



Heart Disease Predictor

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Introduction

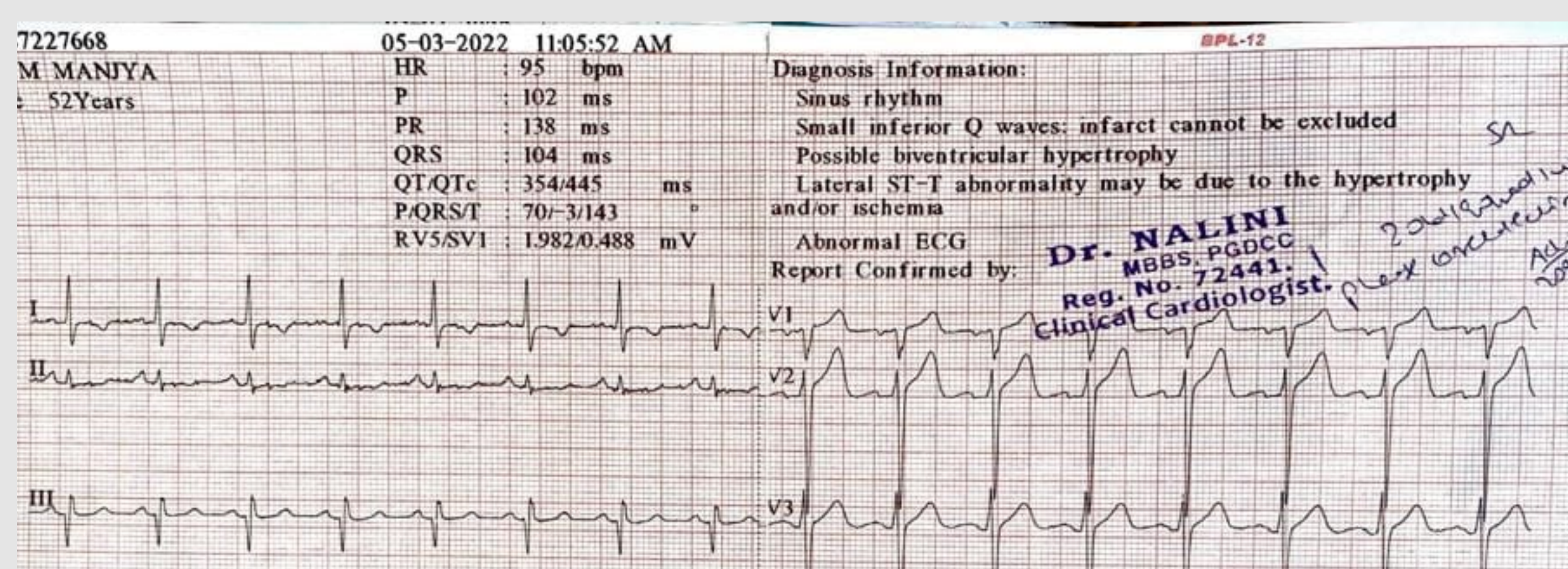
In health care industry, predicting heart disease is a challenging issue. In early days medical tests such as Electrocardiogram (ECG) and blood tests have been used for predicting heart diseases. In addition to clinical tests, computer aided diagnosis systems, namely, patient information, medical diagnosis and medical images are being used for predicting heart diseases. Machine learning algorithms have significant role in predicting diseases. In this project we used knn algorithm to predict the disease.

Attributes

1. Cp—chest pain type - 0,1,2,3.
- (iii) Trestbps—resting blood pressure. The normal range is 120/80.
- (iv) Chol—serum cholesterol shows the amount of triglycerides present. Triglycerides are another lipid that can be measured in the blood. It should be less than 170 mg/dL.
- (v) Fbs—fasting blood sugar larger than 120 mg/dl (1 true). Less than 100 mg/dL (5.6 mmol/L) is normal, and 100 to 125 mg/dL (5.6 to 6.9 mmol/L) is considered prediabetes.
- (vi) Restecg—resting electrocardiographic results: 0 - No; 1 - yes
- (vii) Thalach—maximum heart rate achieved.
- (viii) Exang—exercise-induced angina (1 yes). Angina is a type of chest pain caused by reduced blood flow to the heart. 1 - Yes ; 0 - No

Reports

age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal	target
0	63	1	3	145	233	1	0	150	0	2.3	0	0	1
1	37	1	2	130	250	0	1	187	0	3.5	0	0	2
2	41	0	1	130	204	0	0	172	0	1.4	2	0	2
3	56	1	1	120	236	0	1	178	0	0.8	2	0	2
4	57	0	0	120	354	0	1	163	1	0.6	2	0	2



TEST NAME	RESULT	BIOLOGICAL REFERENCE INTERVAL
Fasting Plasma Glucose	: 149	Normal : 70-100 mg/dL Impaired Fasting Glucose : 101-125 mg/dL Diabetes : >=126 mg/dL

Method : Hexokinase
Comments / Interpretation :
- ADA Guidelines (2021) are adopted for the evaluation of Diabetic Status.

