RESULTS & DISCUSSION
As the number of cases in each individual group in our study was small for assessment of statistical significance. The status of all round clinical improvement was assessed by the alteration for the better of the following parameters of inflammatory milieu of the body

1. Hemoglobin percentage.

2. C-reactive protein (CRP- the reduction of which plays significant role in bone, joints, heart and neuromuscular tissue. This happens to be also significant in immune oriented disease processes).

3. Reduction of levels of hepatic enzymes SGOT and SGPT, showing the improvement of hepatic function with treatment.

4. The reduction of levels of urea and creatinine showing the improvement of renal function.

Control group

A total number of 57 patients selected from hospital records with the similar diseases selected for the present study but were given the conventional therapy formed the control group. This group included equal number of age, sex and disease matched subjects who were treated for arthritis, psoriasis, pemphigus, morbid obesity and multiple organ failure with conventional modes.
Arthritis patients were treated with non-steroidal anti-inflammatory drugs, physiotherapy measures with short wave diathermy, interferencial current etc. Their investigations of the disease state were comparable to those of the age and sex matched patient groups indicating the extent of disease involvement. Their basal values of the relevant hormones like oestrogen, LH, FSH, GH, TSH in female group and testosteron, LH, FSH, TSH and GH were assayed using commercially available RIA and IRMA kits (DSL, Webster, Texas, USA; DPC, Los Angeles, Canada, USA). It may be inferred that the parameters judged clinically and assessed by markers of inflammation and organ function (Hb% indicating the status of haemopoietic milieu, enzymes SGOT, SGPT, \( \gamma \)GTP, indicating the gross functional status of the liver and comparing the integrity of the pituitary-gonad, pituitary-adrenal axes) in the control and the study group were similar. However, there was significant difference in the outcome of treatment in the two groups. Though these parameters are more on the basis of clinical assessment and subjective information given by the patients and their relatives, the significance needs to be judged on a qualitative basis of patient’s feelings of pain-free status and ability to carry out the day-to-day activities without complaints or help and support of others.

Another factor of medical significance, which cannot be translated to statistics is that the patients involved in this study were mostly non responders or poor responders with regard to the usual and conventional treatment, prior to being enrolled in the present treatment schedule. Hence, in a way each patient is control for the results of the present treatment as comparable to
Fig. 1 Frequency distribution of haemoglobin content among control subjects given conventional therapy and the present study subjects, before and after treatment. Details about the treatment schedule are given under materials and methods. The results was expressed in gm %.

Fig. 1a. Control subjects after treatment

![Graph showing frequency distribution of haemoglobin content among control subjects after treatment.]

Fig. 1b Study subjects before treatment

![Graph showing frequency distribution of haemoglobin content among study subjects before treatment.]

Fig. 1c Study subjects after the treatment

![Graph showing frequency distribution of haemoglobin content among study subjects after the treatment.]
Fig. 2 Frequency distribution of Antistreptolysin titre among control subjects given conventional therapy and the present study subjects before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in IU/mL.

Fig. 2a Control subjects after the treatment

Fig. 2b Study subjects before the treatment

Fig. 2c Study subjects after the treatment
Fig. 3  Frequency distribution of C reactive protein among control subjects given conventional therapy and the present study subjects before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in mg/mL.

Fig. 3a Control subjects after the treatment

Fig. 3b Study subjects before the treatment

Fig. 3c Study subjects after the treatment
Fig. 4  Frequency distribution of Serum creatinine levels among control subjects given conventional therapy and the present study subjects before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in mg/dL.

Fig. 4a Control subject after the treatment

![Control subject after the treatment](image)

Fig. 4b Study subjects before the treatment

![Study subjects before the treatment](image)

Fig. 4c Study subjects after the treatment

![Study subjects after the treatment](image)
Fig. 5 Frequency distribution of SGOT levels in control subjects given the conventional therapy and present study subjects, before and after the treatment. The results was expressed in U/L.

