

Session: P096 Central-venous catheter infections

**Category: 8a. Intravascular catheter-related infections**

25 April 2017, 12:30 - 13:30

P2010

**A randomized prospective study to compare the efficacy of catheter locks with saline or heparin in the maintenance of peripheral venous catheters**

Maria Jesus Perez-Granda<sup>1</sup>, Emilio Bouza Santiago<sup>2</sup>, Ariana González<sup>3</sup>, Blanca Pinilla<sup>4</sup>, José Manuel Collado<sup>3</sup>, María de la Luz Rodríguez<sup>3</sup>, Jesús Millán<sup>3</sup>, María Guembe<sup>\*2</sup>

<sup>1</sup>*Hospital Gregorio Marañón; Microbiology and Infectious Diseases*

<sup>2</sup>*Hospital General Universitario Gregorio Marañón, Instituto de Investigación Sanitaria Gregorio Marañón; Clinical Microbiology and Infectious Diseases*

<sup>3</sup>*Hospital General Universitario Gregorio Marañón*

<sup>4</sup>*Hospital General Gregorio Marañón*

**Background:** The need of use of peripheral venous catheters (PVC) and the importance of a proper maintenance to avoid complications requires lock therapy of either heparin or saline as possible preventive approaches. Heparin demonstrated its efficacy in central venous catheters, but there are still controversies of whether it is useful in peripheral venous catheters. Our main objective was to compare the efficacy of saline versus heparin in PVC lock for the prevention of phlebitis and catheter colonization in patients admitted to an Internal Medicine Department (IMD).

**Material/methods:** We performed a clinical, prospective, controlled, open and randomized study with patients admitted to an IMD, who had at least one PVC, from October 2015 to October 2016. Patients were randomized to receive either saline (PosiFlush™, group A) or heparin (Fibrilin™, group B) in the daily maintenance of the PVC. We monitored the clinical outcome to evaluate phlebitis, catheter colonization rate, peripheral venous catheter-related bloodstream infections (PVC-RBSI), crude mortality, days of hospital stay, and days of antimicrobial therapy. The study was registered in [www.clinicaltrials.gov](http://www.clinicaltrials.gov) (NCT02970409).

**Results:** We included a total of 374 PVCs from 273 patients, 200 (53.5%) of them received saline locks (group A) and 174 (46.5%) heparin locks (group B). Patients' main demographic characteristics were equally distributed among the two study groups (table). The median (IQR) days of catheter indwelling time was 5 (3-8) for both groups ( $p=0.38$ ). Phlebitis rate between catheters from Groups A and B was 21.8% and 15.4%, respectively ( $p=0.14$ ). PVC tip colonization rate was 11.0% and 8.6% in groups A and B, respectively ( $p=0.49$ ). There were only 2 episodes of PVC-RBSI that occurred in one patient detected in group A. Other clinical data are detailed in the table.

**Conclusions:** Our study findings demonstrated that there were no statistically significant differences in phlebitis and colonization rates between PVCs that were locked either with saline or heparin. Based on our preliminary data, we suggest that PVC can be maintained with saline, as it is innocuous, safer and cheaper than heparin. However, we continue to collect patients in the study in order to increase the sample size and to analyze only catheters without continuous infusion.

**Table Patients' and catheters' characteristics**

Variables	Total	Group A (saline lock)	Group B (heparin lock)	p
<b>Patients' characteristics</b>				
N (%)	273	135 (49.5)	138 (50.5)	
Mean (SD) age, years	79.7 (64.6-87.1)	80.6 (65.2-87.5)	78.9 (60.8-85.5)	0.52
Male sex, N (%)	120 (44.0)	54 (40.0)	66 (47.8)	0.22
Underlying disease, N (%)	106 (38.8)	54 (40.0)	52 (37.7)	0.71
Congestive Heart Failure	78 (28.6)	38 (28.1)	40 (29.0)	0.89
Chronic Obstructive Pulmonary Disease	71 (26.0)	35 (25.9)	36 (26.1)	1.0
Diabetes	51 (18.7)	25 (18.5)	26 (18.8)	1.0
Nephropathy				
Median (IQR) of hospital days of stay	7.0 (5.0-10.0)	7.0 (5.0-12.0)	7.0 (4.7-10.0)	0.11
Median (IQR) days of antibiotics	4.0 (0.0-7.0)	4.0 (0.0-7.0)	4.0 (0.0-8.0)	0.68
No. of PVC-RBSI	1	1 (0.7)	0 (0.0)	0.49
Crude mortality	19	14 (10.4)	5 (3.7)	0.03
<b>Catheters' characteristics</b>				
N (%)	374	200 (53.5)	174 (46.5)	
Median (IQR) indwelling catheter days	5.0 (3.0-8.0)	5.0 (3.0-8.0)	5.0 (3.0-8.0)	0.38
Catheter use	239 (63.9)	125 (62.5)	114 (65.5)	0.83
Antibiotics	135 (36.1)	75 (37.5)	60 (34.5)	
Others				
Reason for PVC withdrawal	246 (65.8)	126 (63.0)	120 (70.2)	0.08
End of use	69 (18.4)	43 (21.5)	26 (15.2)	
Suspicion of infection	30 (8.0)	21 (10.5)	9 (5.3)	
Obstruction	6 (1.6)	2 (1.0)	4 (2.3)	
Self-removal	20 (5.3)	8 (4.0)	12 (7.0)	
Other				
Phlebitis, N (%)	69 (18.9)	43 (21.8)	26 (15.4)	0.14
Catheter colonization, N (%)*	37/286 (12.9)	22/163 (13.5)	15/123 (12.2)	0.49

\*Data of PVC tip cultures were available in 76.5% (286/374).