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Thrombus length measured by NECT and angiographic techniques (CTA, DSA) and its relationship to recanalization rate and neurological outcome in patients showing MCA occlusion treated with mechanical thrombectomy with stent retrievers.

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Aims and objectives

Although IV thrombolysis results have shown to be related to thrombus length, we don't have so much information about thrombus length influence on recanalization rate and neurological outcome after mechanical thrombectomy with stent retrievers.

We analyzed thrombus length in order to try to find correlation between thrombus length in both NECT and angiographic techniques (CTA, DSA), successful recanalization and neurological outcome after after 3 months in patients treated mechanical thrombectomy with stent retrievers.

Methods and materials

We evaluated NECT and angiographic techniques from 79 consecutive patients suffering a stroke with MCA occlusion treated with mechanical thrombectomy with stentretrievers.

Pearson correlation coefficient was estimated to evaluate the association between thrombus length measured by CT and angio.

Bland & Altman plot was drawn to obtain a visual way of assessing agreement between the two measures.

Univariate analysis through U Mann-Whitney to estimate association between thrombus length and successful recanalization and modified Rankin Scale (mRS).

Significance level was fixed at 0.05. We used Stata software v15.1.

Results

Mean thrombus length in NECT was 12.6 mm (IQR 9.1-18.9), with no differences between succesful recanalization from those with a failure in recanalization (12.3 vs 14 mm, p=0.13).

Mean thrombus length in angiographic techniques (CTA) was 13.6 mm (IQR 10.2-23), with no differences between succesful recanalization from those with a failure in recanalization (12.95 vs 14.35mm, p=0.30).

When concerning about neurological outcome, we did not found differences between good neurological outcome (mRS 0-2) vs bad neurological outcome (mRS >2) associated with mean thrombus length in NECT (12.9 vs 12.3mm, p=0.65) or angiographic techniques (CTA) (14.9 vs 12.7mm, p=0.82).

Pearson correlation coefficient between the measurements with NECT and angiographic techniques (CTA) was 0.91, which indicates a good linear association.

Bland & Altman Plot showed an average of the difference between lengths is 1.75mm lower on NECT than the measure in angiographic techniques. Most points were within the confidence band. Agreement is optimal up to a length of approximately 20mm, but from that length, NECT systematically measures less than angiographic techniques.

Images for this section:

