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Receivers operating characteristics curve: (ROC)

Dot plot → limited info. for sensitivity and specif.

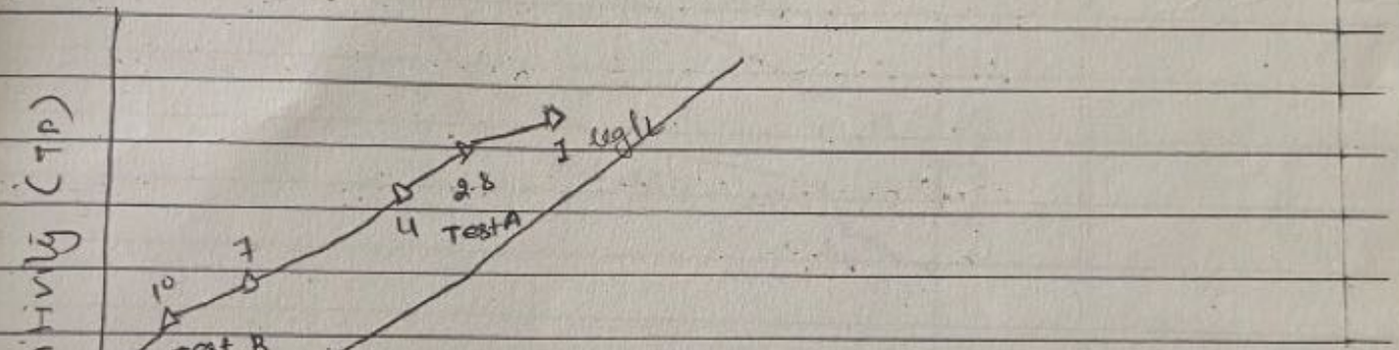
↓

sensitivity and sp. at various cutoff can not be estimated

↓ + Sensitivity and specificity of diff. test for common dz can not be compared obtained by ROC curve.

↓

plotting sensitivity (y-axis) vs 1-specificity (x axis)



ROC of PSA.

- X axis = 1 - specificity indicates FP
- Y axis = Sensitivity indicates TP.
- hidden 3rd axis = cut off values.
- Each points of curve → different decision cut-off
  10 ug/dl for test B
  4 ug/dl for test A.

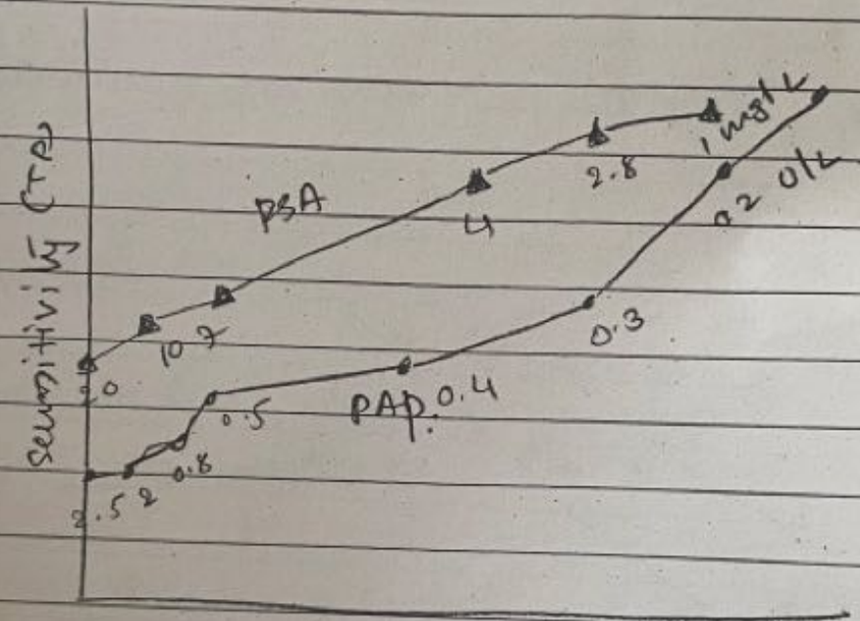
- Test A → higher sensitivity, low spec
  B = vice versa.

- area under curve represent test's overall performance

→ ROC is also used to compare 2 tests in terms of sensitivity and specificity.

ex:

Comparision of performance of Acid phosphatase assay & that of PSA assay for discriminating b/w BPH and prostate CA.



1-Specificity. (FP)

Interpretation:

- ROC indicates,
  - No matter what level of sensitivity is chosen PSA assay offers greater sensitivity and specificity than PAP assay.
- In these ROC, both curves do not intersect.

→ When ROC curves of 2 lab tests assessing same disease interest, one test may exhibit higher sensitivity when other exhibit higher specificity at diff. decision cut-offs.

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* Advantages of ROC are:
① estimation of test performance (sensitivity and specificity) at different decision cut-off.

② Comparision of performance of different tests assessing same disease can be done.