



EFFECTIVENESS OF WELLS CRITERIA IN DIAGNOSING DVT IN JSS HOSPITAL MYSURU.

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ABSTRACT

INTRODUCTION: DVT which is formation of a clot inside the veins which are deeply located, more commonly seen in legs but have the probability to occur anywhere else ranging from brain to intestinal veins. Among the cardio vascular system related mortality this condition holds 3rd most common cause. There are other complications seen such as Recurrence in dvt and “post thrombotic syndrome” which are also accounting for significant morbidity.

AIMS AND OBJECTIVES OF THE STUDY:

Primary objective: Assess the effectiveness of wells criteria in diagnosing DVT, considering usg doppler as gold standard

Secondary objective: To find out the most significant co-morbid conditions associated with / causing DVT

METHODOLOGY: This is a cross sectional study carried out in a tertiary care centre in south india, where patients on opd / ip basis were considered when there is suspicion of DVT & were scored as per wells criteria. Then they were screened with Doppler USG to confirm the presence or absence of DVT. There fore ascertaining the wells scoring its significance in diagnosis DVT at first instance.

RESULTS: Out of 32 patients who were selected 28 were diagnosed accurately with wells scoring. Hence there fore 87.5% were diagnosed with DVT in the present study. PPV is 90.09% , NPV is 20.0 %. In the present study well criteria cut off of >3 had a sensitivity of 71.43% and Specificity of 50% to diagnosed Deep vein thrombosis.

CONCLUSION: Among 32 suspected cases of DVT, wells score was able to make out the diagnosis of DVT in 28 cases thus proving to be a very effective diagnostic indicator. With above mentioned data, this proves that the wells score is indeed dependable predictive scoring for DVT and can be used with ease at Primary health care settings where there is no provision of USG machines. It can be easily scored and non operator dependent

KEYWORDS : DVT, WELLS CRITERIA**AIMS AND OBJECTIVES OF THE STUDY**

Primary objective: Assess the effectiveness of wells criteria in diagnosing DVT, considering USG doppler as gold standard.

Secondary objective: To find out the most significant co-morbid conditions associated With or causing Dvt

METHODOLOGY

a) Study design: Cross sectional study

b) Study Duration: oct-1 - 2019- to september-30 - 2021

c) Sampling technique: PURPOSIVE SAMPLING

d) Sample size: estimated as 32 considering proportion of dvt among those which high probability of dvt (>3 wells score) as 75% ,5% alpha error ,20% relative precision 13.

Formula :

Estimation Of The Single Proportion (relative Precision)

The taken Assumptions are

1) Binary should be the outcome variable (success/failure, alive/dead)
Success probability is p in each trail; failure probability is 1-p
Proportion of distribution of sample (p) is approximated to normal
Formula :

$$n = \frac{(z^2 \cdot 1 - \alpha/2)(1-p)p}{(\epsilon^2 \cdot 2p)}$$

The expected proportion is taken as p relative precision is denoted by the symbol ϵ . $1 - \alpha/2$: Is the desired confidence interval

study setting & collection of data:

This is a cross sectional study of wells criteria for DVT in JSSH MYSORE. 32 patients are selected on IP and OPD basis after satisfying inclusion and exclusion criteria. Following which complete clinical examination and medical history is collected.

Based on that wells score is calculated and they are divided in to low, intermediate & high risk groups. Then the patient will be screened by USG doppler considering it as gold standard from which final result of positive or negative deep vein thrombosis is determined.

Then effectiveness of wells criteria is calculated by considering the Gold standard analysis results.

study population & source of data:

Total number of subjects included in the study were 32 of any patient

with history, symptoms & signs suspicious of deep vein thrombosis in JSS hospital Mysore

No race /sex/ based selection, after satisfying inclusion and exclusion criteria mentioned below

The data was collected by calculating the wells score in a printed score card which contains the above mentioned table and later correlating with use doppler reports

Subject eligibility:**Inclusion Criteria**

- Age greater than 18 years
- Patients who give consent

Exclusion Criteria:

- Patients who had history of recurrent dvt
- Patients with medical history of bleeding disorders

Study assessments of end points:

Based on the scoring after clinical examination and history taking as per wells criteria patients are categorised in to high, intermediate and low risk groups, patient will be subjected to USG doppler (as a part of routine dvt workup, considering it as gold standard).

The results are now compared by analysing the wells score probability to diagnose positive dvt reported cases by USG doppler.