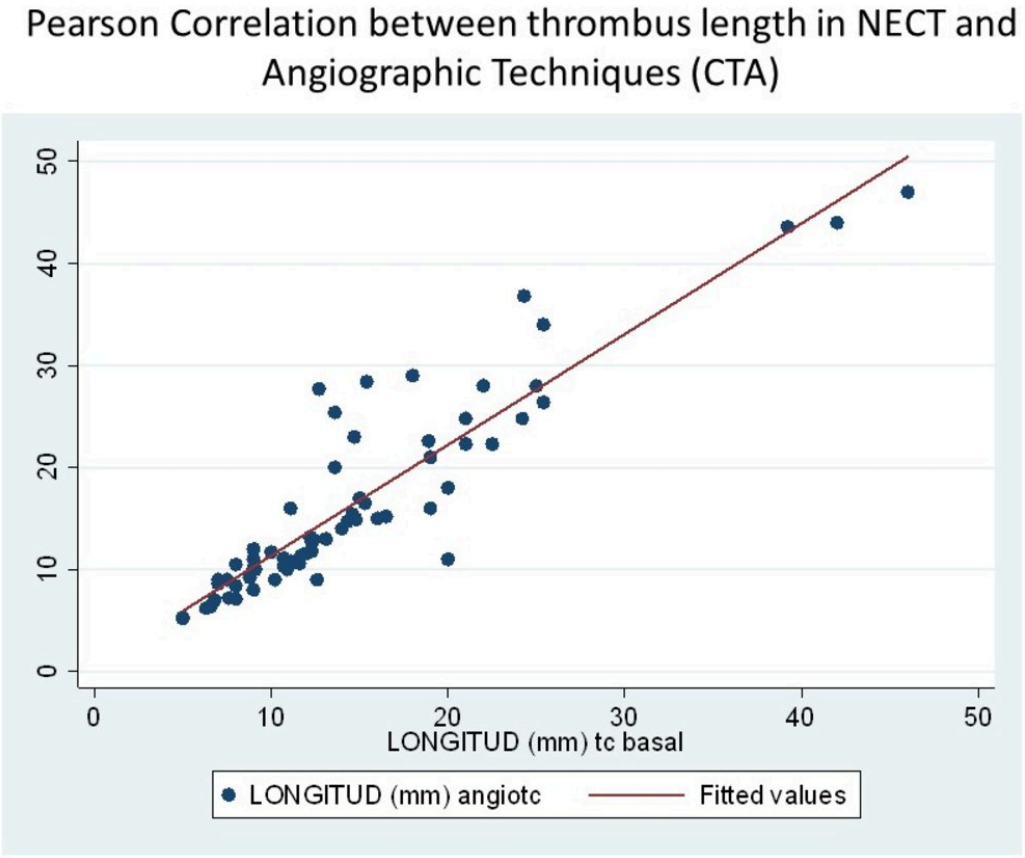

Fig. 3: Table with the results of Pearson correlation between thrombus length in NECT and angiographic techniques showing good linear correlation.

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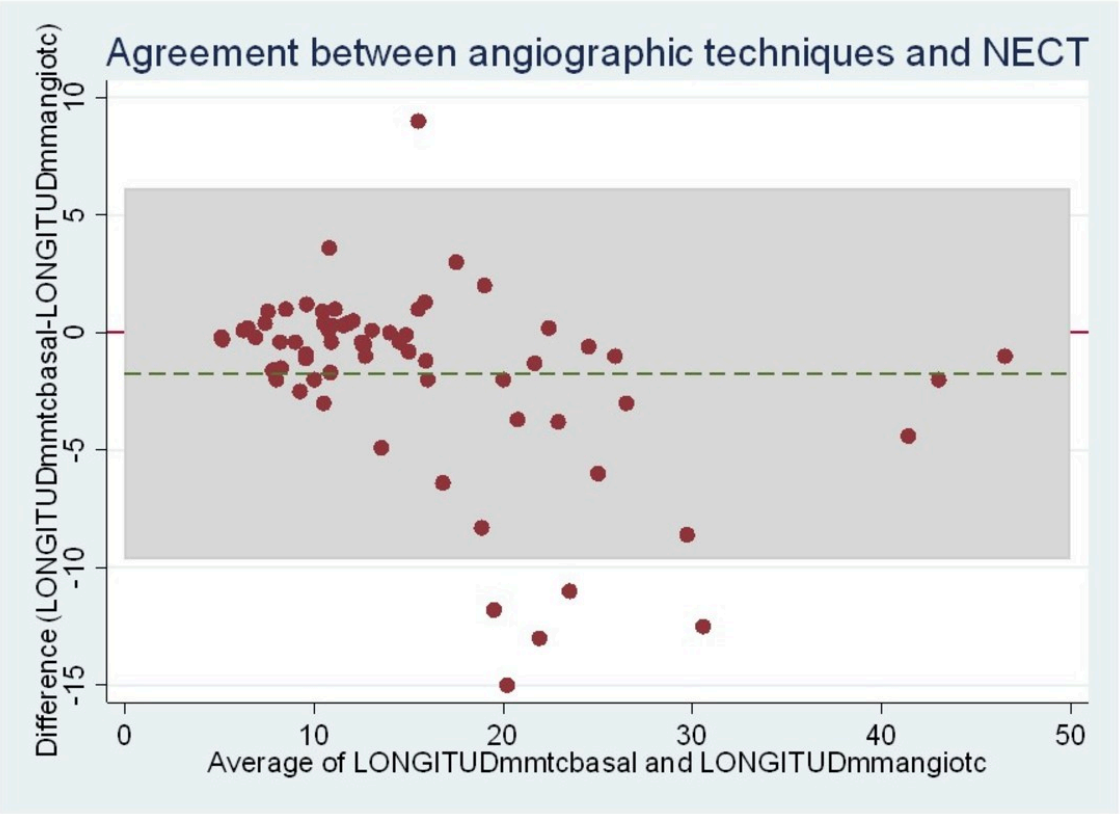

Fig. 4: Bland & Altman Plot showing an average of the difference between lengths.

