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The in-hospital financial burden of hidradenitis suppurativa in patients with inflammatory bowel disease

Alvaro J Ramos-Rodriguez, Ali Khan, Lauren Bonomo, Dmitriy Timerman, Yiming Luo and Alejandro Lemor
Icahn School of Medicine at Mount Sinai West, USA

Background: Hidradenitis suppurativa (HS), formerly known as acne in versa, is a chronic inflammatory and debilitating disease that significantly affects the patient's quality of life. There is a high prevalence of HS in patients with inflammatory bowel disease (IBD), which further compromises quality of life in this patient population. In this study, we sought to explore the in-hospital financial burden of HS in patients with IBD given the lack of published literature on this topic.

Methods: This was a retrospective cohort study using the National Inpatient Sample (NIS) for the years 2008 through 2014. All patients with ICD-9 CM codes for any diagnosis of Inflammatory Bowel Disease (IBD) from 2008 to 2014 across the US were included. There were no exclusion criteria. Patients with IBD were classified as having hidradenitis suppurativa (HS) and not having HS using ICD-9 CM code 705.83. The primary outcome was the financial burden of HS on patients with IBD. The financial burden was measured by resource utilization which included median hospital length of stay (LOS), imaging and bedside procedures (i.e., abdominal CT-scan, incision and drainage) and mean hospitalization costs. Data of patient's insurance and disposition was also collected.

Results: A total of 3,079,332 admissions with inflammatory bowel disease (IBD) were included in the study, of which 4,369 had a diagnosis of hidradenitis suppurativa (HS). Patients with HS-IBD displayed increased additional hospital length of stay when compared to IBD patients without HS (4 days vs 5 days, $p < 0.001$). Patients with IBD-HS incurred significantly higher additional total hospital costs when compared to IBD patients without HS (Mean additional costs: \$ 1,035, $p = 0.013$). There was no difference in additional imaging (i.e. abdominal CT-scan) between the two groups. Patients with IBD-HS had significantly more incision and drainage procedures than those without HS (0.7% vs 10.8%, $p < 0.001$). Additionally, more patients with IBD-HS had Medicare and Medicaid insurance compared to those without HS (61% vs 47.7%, $p < 0.001$).

Conclusion: We conclude that there is a significant increase in-hospital financial burden in IBD patients with hidradenitis suppurativa compared to those with IBD only. Patients with IBD-HS had increased resource utilization including hospital length of stay, mean total hospitalization costs and bedside procedures. more patients with IBD-HS had lower household income and were insured by Medicare and Medicaid.

Biography

Alvaro J Ramos-Rodriguez is currently a Medical Resident Physician at the Icahn School of Medicine at Mount Sinai West. He is the Author of the recently published textbook *Dermatology for the USMLE*. He has dedicated a major part of his medical career to teaching and helping students prepare for the USMLE, including teaching review courses. His interest is in dermatology including DRESS syndrome, toxic erythema of chemotherapy, atopic dermatitis, hidradenitis suppurativa, psoriasis and infectious skin disorders.

Alvaro.Ramos-Rodriguez@mountsinai.org

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Accepted Abstracts

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Growth Factors: Harnessing healing power, from restoration to rejuvenation

Ahmed Al-Qahtani

AQ Skin Solutions, California

Since the Nobel Prize-winning discovery of nerve growth factor (NGF) and epidermal growth factor (EGF) in 1986, scientists and physicians alike have sought to understand and apply the physiological benefits of growth factors. In both healing and rejuvenation, tissue remodeling and systemic restoration, strides have been made in this regard. While the activity of growth factors and other elements of the cell secretome in response to acute wound damage are becoming increasingly well known, it remains a novelty to many that similar principles of restoration and remodeling repair can be employed for the sake of cosmeceutical rejuvenation. Within this domain, topical serums containing an intricate balance of growth factors, cytokines and other peptides have proven effective in reversing the signs of extrinsic aging. Perhaps the most effective of these serums include those engineered and patented (U.S. Pat. 8,518,819) by AQ Skin Solutions. This study corroborates the idea that the topical application of growth factors and cytokines are beneficial in reducing the signs of skin aging of the face, including the area around the eyes. Moreover, growth factors have been shown to restore hair growth and slow down the progression of Androgenetic alopecia. Our study established the effectiveness of naturally occurring growth factors for anti-aging, skin rejuvenation, wound healing and for the first time in the treatment of hair loss.

aq1000@hotmail.com

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Effectiveness of 3D PDO Cannula Cog application for the correction of midface, lower face, submental area and eyebrows in women of different age groups

Aleksandr Babych

trainer in "Beauty Medical, Ukraine

Introduction: The use of 3D PDO threads (bi-directional cannula Cog threads) as a semi-invasive method of lifting sagging skin of the face.