NUTRITIONAL SCREENING: Obese / Normal / Mal Nourished

Height: Weight:

DIETICIAN CONSULTATION: Required / Not Required

DRUG ALLERGIES: YES/NO

Symptoms list:

1. Fever Yes No
2. Myalgia (Body pains) Yes No
3. Cough Yes No
4. Breathlessness Yes No
5. Cold Yes No
6. Sore Throat Yes No
7. Loss of smell, taste Yes No
8. Loose motions Yes No

Handwritten notes: 52/M/K/C/O, Ch. Smokes, Ch. Alcohol, 1 T2DM, 2 HTN, 3 Old CVA, No chest pain / breathless, Routine check-up.

ECG: (5/3/22)
D) SR
E) axis
small q-waves in inf. leads, T + V5, V6
consistent ECG findings of Aug 21

Echo:
LVEF
RWMA

NOSIS

Coronary Artery Disease - Stable Angina
Left Ventricular Function
Chest X-ray Angiogram: Mild Coronary Artery Disease (7/4/22)
Medical Management

HYPERTENSIVE
DIABETIC

HISTORY
Patient was asymptomatic. No history of shortness of breath, palpitations, sweating, chest pains, fever, giddiness, pedal edema. Known case of diabetes and hypertension and on regular H/O CVA in 2020. Chronic alcoholic and chronic smoker.

ADMISSION IN THE HOSPITAL
On admission, patient is conscious coherent, Temp: afebrile, PR: 66BPM, RR: 20CPM, BP: 140/90, SpO2: 98%. CVS: S1+ S2+, RS: BAE+, P/A: SOFT NON TENDER. ECG showed sinus rhythm, normal inferior leads, (consistent with old ECG findings of Aug 21). 2D Echo showed normal LAD, LAD-DOMINANT VESSEL-NORMAL, OMS-OM1-NORMAL, LPDA AND PLV NORMAL, RCA-NON DOMINANT VESSEL-NORMAL. ADVISE MEDICAL FOLLOW UP. HOSPITAL STAY UNEVENTFUL. PATIENT CLINICALLY STABLE AT TIME OF DISCHARGE.

TREATMENT GIVEN
Chest X-ray Angiogram: Mild Coronary Artery Disease. Medical Follow Up.

DISCHARGE
M 40G ORALLY ONCE DAILY AT 8AM
50MG ORALLY ONCE DAILY AT 8PM
5 40MG ORALLY ONCE DAILY AT 8PM
5 75M ORALLY ONCE DAILY AT 2PM
DIABETIC MEDICATION

Algorithm Used

We used The KNN(K-Nearest Neighbour) Machine Learning. Algorithm in this project. K-Nearest Neighbour is one of the simplest. Machine Learning algorithms based on Supervised Learning technique. K-NN algorithm assumes the similarity between the new case/data and available cases and put the new case into the category that is most similar to the available categories. K-NN algorithm stores all the available data and classifies a new data point based on the similarity. This means when new data appears then it can be easily classified into a well suite category by using K- NN algorithm. K-NN algorithm can be used for Regression as well as for Classification but mostly it is used for the classification problems. K-NN is non-parametric algorithm, which means it does not make any assumption on underlying data.

Future Directions

Heart diseases are a major killer in India and throughout the world, application of promising technology like machine learning to the initial prediction of heart diseases will have a profound impact on society. The early prognosis of heart disease can aid in making decisions on lifestyle changes in high-risk patients and in turn reduce the complications, which can be a great milestone in the field of medicine.

Results

Heart Disease Prediction

- chest pain type (values 0,1,
- resting blood pressure
- serum cholesterol in mg/dl
- fasting blood sugar > 120 mg/dl
- resting electrocardiographic
- maximum heart rate achieved
- exercise induced angina

Predict

Results :

Sorry to say, chances of having heart disease is more, please consult a Doctor.

