



REAL TIME ULTRASSOUND FOR SHORT TERM HEMODIALYSIS CATHETER INSERTION IN INTERNAL JUGULAR VEINS BETWEEN PATIENTS WITH AND WITHOUT PREVIOUS SHORT TERM HEMODIALYSIS CATHETER

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OBJECTIVES: Evaluate real time ultrasound (RTU) for hemodialysis short term catheter (HSTC) insertion in internal jugular veins (IJV) between patients with and without previous HSTC.

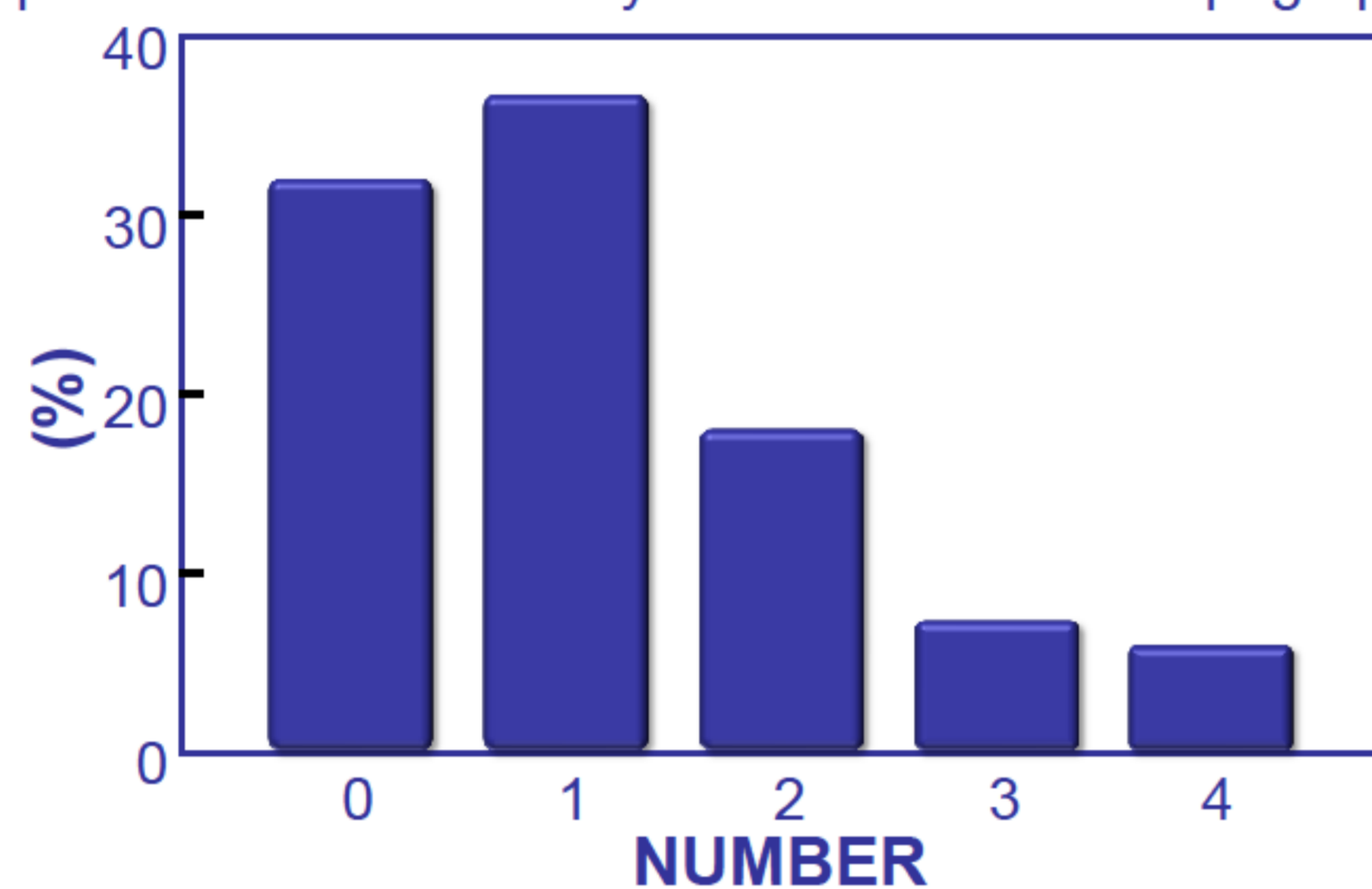
METHODS: Prospective cohort between 2013/07 and 2014/08. The procedures with previous HSTC were divided according to the number of previous venous topographies accessed. Statistics through IBM SPSS Statistics 20.0.