Objective: The objective of this study is to optimize methodology of correction of midface, lower face, submental area and eyebrows by substantiating individual approaches on the use of 3D PDO cannula Cog threads face lifting.

Methods: The correction of sagging skin of midface, lower face and submental area (78.3%) and eyebrows (21.7%) has been carried out in 23 women aged from 34 to 62 considering age and individual anatomic peculiarities. For the correction of sagging skin of midface, lower face and submental area the antegrade and retrograde methodologies of threads insertion were used, while for the correction of eyebrows, the retrograde methodology was used. When antegrade methodology was used, threads were inserted in the direction from temporal area to sagging skin of midface and lower face, while in case of retrograde methodology, threads were inserted from the treated area to the area of intimate combination of skin and head aponeurosis (temporal, occipital and frontal areas). The evaluation of effectiveness in using methods of correction of sagging skin of midface, lower face, submental area and eyebrows was carried out by combining methods of questionnaire and photofixation and considering the number of used threads and methodology of their insertion. The questionnaire, including 16 questions, was prepared and adapted in accordance with the subjective evaluation of results of previous correction.

Results: According to the data of photofixation in observation dynamics we established the dependence of effectiveness of the used methodologies on the skin condition (its ability to shift in the direction of correction conditional upon fat pads), and also the number of inserted threads and the used method of insertion [among 18 women with the sagging skin of midface, lower face and submental area the following methods were used: in 10 (55.6%) the combined methods of threads insertion (from 4 to 10 threads per each side of the face), in 4 (22.2%) the antegrade method (from 3 to 5 threads per each side of the fact), and in 4 (22.2%) the retrograde method (from 3 to 6 threads per each side of the face). In 5 women having sagging of eyebrows only the retrograde method of correction was used (from 2 to 5 threads per each side of the face). questionnaire and photofixation, carried out within 12 months of observation, have shown the results of stable lifting effect within 8 months in women where the combined method of threads and the highest number of inserted threads were in place. Provided retrograde method was used, the stable lifting was observed within 6 months, and in case of the antegrade method the effect reached 4-5 months.

Conclusion: During the use of combined method of face lifting with the insertion of 10 3D PDO cannula Cog threads per each side of the face in case of sagging skin of the midface, lower face and submental area and in case of the retrograde method for eyebrows lifting with the use of 5 3D PDO cannula Cog threads per each side of the face the most expressed and continuous effect of lifting is reached.

e.stoque@ukr.net

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Clitoral reconstructive surgery after female genital mutilation

Amr Seifeldin

Urogynecology & pelvic reconstructive surgery unit, El Galaa teaching hospital for women Cairo – Egypt

Background: Female genital mutilation/cutting (FGM/C), is a cultural tradition widely practiced in Africa and other parts of the world. It causes serious complications on the physical and psychological levels. Increased patient awareness of FGM/C and the desire for an equal feeling and look as the uncut woman has necessitated a need for restorative procedures, yet few doctors are trained in methods of genital cosmetic & reconstructive surgery. most FGM/C victims are unaware of the availability of clitoral reconstructive surgery to reverse the ill effects of FGM/C.

Method: 107 patients were selected with female genital mutilation type II and type III, age was between 18 and 36 years. patients answered a female sexual function index (FSFI) questionnaire on admission, noting their sexual characteristics, and pain level. Postoperatively, patients were asked to come back every 3 months for a one-year follow up.

