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Thesis Title	Immunological and Microbiological Profile of Diabetic Patients with Foot Ulcers			
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Abstract	This study was carried out in Al-Yarmook Teaching Hospital from January 2005 to March 2006 on 76 hospitalized diabetic foot patients compared with 30 individuals from three control groups which involved diabetic non – ulcerative patients , non-diabetic injured patients , and healthy subjects respectively. Foot ulcers were clinically identified depending on Wagner's classification system. The objectives of This study are included detection risk factors of foot ulcers, in diabetic patients, isolation and identification of microorganisms associated with ulcers ,identifying the hematological parameters that may participate in impaired ulcer healing and to conduct an immunological analysis of diabetic foot patients. For microbiological part of study, all microorganisms which were isolated from patients were identified using various bacteriological methods while antibiotic sensitivity test was performed for only aerobic isolates using disc diffusion methods. For determination of cell-mediated immunity , cytokines levels , and proteases activity only 52 out of 76 diabetic foot patients along with 13 subjects of control groups were chosen to achieve this experiments. The results revealed that most of diabetic foot patients are men(65. 8%) with age above sixty years , and had DM for a period more than 10 years (53.94%).The majority of those patients were not on any physical exercises (94.7%) and not on diet system (72.4%) .Other risk factors including IHD and hypertension which appeared in 42.1% and 30.3% of patients respectively . The toes were the most possible location of ulcers (51.3%). The bacteriological culture revealed a significantly higher no. of bacterial isolates when compared with that cultivated from wounds of non-diabetic individuals, in which the gram (-) aerobic bacteria represented the most frequent isolates in the two patient groups with a predominance of *Klebsiella* sp., *Pseudomonas aeruginosa* , and *Proteus* sp. A statistically significant differences were demonstrated in relative frequency of anaerobic isolates			

between the 2 study group as diabetic foot ulcers showed a high prevalence of anaerobic isolates (20.3%) compared with acute wound group(5%) and *Peptostreptococcus* sp.ranked first in terms of anaerobes isolated from D.F.patients.

According to severity of infection , the most diabetic patients categorized as grade II (51.3%) in Wagner's classification scale. Polymicrobial infections were seemed to be increased as Wagner grade progressed towards deeper tissue or locations.

Regarding the antibiotic susceptibility patterns of the isolated bacteria, no differences have been indicated between bacterial isolated from acute wound group and chronic wound group and no harmony was observed between different isolates towards the same antibiotic . Inspite of that amikacin , seemed to be the most effective drug against gram(-) bacteria in both groups of patients. Whereas most of gram(+)bacteria showed sensitivity to vancomycin. In contrast , the least effective drugs were amoxicillin and ampicillin.

The mean blood ESR and the mean glycosylated Hb levels were significantly higher in diabetic foot patients with a slightly decreas in Hb levels was occurred in the same patients as compared with other control groups. A leukocytosis on admission and elevation in granulocyte count were detected in both diabetic foot and non diabetic wounded groups but with a higher increase detected in acute wound group than D.F. patients while a monocytosis was detected in diabetic subjects with foot ulcers compared with other control groups. The cell mediated immunity were not altered in diabetic patients as D.F. patients showed normal lymphocyte count and normal lymphocyte proliferation in response to PHA and Con.A mitogens respectively .Whereas an impaired neutrophil was seen in D.F. patients in each of phagocytosis activity , oxygen respiratory burst and the numbers of ingested yeast per neutrophil cell (yeast phagocytic index) when compared with other control groups ($p< 0.001$).

According to humoral immunity evaluation , immunoglobulin A (IgA) showed a significant increase in D.F. patients (3.82 g/l)when compared with other control groups whereas IgM and IgG were within a normal range limits while a slightly decrease in mean serum C_3 level was indicated in D.F. patients when compared with other control groups but, it did not reach the statistical level . On the contrary .A statistically decrease in mean serum C_4 level was shown in D.F patients compared with other control groups. Serum cytokines showed an increased level of IFN-γ and IL -6 and a decrease in level of IL-10 in D.F. patients when compared with healthy control subject , while no statistically differences in serum cytokines levels of both IL-4 and TNF-α was observed when compared D.F. patients with control groups.

Regarding the proteases activity in tissue sections , the % ISH for MMP-2 showed no significant differences between acute wound group (19.6%) and chronic wound group (24.9%).Whereas a significant differences was observed for MMP-9 which showed an elevated levels in D.F. patients (34.1%) compared with acute wounded group (21.7%) along with a reduction in levels of TIMP-2 in D.F. patients (13.8%) to about one-forth its

	level in non –diabetic traumatic patients (55.4%), these results are correspondence with the intensity as the majority of D.F. patients showed faint intensity for MMP-2 (36.5%) and high intensity for MMP-9 (42.3%) and faint intensity for TIMP-2 (48.1%) .Along with these results , most of D.F. patients (61.5%) exhibited mild degree of tissue repair (61.5%) whereas a high degree of tissue repair (61.5%) was seen in non-diabetic wounded patients (P< 0.001).