3 - high probability

Score is calculated using below criteria

Clinical Feature	Points
Active cancer (on treatment, treated in the last 6 months or palliative)	1
Paralysis, paresis or plaster immobilisation of the lower limb	1
Bedridden for 3 days or more, or major surgery in the past 12 weeks requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf Swelling 3 cm larger than the symptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral superficial veins (non-varicose)	1
Previous DVT	1
Alternative diagnosis is at least as likely as DVT	-2
Clinical probability simplified score	Points
DVT likely	2 points or more
DVT unlikely	1 point or less

Statistical Analysis:

The descriptive statistics was done by proportion, mean, SD, MEDIAN, INTERQUARTILE RANGE
The inferential statistics was done using Chi square test / fissure exact test, ROC curved measures of validity like sensitivity, specificity, NPV, PPV with 95% confidence interval.

All these measurements were calculated using the SPSS 21.0 and EPIINFO 7.2.2.6 Statistically significant P value was considered <0.05.

RESULTS

	Frequency	Percentage
21 – 30	9	28.1%
31 – 40	9	28.1%
41 – 50	8	25%
51 – 60	4	12.5%
61 – 70	2	6.2%
Total	32	100%
Mean ± SD	38.40 ± 12.82	

In the present study, the populations mean age was 38.40 ± 12.82.

28.1% belong to 21-30 years and 31-40 years each. 25% in 41-50 years age group, 12.5% in 51-60 years age group, 6.2% in 61-70 years age group.

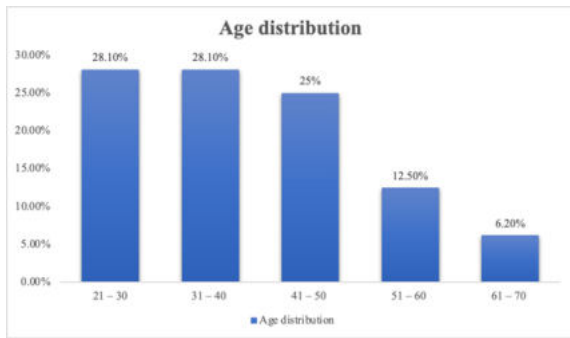


Table 2: Distribution based on gender

	Frequency	Percentage
Male	14	43.7%
Female	18	56.2%
Total	32	100%

43.7% were male and 56.2% were female.

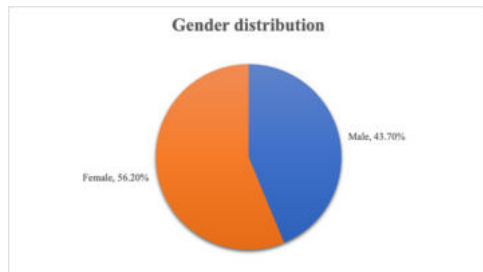


Table 3: Distribution based on Immobilization

	Frequency	Percentage%
1)Yes	7	21.9%
2)No	25	78.1%
3)Total	32	100%

Immobilized patients were 21.9%

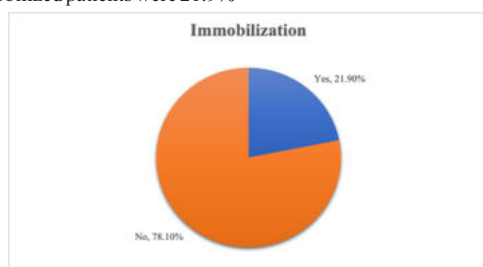


Table 4: Surgical History

	Frequency	Percentage
1)Yes	7	21.9%
2)No	25	78.1%
3)Total	32	100%

21.9% had past history of surgery

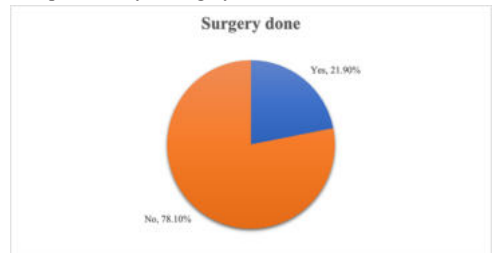


Table 5: H/O Cancer

	Frequency	Percentage
1)Yes	4.	12.5%
2)No	28.	87.5%
Total	32.	100%

12.5% had history of cancer

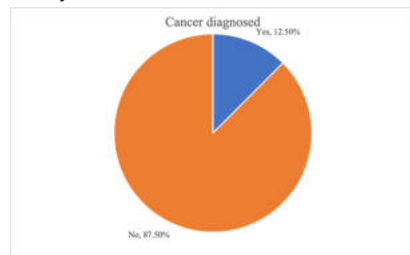


Table 6: Smoking

	Frequency	Percentage
1)Yes	10.	31.2%
2)No	22.	68.7%
-Total	32.	100%

31.2% had history of smoking.