Results: Clitoral reconstructive surgery after female genital mutilation provides an improvement in patient psychology and mood noted by an increase in confidence, self-esteem, feminine body identity, and quality of life. we also noted improvement in sexual desire, arousal and satisfaction with moderate improvement in time to reach orgasm, lubrication and pain. However orgasmic intensity has improved to a great extent, together with relationship with parents previously blamed for giving consent for the procedure, and partner relation

Conclusion: Increased education, awareness and family support are an important step in lowering FGM/C rates in Africa. genital reconstructive procedures have shown promising results and should be offered and made available to all FGM/C victims who consult gynecology clinics in hospitals. The training of more doctors in genital cosmetic and reconstructive techniques should also be encouraged.

a.seifeldin@gmail.com

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Man, folliculotropic mycosis fungoides: A case report

Ibrahim Nafee

Mansoura University, Egypt

A 58 years old man presented with multiple skin lesions of 3 years duration with progressive course. The condition started with itchy hyper-pigmented plaques on the back. examinations revealed multiple hyper-pigmented plaques on the back and shoulders, and thighs. Our differential diagnosis included mycosis fungoides, leprosy, sarcoidosis, and amyloidosis. skin biopsy was done and revealed dense infiltration of follicular epithelium and dermis by small to medium sized lymphocytes. The lymphocytes have scanty cytoplasm, dark and cerebriform hyperchromatic nuclei. Immunohistochemical study revealed positive staining with CD4 and negative staining with CD20. Two year later, the patient developed nodules and plaques with discharging material on the scalp and similar lesions on face and neck. biopsy was taken from scalp nodule and revealed similar findings to the previous biopsy from the back but with more dense infiltration. It shows positive staining with CD3, mild staining with CD8 and negative staining with CD20. Final diagnosis was folliculotropic mycosis Fungoides of trunk and scalp. Investigations were within normal apart from thyroid nodule, enlarged cervical and axillary lymph nodes by ultrasound with distorted shape and lost hilum. Pan CT was done and revealed multiple bilateral enlarged upper, lower deep cervical lymph nodes and posterior triangle lymph nodes in which the largest measured about 14 X 6 mm. bilateral enlarged axillary lymph nodes with preserved criteria. no other organomegaly. thyroid function tests were normal. Bone marrow biopsy revealed normocellular, normal myeloid, erythroid, lymphoid series, normal megakaryocytes and free of abnormal cells. folliculotropic MF is a distinct variant of MF. It affects about 10% of MF patients in head and neck region. folliculotropic infiltrates often with sparing of the epidermis. most cases show mucinous degeneration of the hair follicles. traditionally designated as MF-associated follicular mucinosis. the deep, follicular and perifollicular localization of the neoplastic infiltrates, makes them less accessible to skin-directed therapies. clinical staging systems for MF are not very helpful in folliculotropic MF. One or a few plaques on the face and scalp do not have stage IA disease and should always be considered as having tumor stage disease. Survival of patients with folliculotropic MF is similar to that of classic tumor stage MF.

ibrahimnafeei@gmail.com

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Combination of microneedle radiofrequency (RF) and low-level light therapy (LLLT) in new treatment protocol in patients with acne

Vaisov I.A., Vaisov A.Sh., Mun A.V. and Yusupova Sh.A
College & University Tashkent, Uzbekistan

Statement of the problem: The RF radiation has pathogenetic orientation that generates thermal action. The effect of the RF microneedling combines the benefits of non-ablative fractional photothermolysis and deliver energy to the tissue mechanically. The depth of needle insertion affects most of the sebaceous glands. An additional threating method is low level light therapy (LLLT), which penetrates the skin and influences biological processes in tissues, stimulates regeneration and metabolism, improves hemodynamics and microcirculation, provides anti-inflammatory, immunocorrecting effects. We have proposed a combined method of treating acne, which includes the use of RF-microneedles followed by LLLT.

Purpose of the study: To assess the effectiveness of the combined use of RF-microneedles and LLLT in treatment of acne patients.

Material and methods: There were 19 patients under our supervision aged 18 to 31 with varying degrees of severity of acne, 13 of them (68.4%) were women and 6 (31.6%) men. All patients underwent RF micrononeedling with the INFINI device (Lutronic, South Korea) with the following parameters: depth of needle insertion - 1.5 mm, power - 500W, level-3. Immediately after RF microneedling LLLT Healite (Lutronic, South Korea) was performed with frequency of 48 hours in 5 sessions. A total of 4 combined procedures were administered to each patient once a month.