Fig. 5a Control subjects after treatment

Fig. 5b Study subjects before treatment

Fig. 5c Study subjects after the treatment
Fig. 6  Frequency distribution of SGPT among control subjects given conventional therapy and the present study subjects, before and after the treatment. The results was expressed in U/L.

Fig. 6a. Control subjects after treatment

Fig. 6b. Study subjects before treatment

Fig. 6b. Study subjects after treatment
concentrations

Fig. 7 Frequency distribution of Serum GH among control subjects given the conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in ng/mL.

Fig. 7a Control subjects after the treatment

Fig. 7b Study subjects before the treatment

Fig. 7c Study subjects after the treatment
Frequency distribution of Serum TSH concentrations among the control subjects given the conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in μIU/mL.

Fig. 8a Control subjects after the treatment

Fig. 8b Study subjects before the treatment

Fig. 8c Study subjects after the treatment
Fig. 9 Frequency distribution of Serum $T_4$ concentrations among control subjects given conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in μg/dL.

**Fig. 9a Control subjects after the treatment**

<table>
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<th>4</th>
<th>6</th>
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<td>0.0</td>
<td>0.5</td>
<td>1.0</td>
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**Fig. 9b Control subjects before the treatment**

<table>
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**Fig. 9c Study subjects after the treatment**

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<td>μg/dL</td>
<td>0.0</td>
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Fig. 10 Frequency distribution of Serum LH concentrations among control subjects given conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in µIU/mL.

Fig. 10a Control subjects after the treatment

Fig. 10b Study subjects before the treatment

Fig. 10c Study subjects after the treatment
Frequency distribution of Serum testosterone concentrations among control subjects given conventional therapy and the present study subjects before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in ng/dL.

Fig. 11a Control subjects

Fig. 5b Study subjects before the treatment

Fig. 5c Study subjects after the treatment
Fig. 12 Frequency distribution of Serum estradiol among control subjects given the conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in ng/mL.

Fig. 12a Control subjects after the treatment

Fig. 12b Study subjects before the treatment

Fig. 12c Study subjects after the treatment
Fig. 13 Frequency distribution of Serum progesterone concentrations among control subjects given the conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in ng/mL.

Fig. 13a Control subjects after the treatment

![Control subjects after the treatment](image)

Fig. 13b Study subjects before the treatment

![Study subjects before the treatment](image)

Fig. 13c Study subjects after the treatment

![Study subjects after the treatment](image)
Fig. 14 Frequency distribution of Serum FSH concentrations among control subjects given the conventional therapy and the present study subjects, before and after the treatment. Details of therapy and the subjects are given under materials and methods. The results was expressed in ng/mL.

Fig. 14a Control subjects after the treatment

Fig. 14b Study subjects before the treatment

Fig. 14c Study subjects after the treatment
other mode of treatment. This was clearly evident in all the patients enrolled for the present study. This may be especially highlighted in the individual cases like the crippled and bed-ridden lady with arthritis who was up and ambulatory in about 10 days of the treatment schedule and the bed-ridden quadriplegic man after cervical spine fracture and interventional corrective spinal surgery, who was practically helpless despite theoretical medical normalcy and residual defect, which was known to be permanent in the available medical knowledge. The fact that he is moving about freely now after 2 yrs of the mishap is more than rewarding and proof for the concerned.

The significance of the present study with limited number of subjects has to be in the background of difficulty in enrolling cases for newer methods of treatments in the light of current developments in field of molecular medicine.

The normalization of modestly elevated levels of TSH with the present treatment schedule, without giving replacement of thyroxine, is a clear fact that there is polyglandular dysfunction in chronic inflammatory, degenerative disorders, especially the condition of andropause in males and menopause in females, which can be corrected the treatment of the underlying inflammatory process and does not warrant lifelong thyroxine supplementation. Ageing and degenerative changes of the body tissues have been linked to chronic inflammatory processes in recent scientific advancement of cell biology.