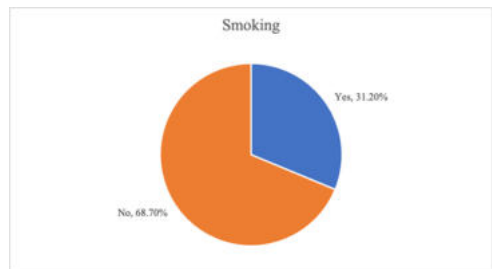


Table 7: H/o Myocardial infarction

	Frequency	Percentage
Yes	2	6.2%
No	30	93.7%
Total	32	100%

6.2% had history of Myocardial infarction.

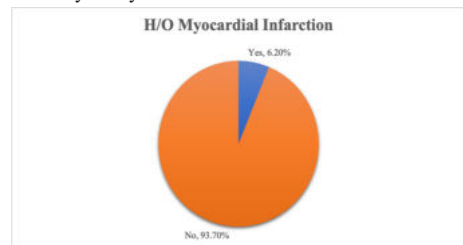


Table 8: Renal failure

	Frequency	Percentage
Yes	2	6.2%
No	30	93.7%
Total	32	100%

6.2% had Renal failure

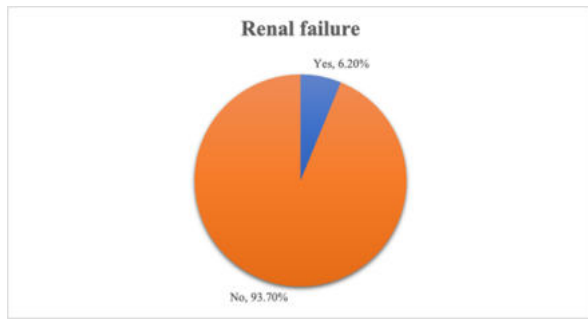


Table 9: Trauma

	Frequency	Percentage
Yes	1	3.1%
No	31	96.9%
Total	32	100%

3.1% had Trauma



Table 10: Blood group

	Frequency	Percentage
O+	13	40.6%
AB+	2	6.2%
B+	15	46.8%
A+	2	6.2%
Total	32	100%

40.6% with O+ Blood group, 6.8% with B+ Blood group, 6.2% with AB+ and A+ Blood group.

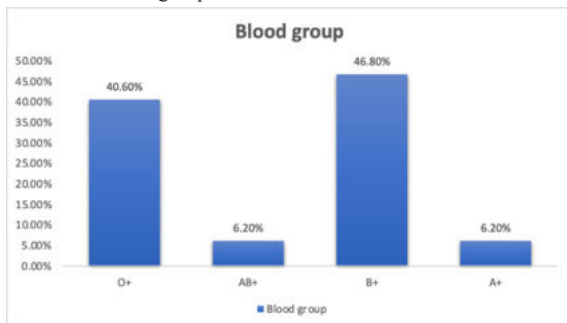


Table 11: Dyslipidaemia

	Frequency	Percentage
Yes	11	34.4%
No	21	65.6%
Total	32	100%

34.4% have Dyslipidemia.

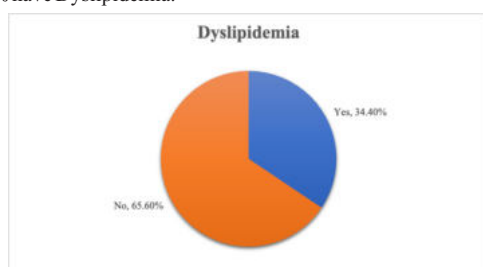


Table 12: Wells score

	Frequency	Percentage
0 -1 (Low risk)	0	0%
2 - 3 (Moderate risk)	3	9.4%
>3 (High risk)	29	90.6%
Total	32	100%

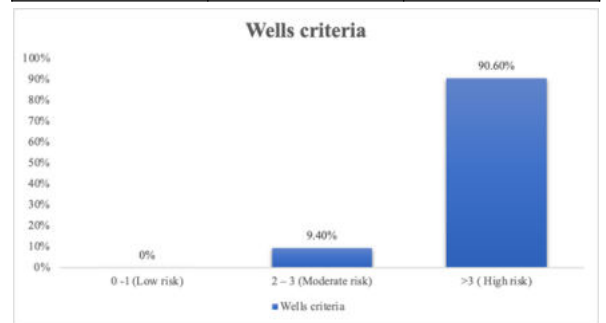
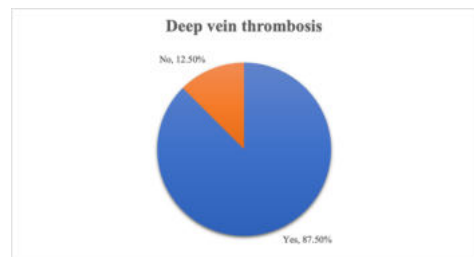