Findings: A total clinical recovery was noted in 16 (84.2%) patients as a result of 4 RF-microneedling procedures, which was expressed in the resolution of inflammatory lesions and post-inflammatory hyperpigmentation, reduction in sebum hyper-production, and partial smoothing of atrophic scars. In 3 (15.8%) patients significant improvement was noted.

Conclusion: The use of complex therapy by RF-microneedles and LLLT in the treatment of acne patients can significantly reduce the medicine dose, shorten the course of treatment, and correct post-inflammatory effects.

iskandarv@gmail.com

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Effective treatment methods of cutaneous leishmaniasis

Vaisov A.Sh., Vaisov I.A., Yusupova Sh.A., Mun A.V
College & University Tashkent, Uzbekistan

The territory of Uzbekistan, Bukhara, Navoi, Khorezm regions and the Autonomous Republic of Karakalpakstan, in particular, have been considered as one of the historically active zones of skin leishmaniasis. According to WHO, about 1.3 million people fall ill each year, and about 350 million people live in risk areas. Due to the lack of effective treatment methods this problem remains relevant at the present time.

Objective to study the comparative efficacy of traditional and complex treatment of cutaneous leishmaniasis.

Materials and methods 15 patients aged 20 to 48 were monitored, there were 7 men (47%) and 8 women (53%) from endemic areas. All patients were divided into 2 groups. Patients from the first group (7 people) received systemic therapy in the form of Doxycycline monohydrate 100 mg twice a day for 20 days. The patients from the second group (8 people) administered the antibiotic and carbon dioxide laser destruction in addition, performed by eCO2 Lutronic device (South Korea) with a frequency of 140 Hz, a pulse duration of 170 mS and an output power of 1.0W. A of leishmaniomas was performed completely with the formation of coagulation crust.

Results of the study Evaluation of the therapy effectiveness was carried out from 1 to 6 months. In the first group, the duration of the disease was 5 months with the formation of hypertrophic scars. In the second group, the duration of the course was 2 months, with minimal manifestation of ulceration and without scar formation. Patients in the stage of ulceration regeneration occurred within 1.5 months with the formation of a satisfactory cosmetic defect.

Conclusions Thus, the stage of healing was much faster in patients who, received traditional therapy and underwent laser destruction in combination. In addition, patients who were performed laser destruction of leishmaniomas demonstrate minimization of scarring.

iskandarv@gmail.com

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Psoriasis is a chronic inflammatory disease

Mohammed Kareem
Cairo Hospital, Egypt

Psoriasis is a chronic inflammatory disease of the skin which is characterized by the presence of erythematous scaly plaques. Psoriasis is an organ-specific autoimmune disease that is characterized by exacerbation and remission. Psoriasis is a life-long disease with significant impact on the quality of life. Patients affected by psoriasis often develop co-morbidities as nail dystrophy, psoriatic arthritis, depression, Crohn's disease; squamous cell carcinoma and lymphoma are associated with psoriasis. Methotrexate (MTX) has been used for decades as the most commonly prescribed traditional systemic therapy worldwide for the treatment of psoriasis. Although its mechanism of action has not been fully elucidated, current evidence supports that it works by acting as both an antimetabolite (by inhibiting dihydrofolate reductase) and an immunomodulatory agent (by promoting adenosine release, thereby suppressing inflammation). Due to its anti-inflammatory quality, it is widely used as a treatment for various inflammatory diseases including but not limited to rheumatoid arthritis (RA), Crohn's disease, multiple sclerosis, psoriasis, and psoriatic arthritis. Methotrexate is indicated in the treatment of moderately severe and severe forms of plaque psoriasis, psoriatic erythroderma, palmoplantar-pustulosis, generalized pustular psoriasis, nail psoriasis and psoriatic arthritis. HSPs were first discovered as a cohort of proteins that are powerfully induced by heat shock and other chemical and physical stresses in a wide range of species. The HSPs have been subsequently characterized as molecular chaperones, proteins, which have in common the property of modifying the structures and interactions of other proteins. Molecular chaperone function dictates that the HSPs often interact in a stoichiometric manner with their substrates, necessitating high intracellular concentrations.

moh87k@yahoo.com

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Skin rejuvenation with picosecond technology

Virginia Benítez Roig
Virgili University, Spain

Background: The optical breakdown caused by tightly focused near-infrared laser pulses in a small area of intradermal lesions leads to skin rejuvenation without affecting the epidermis. Recently with the new picosecond laser technology, it is possible to safely generate optical breakdown in tissue leading a new approach to facial rejuvenation with no pain, a little to no downtime and reduced risk of complications.