Multiple organ dysfunction of acute phase like that occurring in Multiple Organ Failure (MOF) syndrome occurring in acutely ill patients like stroke, myocardial infarction, diabetic acidosis and other metabolic storms were taken up for our study protocol. Chronic states of multiple organ
dysfunctions occurring in bed-ridden cases and age related arthritis etc. were included for our study. It was noteworthy that the phenomenon of downhill course of disease processes involving the cascade of multiple organ dysfunction (ending up in organ failure) happens in acutely ill cases of stroke, head injury and other severely traumatized cases of road traffic accidents; who succumb to the inevitable end, even though the primary illness on admission might have been abated and brought under control like the head injury or multiple fractures or the acutely diabetic state. Making the explanation of the untoward outcome of treatment rather difficult to understand for the layman related to the unfortunate patients. This is because of the shift of the central mechanism of disease courses to the relentless catabolic process of cell apoptosis leading to multi organ dysfunction and ultimate organ failures. This process understandably can be tackled by the use of recombinant growth hormone and the supportive gonadal steroids (testosterone, oestrogen, progesterone) the latter helping in anti-inflammatory cytokine and prostaglandin mechanisms.

Results observed in patients of arthritis

Three male patients of the age group of 35-50 years were in the study group of rheumatoid arthritis. They had evidences of impaired glucose tolerance (fasting blood glucose of 100 mg/dl-115 mg/dl and postprandial glycaemia of 180 mg/dl-190 mg/dl). Their serology for rheumatoid factor was positive and radiological evidences of narrowing of synovial spaces, oestopenia and deformities of small joints of the hands and feet were present. They showed good relief of pain in 15 days of starting with gonadal steroids.
All the three reported 60% relief of pain subjectively. Objective evidence of clinical response was perceivable by their ability to move about freely and attend to their personal leads without help from anybody. After two weeks of treatment with gonadal steroids, two of the male patients with rheumatoid arthritis (who could afford) were supplemented with recombinant growth hormone schedule of treatment protocol for two months and the results observed were significantly better in subjective pain relief of 90 percent and above, and objectively ascertainable ease of pain free mobility and ambulation at home and for small trips outside home. The clinical improvement and subjective feeling of relief made a significant improvement of the confidence and morale of these patients and counselling them towards maintenance of treatment increased involvement in physiotherapeutic measures was easier. Our results with the new treatment protocol for such degenerative joint diseases is significantly noteworthy even though the number of subjects in each group are less. The quality and quantity of clinical improvement in these diseases which are notorious for slow and improper response to treatment with anti-inflammatory drugs (by oral, parenteral and local routes of administration), methods of physiotherapy, with local application of heat, diathermy and interferential vibrations.

One female patient of the menopausal age group (53 years) had a history of suffering with rheumatoid arthritis sequelae for over 8 years. She had treatment with hormone replacement therapy from the author five years prior to coming to the present study protocol. After initial response with good relief she was lost for follow up for various reasons. She came in a very
crippled state of being bed-ridden and unable to move about at home even for her own personal comforts. She improved significantly with the initial fortnight hormone replacement therapy alone (transdermal oestrogen and injection depo provera). She was relieved from pain and stiffness of joints to a subjective perception of 60 percent relief. But her mobility, ambulation and ability to look after personal comforts were yet lacking. Though her affordability was low, yet she was given recombinant growth hormone schedule of treatment additionally for period of two weeks and the substantial improvement in the response was to the extent that she was able to move about freely without pain and undertake small errands of moving out of home with moral and physical support from somebody to go with her. Though statistical statement cannot be given of this response, individual difference of relief from suffering from a disease notorious for crippling like rheumatoid arthritis for above from any other schedule of treatment, thus for tried in her case speaks volumes about our study protocol.

The beneficial effects of oestrogen on modulation of the inflammatory process and alteration of the function of the immune cells like macrophages, NK cells and monocytes have been fairly well established by now. Further the effect of MIF and LIF in the recruitment of immune cells like macrophages and in the trans-differentiation of stem cells to be recruited as active macrophages and NK cells to participate in inflammatory process has also been fairly established. The heightened levels of both these cytokines (especially those of MIF) is known to be responsible for hyperactive inflammatory reaction which may be detrimental to the tissues affected, there
by spreading the process of cell damage to nearby normal areas. This process is particularly known to be responsible for the beginning of multiple organ dysfunction and failure (Loli, 2001; Kong et al., 2005; Rottoli et al., 2005). The beneficial modulatory effects of oestrogen and progesterone have been well sighted in the section of review of literature.

