National Health Research Sysmposium 2017

"Promoting Research Culture by sharing evidence Based Research, Best Practices and Innovations"

Abstract Book

Education, Training and Research Unit
Ministry of Health, Nutrition and Indigenous Medicine

PP 52

ASSOCIATION OF SELECTED INFLAMMATORY MARKERS WITH LUMBAR DISC HERNIATION AND DEGENERATION

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Background: Lumbar disc degeneration and herniation (LDHD) is considered as the major contributing factor for low back pain. Although LDHD is a multifactorial condition recent studies have suggested that microorganisms play a possible role in LDHD.

Aim: To identify the association of selected inflammatory markers in LDHD patients with positive and negative lumbar disc cultures and to compare with controls.

Method: Test subjects were patients undergoing lumbar discectomy (n=104), while controls subjects (n=104) were healthy adults who did not obtain treatment for back pain for the past one month period and without having acute or chronic inflammation/infection. Surgically removed disc was taken for aerobic and anaerobic studies whereas muscle biopsies were used as controls. In order to prevent bacterial contamination of the skin, stringent aseptic procedures were followed; this included cleaning the skin of the surgical field preoperatively two times with 70 % (v/v) isopropyl alcohol and three times with povidone iodine solution prior to skin incision. Gram stain, coagulase and catalase test were performed for the isolates and RapID ANA II ID kit (remel,USA) was used for the identification of anaerobes. Venous blood samples were obtained from test subjects (prior to the surgery) and control subjects. Serum aliquots were analyzed for C-reactive protein (CRP) and high sensitivity CRP using KONE 20 XT auto analyzer. One-way ANOVA (Post Hoc) was used for statistical analysis using SPSS 20.0 version.

Results: Among 104 disc cultures, there were 18 (17.3 %) subjects with positive disc cultures; 12 were positive for aerobes (coagulase negative *Staphylococci* species) and 6 for anaerobes. Identified anaerobic cultures represented *Propionibacterium acnes* (n=2) and *Gemella morbillorum* (n=1). However, three anaerobic cultures could not identify due to slow growth. Mean CRP and hs-CRP were significantly higher in patients with LDHD and positive disc cultures (p=0.003 and p=0.021) when compared to controls. Further mean CRP and hs-CRP concentrations were higher in positive disc cultures (8.2 ± 12.7 mg/L and 5.1 ± 11.8 mg/L) when compared to those of negative disc cultures (6.2 ± 8.3mg/L and 3.9 ± 6.6 mg/L) and control subjects (3.4 ± 2.7 mg/L and 1.9 ± 3.1 mg/L).

Conclusion: Significantly higher CRP and hs-CRP were present in LDHD positive disc cultures when compared to control subjects. Increased level of CRP and hs-CRP in both microorganism positive and negative patients suggest the role of inflammatory changes in LDHD. Elevation of inflammatory markers, hs-CRP and CRP could be used as early inflammatory markers in clinical assessment of patients with LDHD.

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