Method: 22 patients were treated with a Picosecond laser with two length-wave: 1064 nm and 532 nm. They received three sessions with one-month intervals between them for skin rejuvenation in face and neck to improve texture, dyschromia and fine wrinkles. We analyse different variables: age, gender, Fitzpatrick skin type, side effects and areas treated. To evaluate the effectiveness for skin rejuvenation histological investigation were performed three times with 3mm punch biopsy: before, immediately after (first 30 minutes) and 6 months after (three patients), 7 month (one patient) and 10 month (one patient). The Haematoxylin & Eosin stain were use. Also, Van Gieson-Elastin for collagen and elastin and Alcian Blue pH 2,5 and nuclear Fast Red to demonstrated hyaluronic acid.

Results: More of the patients treated were between 50 to 70 years old. There are more female (86%) than male (14%). The Fitzpatrick skin type more frequently was III (45%) and IV (41%). Other skin types (V and VI) have 5% each one. The histological results showed some intraepidermal vacuoles and also in papilar dermis with intact stratum corneum immediately after. New collagen, elastin and also hyaluronic acids were seen after 6 months of the procedure.

Conclusion: The skin rejuvenation with Picosecond laser is possible as a non -invasive treatment and without minimal or no downtime

info@dravbenitez.com

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The histological features of toxic erythema of chemotherapy: A retrospective review

Alvaro J Rodriguez¹, Manrup K Hunjan², Lauren Bonomo, Alina G Bridges DO², Shahrukh K Hashmi² and Rokea El-Azhary²

¹Icahn School of Medicine at Mount Sinai, USA

²Mayo Clinic, Rochester, USA

Background: Toxic erythema of chemotherapy (TEC) describes a spectrum of clinical cutaneous entities occurring after the initiation of cytotoxic chemotherapeutic agents such as antimetabolites (i.e. cytarabine) and anthracyclines (i.e. doxorubicin). Typically, it presents as a severe skin reaction manifesting as acral erythema, edema and dysesthesias of the hands and feet. Our goal was to review the skin biopsy slides of confirmed TEC cases to better define unique histological features found in this rare dermatological entity.

Methods: We retrospectively reviewed the charts of 500 patients who had undergone allogeneic or peripheral stem cell transplant from January 2010 to December 2015 and were receiving chemotherapy. We identified 39 patients with a skin eruption consistent with TEC. From the 39 confirmed TEC cases, only 11 had skin biopsies. All cases were reviewed alongside a Dermatopathologist to define and collect histological findings.

Results: The most common histological findings were interface vacuolar dermatitis, dysmaturation of keratinocytes and the presence of dyskeratotic keratinocytes. The histological hallmarks of TEC that were seen in unique cases were epidermal hyperpigmentation, focal pigment incontinence, epidermal bullae and focal eccrine syringometaplasia.

Conclusion: We conclude that the diagnosis of TEC is mainly a clinical diagnosis based on morphology and location of eruption in the right clinical context. The histopathological features of TEC are generally non-specific, and can only support a clinical diagnosis. Large-scale studies are needed to find consistent clinical and histological features to better define a standardized diagnostic criterion for TEC.

Alvaro.Ramos-Rodriguez@mountsinai.org

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Methods: This was a retrospective cohort study using the National Inpatient Sample (NIS) for the years 2008 through 2014. All patients with ICD-9 CM codes for any diagnosis of Inflammatory Bowel Disease (IBD) from 2008 to 2014 across the US were included. There were no exclusion criteria. Patients with IBD were classified as having hidradenitis suppurativa (HS) and not having HS using ICD-9 CM code 705.83. The primary outcome was the financial burden of HS on patients with IBD. The financial burden was measured by resource utilization which included median hospital length of stay (LOS), imaging and bedside procedures (i.e., abdominal CT-scan, incision and drainage) and mean hospitalization costs. Data of patient's insurance and disposition was also collected.