The lowering of inflammatory markers especially CRP has been shown to increase significantly the outcome of treatment in the study group and the same has been highlighted by various authors recently (Wood et al., 1993; Zee and Ridker, 2002). Though this marker is important in all inflammatory conditions, it has been specially highlighted in the inflammatory conditions of cardiovascular system. In the presence study, this is fairly evident in all variety of degenerative conditions.

**Treatment-outcome in dermatological cases**

The four female patients in the age group of 40-50 years, all in menopausal phases, with severe, extensive lesions of pemphigus were treated with hormone replacement treatment with injections of depot progesterone fortnightly and additional recombinant growth hormone as daily subcutaneous doses of 3 units of Nordilets. In these cases, oestrogen was started after the initial effects of benefits which were apparent as oestrogen is known to aggravate allergic manifestations. After 10 days of initiation of treatment with progesterone and recombinant growth hormone, oestrogen applications on the skin showed additional improvement of clearing skin lesions. It is probably the reactivation of progesterone and oestrogen receptors that brings about the
balanced anti-inflammatory and immunosedative effects on the immuno-infective insult on the skin. It is noteworthy that in cases of urticarial skin lesions and signs of allergic rhinitis on the mucous membranes of the rhino-pharyngeal mucosal membranes get flared up with initial therapy if started with oestrogen, whereas giving progesterone in the beginning and after the initial benefits on immuno-inflammation on the skin and mucous membranes are appreciable, in about 10 days of initiation of progesterone, it may be beneficial to supplement oestrogen (transdermal or by the use of oestrogen receptor modulators). All the patients had dramatic response of clearance of skin lesions, itching and burning sensations in about 5-7 days. Two of them had been on cortisone therapy prior to taking them to the study protocol and had low basal levels of cortisone. They were given injections of ACTH, as Acton Prolongatum (manufactured by Ferring India Ltd.) in doses of 40 units intramuscular once a week for 5 weeks.

We are not aware the use of these hormones for such conditions of skins, that are at times quite relentless and resistant to treatments which quite often is started with some form of cortisone, which in fact makes the condition respond initially, but makes it a chronic and recurrent one becoming less and less responsive to cortisone doses.

There were five male patients in the age group of 40-50 years with extensive psoriasis and two male patients in the same age group with extensive pemphigus. Their testosterone and growth hormone levels were low before the treatment, they were given testosterone and recombinant growth hormone as per the study protocol for two months, they responded
very well in five to seven days of starting the treatment by clearance of skin lesions and symptomatic relief from itching and burning sensation. They were followed up for two months and did not have any recurrence till date. The involvement of gonadal steroids and growth hormone in inflammatory and degenerative processes involving skin has been exemplified in these cases of our study. There are no known reports about the treatment of such conditions with these hormones. The significant and positive improvement in the clinical condition in these diseases are those which are quiet often unresponsive to usual modes of treatment. The use of cortisone, which is often done in clinical practice though may give apparently beneficial initial response, makes the condition chronic and recurrent and also upsets the integrity of the hypothalamo pituitary—adrenal axis leading to the need of continuing cortisone usage and weaning off from it. An incidental finding in these patients who were all of the age group of andropause was a modest elevation of TSH in these before treatment. Their TSH levels were seen to normalize after the treatment, without the need for thyroid replacement, it is postulated in the present study that, a deranged metabolic milieu of chronic inflammation, alteration of function of the different endocrine glands can happen as a part of multiple organ dysfunction and the same can be corrected by normalization of the inflammatory process.