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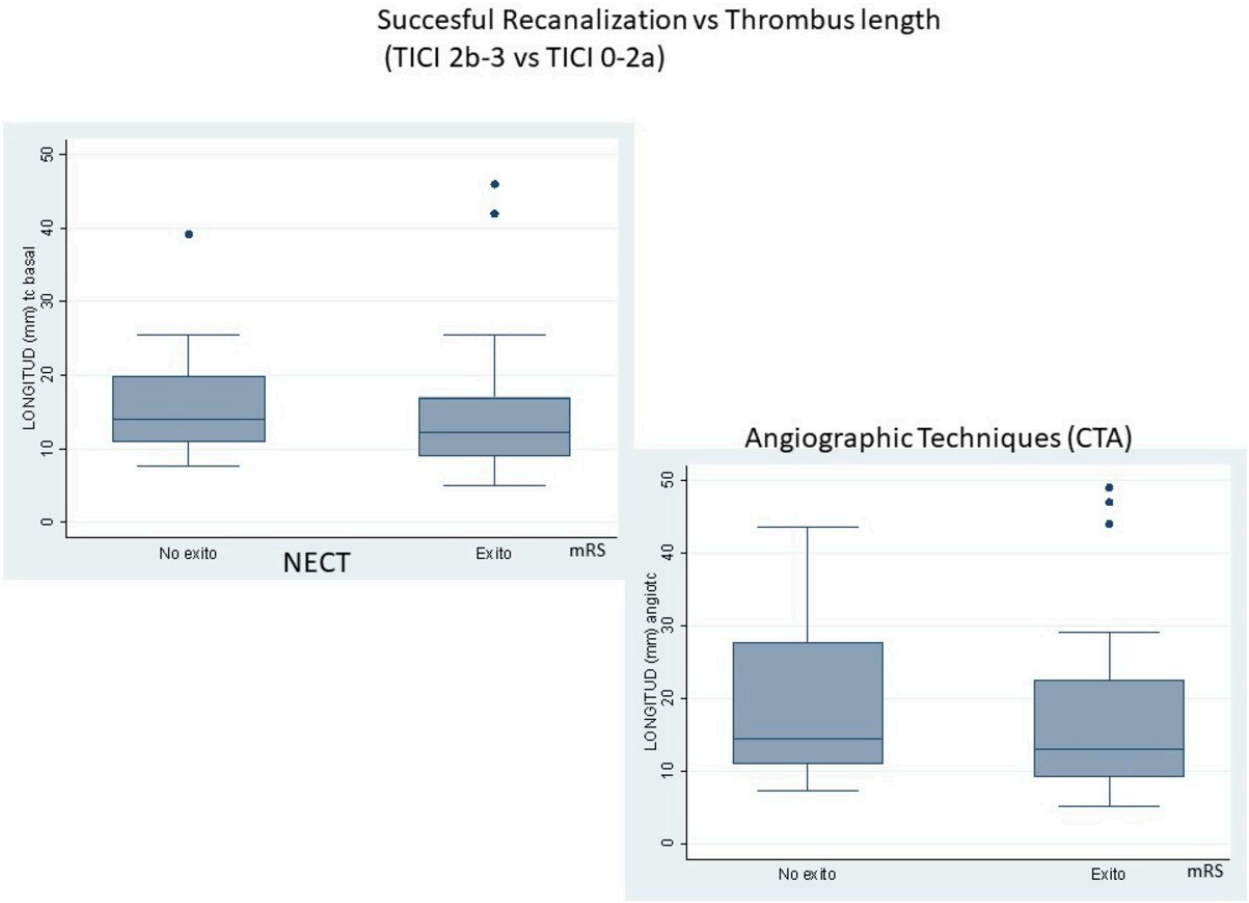

Fig. 1: Box Plot showing relationship between thrombus length and recanalization rate