Results: A total of 3,079,332 admissions with inflammatory bowel disease (IBD) were included in the study, of which 4,369 had a diagnosis of hidradenitis suppurativa (HS). Patients with HS-IBD displayed increased additional hospital length of stay when compared to IBD patients without HS (4 days vs 5 days, $p<0.001$). Patients with IBD-HS incurred significantly higher additional total hospital costs when compared to IBD patients without HS (Mean additional costs: \$ 1,035, $p=0.013$). There was no difference in additional imaging (i.e. abdominal CT-scan) between the two groups. Patients with IBD-HS had significantly more incision and drainage procedures than those without HS (0.7% vs 10.8%, $p<0.001$). Additionally, more patients with IBD-HS had Medicare and Medicaid insurance compared to those without HS (61% vs 47.7%, $p<0.001$).

Conclusion: We conclude that there is a significant increase in-hospital financial burden in IBD patients with hidradenitis suppurativa compared to those with IBD only. Patients with IBD-HS had increased resource utilization including hospital length of stay, mean total hospitalization costs and bedside procedures. More patients with IBD-HS had lower household income and were insured by Medicare and Medicaid.

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Association between lipid profile and serum testosterone in patients with hirsutism disease

Sohail Waheed¹, Abdus Sattar², Muhammad Ahmad³, sadiq ullah⁴ and Tanveer Syed⁵

¹Combined Military hospital, Swat, Pakistan

²Khyber medical university, Peshawar, Pakistan

³Peshawar Medical College, Peshawar, Pakistan

⁴Khyber medical college, Peshawar, Pakistan

⁵Salford royal NHS foundation trust Manchester, United Kingdom

Background: Hirsutism is defined as the growth of thick, dark excessive terminal hairs on the androgen dependant areas of human body including the upper lips, chin and mandibles. Hirsutism may either be idiopathic or it may be caused by polycystic ovary syndrome, non-classic adrenal hyperplasia, adrenal or ovarian tumors. Androgen excess is the cardinal phenomenon that leads to hirsutism. Women with polycystic ovary syndrome (PCOS) shows an abnormal lipoprotein profile, which is characterized by raised concentrations of plasma triglyceride, marginally elevated LDL-cholesterol, and reduced HDL- cholesterol. There is relationship between lipid abnormalities and serum testosterone levels. Among the causes of hirsutism the relation is well established in PCOS but there is limited data on other causes of hirsutism which suggest this relationship.

Objective: The aim of this study was "To establish relationship between lipid profile and serum testosterone in patients with hirsutism."

Methods: All female patients of reproductive age group 18-45 presenting with hirsutism and who gave consent for this study were included while, the patients of known metabolic diseases like diabetes mellitus, hypertension were excluded. Hundred female patients were included in the study. After approval from ethical committee of Advance Study and Research Board (ASRB) Khyber Medical University, blood sample of hirsutism patients were collected for serum testosterone and lipid profile analysis in laboratory at Combined Military Hospital Peshawar. Serum lipids were analyzed on Selectra E automated chemistry analyzer using kits provided by Merck Pakistan. Serum testosterone level was analyzed by a kit (Access Testosterone Assay) provided by Beckman Coulter, using chemical luminescence technique. The data obtained was analyzed through SPSS version-16 software.

Results: A significant p (<0.05) and a positive correlation (r=0.316) of testosterone with total cholesterol and positive correlation (r=0.303) of testosterone with LDL cholesterol, a non significant p (>0.05) and a positive correlation (r=0.041) of testosterone with HDL cholesterol was observed. Where as a non significant p (>0.05) and no correlation (r=0.00) of triglyceride with testosterone was seen.

Conclusions: This study concluded that serum testosterone relationship with lipid profile in hirsutism disease shows significant relationship with total cholesterol. Subsequently, this study also elaborated serum testosterone relationship with LDL cholesterol in hirsutism disease. A significant and positive correlation relationship was found. This study concluded that in hirsutism disease when level of serum testosterone deviated from normal point also brings deviation in total cholesterol and LDL cholesterol.

Limitations: To investigate each and every patient of hirsutism for its cause, was not possible due to lack of resources and funds.

drsohailderm@outlook.com