➤ There were 150 reviews procedures in 92 patients (Table 1).

| Table I: Demographic characteristics | characteristics |
|--------------------------------------|-----------------|
| Age (years) | 65,21 ± 10,88 |
| Sexo masculino | 73 (48,7%) |
| Comorbidities | 143 (95,3%) |
| HAS | 121 (80,7%) |
| DM | 107 (71,3%) |
| Cardiovascular disease | 25 (16,7%) |
| Dyslipidemia | 46 (30,7%) |
| Cancer | 3 (2,0%) |
| Coagulopathy | 2 (1,3%) |
| Prevalent in hemodialysis | 92 (61,3%) |
| Dialysis vintage (days) | 240,84 ± 165,88 |

➤ Previous HSTC procedures in 102 (68.0%): 1 venous topography 55 (36.7%), 2 topographies in 27 (18%), 3 topographies in 11 (7.3%) in 9 4 topographies (6%) (Figure 1).

Graph 1: Previous HSTC by number of venous topographies.



➤ In 68 procedures, the paired antero posterior distance (APD) of the right IJV proved to be significantly higher than of the left (Table 2).

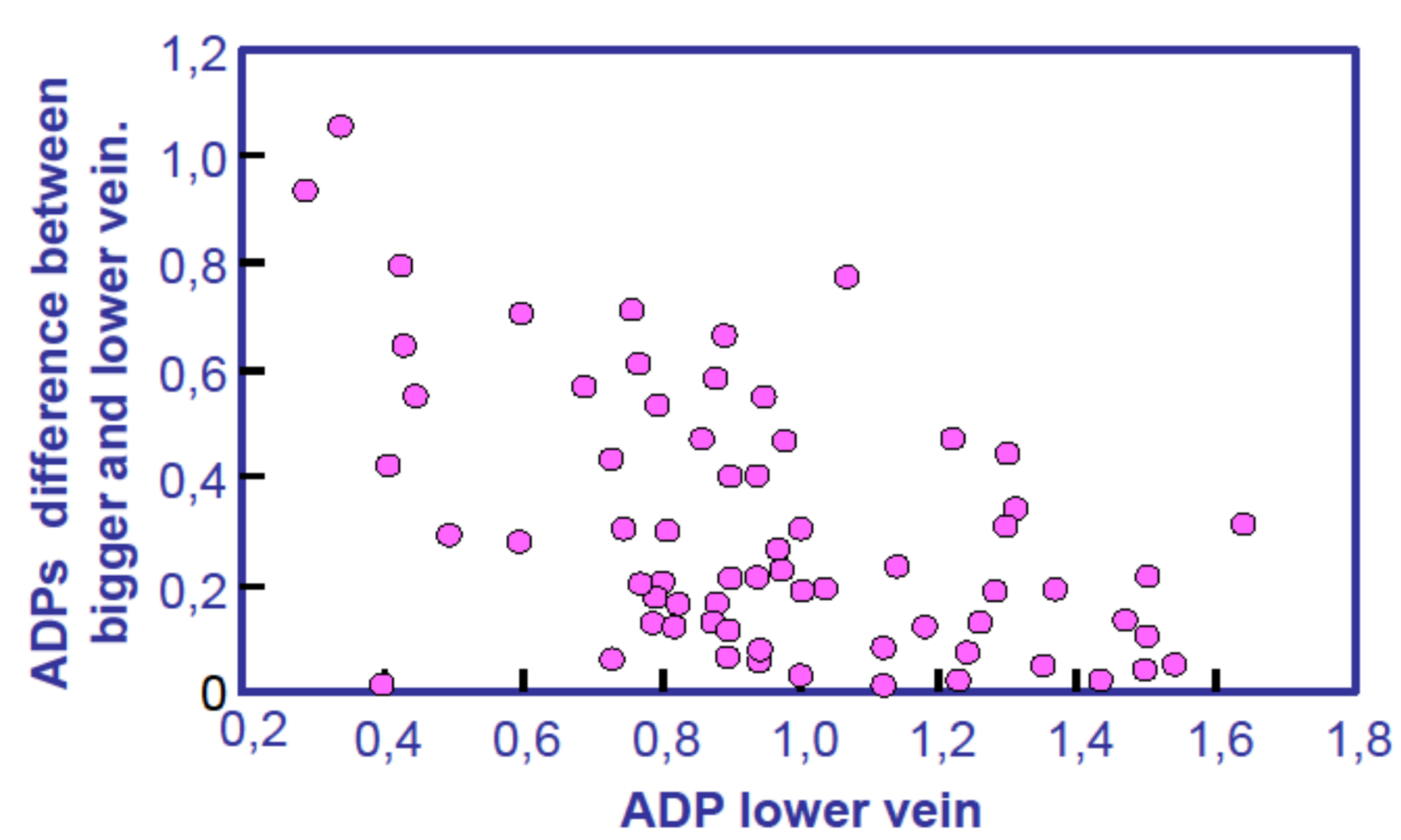
Table 2: Measures of matched ADPs of right and left IJV.