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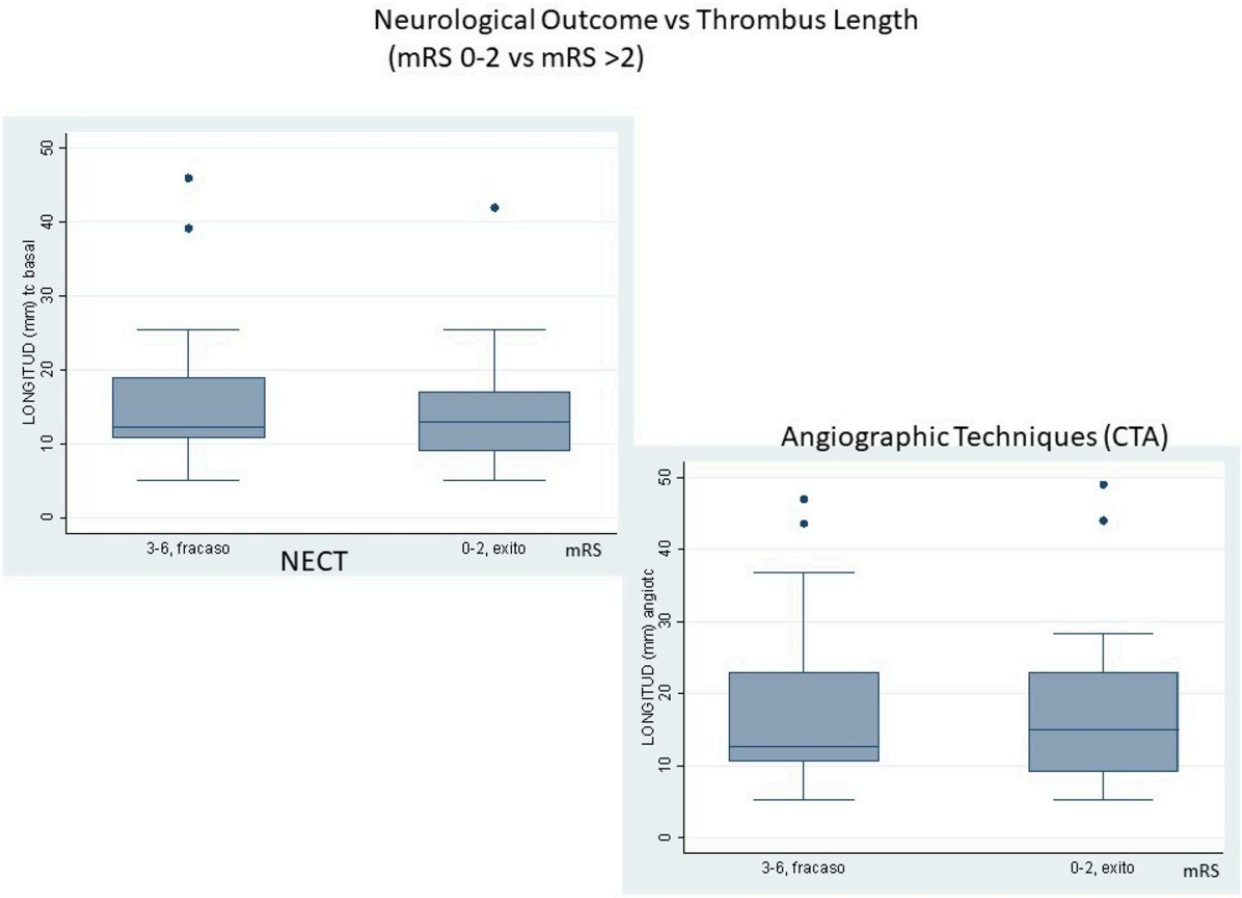

Fig. 2: Box Plot showing relationship between thrombus length and neurological outcome (mRS at 90 days)

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Conclusion

In our study, we did not found a relatioship between thrombus and recanalization success or neurological outcome in mechanical thrombectomy for middle cerebral artery occlusions.

Therefore, large clots should not be a contraindication for mechanical thrombectomy with stent retrievers.

It may be other factors that influence the rate of recanalization (clot density, clot composition...) or perhaps it is the sum of several of them which has the key for predicting succesful recanalization and neurological outcome.

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