Table 13: Deep vein thrombosis

	Frequency.	Percentage.
Yes	28	87.5%
No	4	12.5%
Total	32	100%



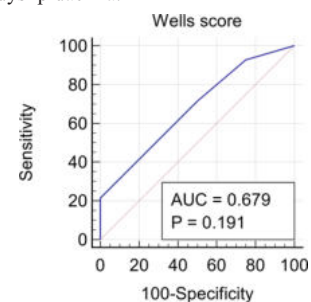
In the present study, 87.5% were diagnosed with Deep vein thrombosis.

Table 15: Risk factors and DVT

	DVT Present	DVT Absent	P value
Age	38.82 ±13.19	35.50 ±11	0.63
Sex	Male	2	0.79
	Female	16	
Immobilization	7	0	0.26
H/O Surgery	5	2	0.15
H/O Cancer	4	0	0.42
Smoking	8	2	0.39
H/O Myocardial Infarction	1	1	0.10
Renal failure	2	0	0.58
Trauma	1	0	0.70
Dyslipidemia	9	2	0.48

In the present study, Patients diagnosed with DVT

- 25% had history of immobilization.
- 17.9% with DVT had history of surgery
- 14.3% had history of cancer.
- 28.6% had history of smoking
- 3.6% had history of Myocardial infarction
- 7.1% had renal failure
- 3.6% had trauma
- 32.1% had dyslipidaemia.



DISCUSSION

The present study was conducted in JSS Hospital, considering that the USG doppler as gold standard and to figure out the most significant co morbid conditions associated with or causing DVT among cases with history, signs and symptoms of DVT attending the OP and IP of a tertiary health care centre, Mysore.

To achieve the objective a cross sectional study was conducted where 32 patients were selected.

Based on that wells score is calculated and they are divided in to low, intermediate & high risk groups.

Age distribution

In the present study, the mean age of population under study was 38.40 ± 12.82.

28.1 % belong to 21-30 years and 31-40 years each. 25% in 41-50 years age group, 12.5% in 51-60 years age group, 6.2% in 61-70 years age group.

In the present study the mean age of patients with DVT was 38.82 ± 13.19.

Gender

In the present study, 43.7% were male and 56.2% were female. 42.85% of patients with DVT were male and 57.15% were female.

Risk factors

In the present study, Patients diagnosed with DVT

- 25% had history of immobilization.
- 17.9% with DVT had history of surgery
- 14.3% had history of cancer.
- 28.6% had history of smoking
- 3.6% had history of Myocardial infarction
- 7.1% had renal failure
- 3.6% had trauma
- 32.1% had dyslipidaemia.

Wells criteria

In the present study well criteria cut off of >3 had a sensitivity of 71.43% and Specificity of 50% to diagnosed Deep vein thrombosis.

PPV is 90.09%.

NPV is 20.0 %

	Cut off	AUC	Sensitivity	Specificity	P value
Present study	>3	0.67	71.43%	50%	0.19
Razaq et al. ¹⁵⁴	>1	0.75	87.3%	65.5%	<0.01*
Silveira PC et al. ¹⁵⁵	>3	0.60			
Engelberger RP et al. ¹⁵⁶	>3	0.56			
Modi et al. ¹⁵⁷	>2	0.85	67%	90%	<0.001*

CONCLUSION

- Among 32 suspected cases of DVT, wells score was able to make out the diagnosis of DVT in 28 cases thus proving to be a very effective diagnostic indicator
- With above mentioned data, this proves that the wells score is indeed dependable predictive scoring for DVT and can be used with ease at Primary health care settings where there is no provision of USG machines.
- It can be easily scored and non operator dependent.

Summary

DVT being most commonly encountered clinical condition in everyday hospital setting and also has many atypical presentations

Many of them may go unnoticed and may end up resulting in complications resulting to significant morbidity and mortality as well.

This cross sectional study conducted in JSS HOSPITAL with purposive sampling technique.

The current study of wells criteria concluded that this is a effective tool in diagnosing DVT primarily before conforming by the gold standard test (USG)

This prevents the lag of initiation of treatment if USG is not available at that point of time (mainly in remote areas) and patient can be started on

required anticoagulation

This can also be used to prevent unnecessary USG scan in low probability cases, thus being a cost cutter.

This doesn't always require a medical professional to score / non operator dependent

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