| | Right IJV | Left IJV | p |
|------------------|-------------|-------------|----------|
| APD (media ± SD) | 1,18 ± 3,22 | 1,02 ± 3,30 | = 0,000* |

* t test for paired samples

➤ In 11 (16.2%) of the 68 procedures with paired measurements of the IJV, the method determined the choice of the vein; in 7 (10.3%) due to the difference of ADP and in 4 (5.9%) due to venous thrombosis (TV) (Graph 2 and Figures 1 and 3).

Graph 2: Scatter plot between ADPs lower vein x ADPs largest vein - lower vein.



CONCLUSIONS:

To our knowledge, this is the first report of using RTU for HSTC insertion in IJV with previous HSTC, comparing with data among patients who never used HSTC. We observed 2.9 more complications with prior HSTC; with previous HSTC at 2 topographies, strong association is observed. Age, gender, DM, AH, DLP and CVD were not related. Due to variability of APD, RTU assists in the vein choice. VT is a common finding and related to infection of previous HSTC. There is no relation between the non progression of the guide wire and APD. Data reinforce the importance of "Fistula FIRST".

Figure 1: Asymmetry of the jugular veins in the same patient.



Figure 3: Thrombus inside the left IJV.



➤ Complications occurred statistically significantly more frequently in proceedings with previous HSTC (Table 3).

Table 3: Occurrence of complications in procedures with and without previous CVCCP

| | Without previous HSTC | With previous HSTC | P |
|---------------|-----------------------|--------------------|----------|
| Complications | 7 / 48 (14,6%) | 40 / 102 HSTC39,2% | = 0,002* |

* Pearson chi square.

➤ The association between complications and previous HSTC remained after correction for confoundings - like age, sex, Arterial Hypertension (AH), Diabetes Mellitus (DM), Dyslipidemia (DLP) and Cardiovascular Disease (CVD) - by binary logistic regression analysis (OR 2.9, CI 0.11 0.73, p = 0.009).

➤ There were 15 (27.3%), complications in 55 patients with previous HSTC in one topography; 14 (51.9%) in 27 patients with 2 topographies; 5 (45.5%) in 11 patients with 3 topographies; 6 (66.7%) in 9 patients with 4 topographies (p = 0.001, chi-square, p < 0.05 between 2 topographies and no previous HSTC, post hoc Tamhane) (Table 5).

