Immunological changes in patients with DM

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Why do we have to concern about diabetic patients ?

- Prevalence → adults in KSA is 23.7%.
- Increased incidence of infections caused by bacteria, virus, and fungi
- mortality rate of patients with an infection and ketoacidosis is 43%
- indeed it has been classified as a cause of secondary immunodeficiency by the WHO

prospective study of 1000 hospitalized Patients

studied➔ 2/3 of the bacteremias were found in patients with DM compared to 1/3 in patients without DM

How Do they differ from the normal population?

Functional Defects

- Chemotaxis
- Adherence
- Phagocytosis
- Oxidative burst
- Bactericidal Activivties of PMNs

Complements

- Low C4 value in 95% of DM

  40% of N

High level of C4 reported in pt with neuro & retinopathy ?!

- Isolated C4 def dosen't affect the immune system
- IDDM → low C3 (Lowest value of c3&4 if HBA1c >11%)
- NIDDM → high C3

IL & TNF

- Resting → Elevated -TNF-K
  - IL-6
  -IL-8

- IL & TNF secretion in response to LPS
  -decreased IL1 & 6
  -TNF → same

HOW?

- It is possible that the elevated resting value of diabetic cells leads to the induction of tolerance to stimulation, which results in lower cytokine secretions after stimulation.

- This phenomenon has already been described in nondiabetic cells

- Neither glucose nor insulin showed any effect on the production of IL-1 or IL-6

  in isolated monocytes, so the decreased production after stimulation with LPS seemed an intrinsic cellular defect of diabetic cells

Skin test hypersensitivity

- 88% of N ppl exhibits delayed skin test hypersensitivity to candida Ag
- Only 44% of diabetic
- No diff was found with mumps & TB

Effects of Hyperglycemia

- Enhance the virulence of certain microorganisms.

E.g: Candida albicans, which expresses a surface protein that has great homology with the receptor for complement 3b (CR3).

- Glucose alone can't serve as energy

- some microorganisms may adhere better

What about Antibodies?

- IgA & G higher in poorly controlled T2D
- Poorly controlled DM → Low IgM

  Chronic occult infection??

Diabetes induced immunological and biochemical changes in human colostrum.

Acta Paediatr. 2011 Apr;100(4):550-6.

- IgA and IgG were lower in the colostrum of hyperglycaemic mothers, whereas IgM did not vary between the groups.
- Colostral C3 protein was significantly lower in diabetic mothers, but colostral C4 protein was similar between normoglycaemic and hyperglycaemic mothers

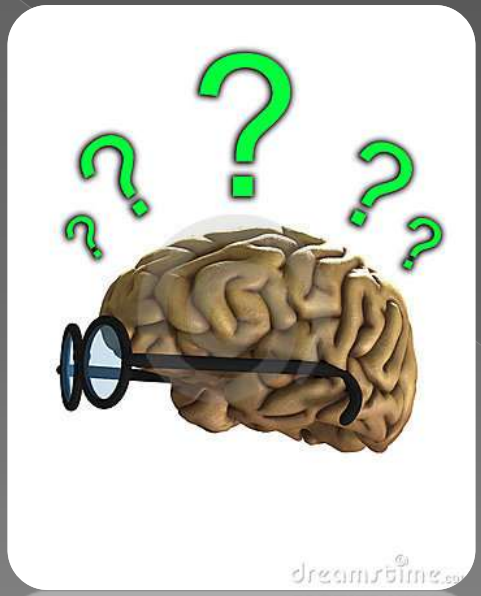
After all of that ,,, Whats the effect of those immunological changes on my clinical practice?

- Diabetic patients have different clinical presentation
- FEVER?

  (Malignant OE , Diabetic foot & osteomylitis)
- LEUKOCYTOSIS?
- DIFFERENTIAL?
- PAIN?
- Early detection of infection is crucial in those pt duo to higher risk of complication
- More vulnerable to G –ve infections

So how to Judge?

Still There're lots of question to be answered about that



Thnx


MERCI!
どうもありた
Todah!
多謝
Thank You!
Dank Je Wel
感謝
Thank you!
どうもありがとうございました
Merci!
GRACIAS!
Danke!
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