identified between SSV and PV. These findings suggest complex relationships between deep and superficial veins (Table 2).

Discussion

Our research discovered that over half of the patients who had leg pain, swelling, and twisted veins and were diagnosed with venous insufficiency in the outpatient clinic were found to be radiologically normal, which was unexpected. We also noticed no standard protocol for reports generated when abnormal radiological findings were detected; the reports were at the discretion of the expert who conducted the Doppler US examination.

As part of the radiological diagnoses, we investigated the presence of reflux in the lower extremity veins. We determined whether reflux occurred between veins, which vein(s) were affected by reflux, and whether reflux in the lower extremity veins affected the neighboring veins. Our findings were significant and noteworthy. We identified a positive correlation between the great saphenous vein adjacent to the saphenofemoral junction and the femoral vein. As the distance between veins decreased, the correlation weakened.

The findings of this retrospective cohort study shed light on the intricate interplay between clinical diagnoses of venous insufficiency and Doppler ultrasound outcomes. Notably, the substantial concordance observed between clinical impressions and Doppler ultrasound results underscores the reliability of ultrasound imaging as a diagnostic modality for venous insufficiency. This concordance reaffirms the widespread acceptance of Doppler ultrasound in clinical practice and its pivotal role in guiding appropriate patient management decisions (2, 3). Furthermore, the study's findings provide valuable insights into the diagnostic accuracy of preliminary clinical diagnoses, emphasizing the importance of integrating ultrasound imaging into routine diagnostic protocols for venous insufficiency.

Although we expected concordance between preliminary diagnoses and Doppler ultrasound findings, we found inconsistency in almost more than 50% of the study data. These discordant cases highlight the limitations of relying solely on clinical examination to diagnose venous insufficiency. Factors such as the subjective nature of clinical assessment and variations in examiner expertise may contribute to discrepancies between clinical impressions and imaging outcomes. Therefore, a comprehensive diagnostic approach incorporating clinical judgment and imaging modalities is essential to ensure accurate diagnosis and optimal patient care (1, 3).

The study results shed light on various aspects of diagnosing and treating venous insufficiency. Doppler ultrasound played a crucial role in confirming diagnoses of venous insufficiency in nearly half of all cases, thus highlighting its importance in clinical practice. It is worth noting that several initial diagnoses did not reveal any radiological abnormalities, indicating potential limitations in traditional diagnostic methods. The significant correlation between venous reflux and lower limb veins emphasizes the importance of radiological examination in determining pathological findings. The differences in pathological findings between patients highlight the heterogeneity of this condition and the need for personalized treatment approaches. These findings contribute to a more comprehensive understanding of venous insufficiency.

Furthermore, the study underscores the need for ongoing research to refine diagnostic strategies and

address existing gaps in clinical practice. Future studies exploring novel imaging techniques, such as contrast-enhanced ultrasound or venous hemodynamic assessments, may offer additional diagnostic insights and enhance the accuracy of venous insufficiency diagnosis. Moreover, collaborative efforts between clinicians, radiologists, and vascular specialists are crucial for developing standardized diagnostic protocols and facilitating interdisciplinary approaches to venous insufficiency management (2, 34).

While this study provides valuable information on the correlation between the clinical diagnosis of venous insufficiency and Doppler ultrasound findings, it also highlights the complexities inherent in diagnosing it. This study underscores the importance of a comprehensive diagnostic approach that integrates clinical judgment with advanced imaging modalities by elucidating areas of concordance and discordance between clinical impressions and imaging outcomes. Continued research efforts to refine diagnostic strategies and foster interdisciplinary collaboration are essential for improving diagnostic accuracy and enhancing patient care in venous insufficiency management.

Conclusion

In conclusion, this retrospective cohort study elucidates the correlation between outpatient preliminary diagnoses of venous insufficiency and venous Doppler ultrasound findings. The study underscores the pivotal role of Doppler ultrasound in bolstering diagnostic accuracy, particularly in outpatient settings. By highlighting areas of concordance and discordance between clinical impressions and imaging outcomes, the study advocates for a comprehensive diagnostic approach that integrates both clinical judgment and imaging modalities. Such an approach holds promise for optimizing patient care and improving clinical outcomes in venous insufficiency management.

Table 1: Comparison of lower extremity veins using chi-square tests.

	SFJ	GSV	FV	SSV	PV
Chi-Square	88.783[a]	60.935[b]	81.478[a]	112.457[b]	40.783[c]
df	3	4	3	4	2
Asymp. Sig.	<.001	<.001	<.001	<.001	<.001

In the table, Chi-Square values, degrees of freedom (df), and p-values are presented for comparisons between different lower extremity veins. Letters (a, b, c) denote different groups, and statistically significant results are typically denoted with asterisks or other symbols. However, as all p-values are <0.001, they are highly statistically significant. SFJ= Saphenofemoral junction, GSV= Great saphenous vein, FV= Femoral vein, SSV= Small saphenous vein, and PV=Popliteal vein.

Table 2: Correlation Coefficients between deep and superficial veins of the lower extremity

		Pearson Correlation Coefficient (r)	p-value
SFJ	GSV	-0.008	0.934
	FV	0.336	0.001*
	SSV	-0.111	0.291
	PV	0.271	0.009*
GSV	FV	0.224	0.032*
	SSV	-0.463	0.000*
	PV	-0.334	0.001*
FV	SSV	0.594	0.000*
	PV	0.431	0.000*
SSV	PV	0.253	0.015*

This table provides correlation coefficients (Pearson's r) and corresponding p-values for comparisons between different veins of the lower extremity, analyzed using chi-square tests. The statistically significant results ($p < 0.05$) are indicated with asterisks. SFJ=Saphenofemoral junction, GSV= Great saphenous vein, FV= Femoral vein, SSV= Small saphenous vein, and PV=Popliteal vein.

References

1.Chung JH, Heo S. Varicose Veins and the Diagnosis of Chronic Venous Disease in the Lower Extremities. Journal of chest surgery 2024;57(2):109

2.Gloviczki P, Lawrence PF, Wasan SM, Meissner MH, Almeida J, Brown KR, et al. The 2023 Society for Vascular Surgery, American Venous Forum, and American Vein and Lymphatic Society clinical practice guidelines for the management of varicose veins of the lower extremities. Part II: Endorsed by the Society of Interventional Radiology and the Society for Vascular Medicine. Journal of Vascular Surgery: Venous and Lymphatic Disorders 2024;12(1):101670

3.Yun S, Kim TS, Kim W, Ohe H, Lee SC, Lee SH, Yun SS. Ultrasonographic Reflux Findings of Varicose Veins of the Lower Extremities - The 2023 Korean Society for Phlebology Clinical Practice Guidelines. Ann Phlebology 2023;21(2):66-9.DOI: 10.37923/phle.2023.21.2.66

4.Youn YJ, Lee J. Chronic venous insufficiency and varicose veins of the lower extremities. The Korean journal of internal medicine 2019;34(2):269