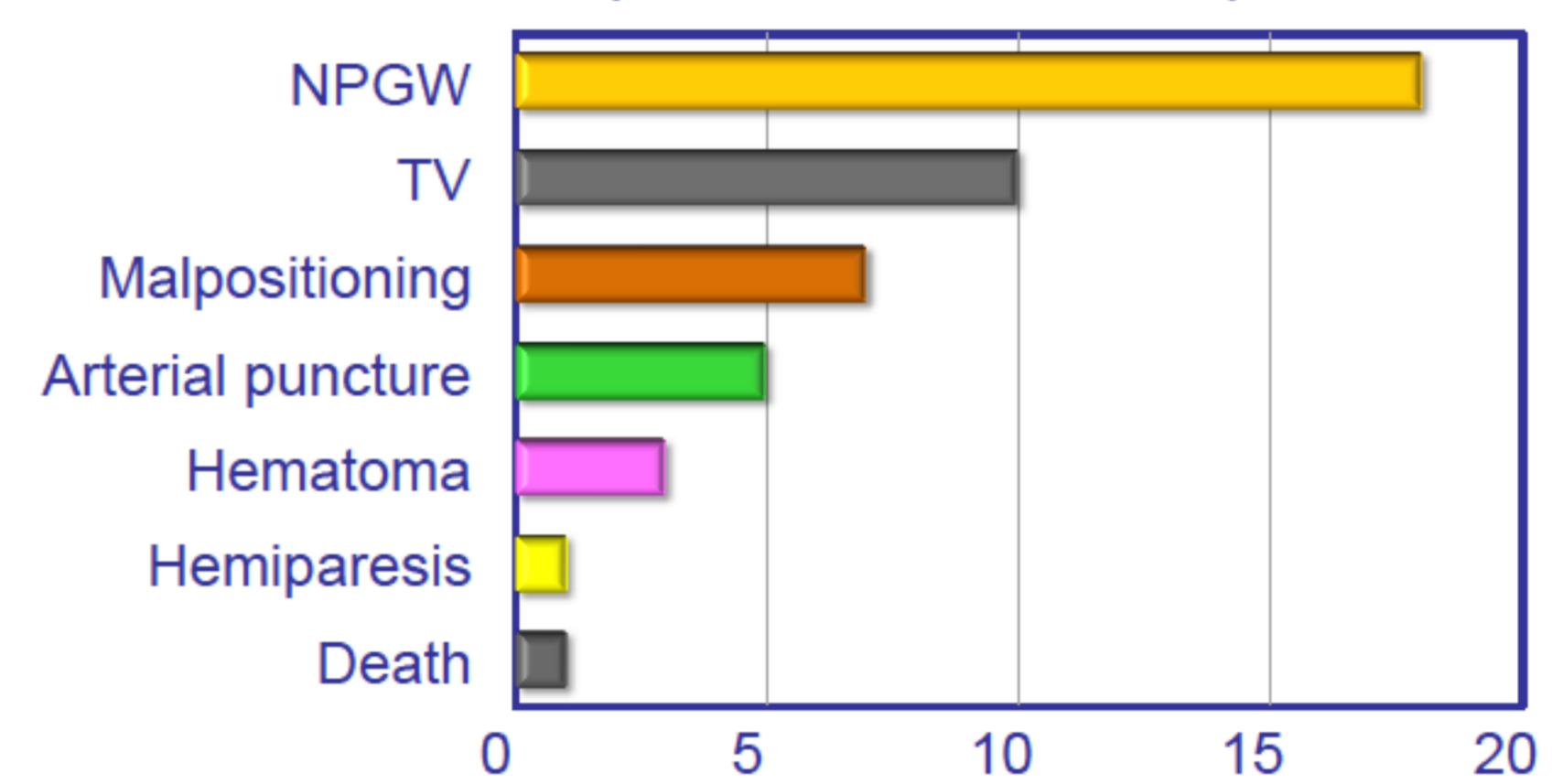
Table 5: Complications distributed by number of topographies of previous HSTC.

| | 0 (N=48) | 1 (N=55) | 2 (N=27) | 3 (N=11) | 4 (N=09) | P |
|---------------|-----------|------------|-------------------------|-----------|-----------|----------|
| Complications | 7 (14,6%) | 15 (27,3%) | 14 (51,9%) ^a | 5 (45,5%) | 6 (66,7%) | = 0,001* |

* Pearson chi square; Mean difference significant at the 0.05 level; between groups 2 and 0 catheter - Tamhane.

➤ The most frequently observed complication was non progressing guide wire (NPGW) in 18 procedures (12.00%); TV in 10 (6.67%); malpositioning in 7 (4.67%); arterial puncture in 5 (3.33%); hematoma in 3 (2.00%); hemiparesis in 1 (0.67%); death in 1 (0.67%) (Figure 3).

Graph 3: Observed complications.



➤ NPGW occurred in 2 (4.2%) of 48 without prior HSTC and 16 (15.7%) of 102 with (p = 0.043, Pearson chi square). The association was lost after binary logistic regression analysis (RR: 2.3; CI: 0.50 to 1.09, p = 0.065).

➤ There was no significant difference in APDs between cases with successful or not progression of the guide wire, either in the of right or left IJV.

➤ All 10 cases of TV occurred in patients who had their previous HSTC removed by infection.

➤ There were 7 procedures with malpositioning of HSTC; 6 (5.9%) occurred in the 102 procedures with previous HSTC and 1 (2.1%) in the 48 without previous HSTC (p = 0.30, Pearson chi square).

➤ There were no statistically significant differences between the procedures with and without previous HSTC in relation to age, gender, DM, AH, DLP or CVD.

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