The effects of topical and systemic oestrogen therapy in hastening of positive inflammatory processes have been cited by various workers. This has been seen in both sexes actually especially in the aged. (Calvin et al., 1998; Ashcroft et al., 1999). The effects of gonadal steroids (both oestrogen and
testosterone) in the modulation of skin and epidermal macrophages and the monitoring of immune cell recruitment in conditions of inflammation of the skin is also well established. These reports on molecular mechanisms of inflammatory process prompted the present study to use gonadal steroids and growth hormone in cases of psoriasis and pemphigus. This method of treatment for such conditions is not reported so far to our knowledge. The wonderful benefits of healing the inflammatory conditions in response to hormonal therapy is well appreciable in our study group though few in number, yet response to treatment and comfort given to the patients is highly significant to stimulate further studies.

**Morbid obesity**

The six female subjects who were studied in this group were in the age group of 35-45 years, two of them were peri-menopausal with long periods of amenorrhea. The four female patients in the menopausal phase and the peri-menopausal phase had low oestrogen levels and a low normal level of growth hormone with the flattening of diurnal variation of growth hormone levels. The results of our treatment protocol gave a reduction in weight, ranging to about 15-30 kilo grams in two months. This was without the benefits of exercise, because these subjects were not able to tolerate even ten minutes of brisk activities, and their ventilatory reserve was low before treatment. All of them were miserably aware of their inability to shed any considerable weight, due to their past experience at various methods towards weight reduction. The significant weight loss in about 2-3 weeks without having to strain for the same, gave them an absolute revival of hope and zeal to carry on with the
efforts at weight reduction. The improvement in their ventilatory capacity with treatment further facilitated their own efforts towards undertaking exercises for weight reduction. Another interesting finding in the study was the reduction in snoring which is common in such subjects and which also adds to the element of sleep-apnea causing hypoxia which may theoretically aggravate the inflammatory, degenerative and immuno potential processes which modulate the function of adipocytes. They were counselled to meditate and follow the principles of kinesthesiology (by intense visualization and feeling the effects of intense exercise, like palpitations, feeling of warmth and tension in the muscles and joints). They were encouraged to do this before starting any attempts at brisk activity or when it was not possible for them to do any form of exercise. The effects of positive thinking and visualization was possible to be attempted in these subjects, only because of the impetus of the significant weight reduction, respiratory comforts and freedom from discomfort of mechanical abrasion of the groin and axilla, which the present treatment gave them.

Obesity has been considered to be a process of inflammation and heightened adipocyte function towards apoptosis. Adipocytes have very important role in immune functions. This is well known to be altered by cytokines like TNF, IL-1 and IL-6. Oestrogen and androgens are known to modulate the modulatory cytokines (Heck et al., 1997; Seo et al., 2004). The role of leptin in modulating the function of the adipocytes and regulating the hunger and appetite in obese individuals is also well known, as well as its effects on haematopoiesis and macrophage function (Zalla et al., 1995). The
beneficial effects of recombinant growth hormone, oestrogen, androgen and the complementary role of progesterone and DHEA have been tried in the presence study to provide beneficial effects (far better than existing and available modes of treatment) in the subjects of morbid obesity and those with chronic complications of diabetes mellitus, which are actually process of chronic inflammation and degeneration going on at the level of arterioles, adipocytes and nerve cells. As cited in the many places of review of literature the possibility of regeneration of neuronal cells after injury and inflammation has been fairly well established. In the light of the knowledge of modulatory effects of dendritic cells (DC) MIF, LIF and the immense role played by the folliculocyte cells (FC) of the pituitary in the recruitment of immune and inflammatory cells, the presence study brings out the immense value of treatment with gonadal steroids and growth hormone in cases of neuronal damage due to injury, paralysis and neuropathy of metabolic diseases like diabetes mellitus. The notion that paralytic limbs cannot gain functional capacity to near normalcy has been well disproved by the presenten study, specially in cases of paralysis occurring after spinal fracture (Allaerts et al., 1997a,b; Hoek et al., 1997; Bjornson et al., 1999; Mogi et al., 2004)

The patients who had post-myocardial-infarction sequelae, not recovering physically to re-ambulate and recover ability to normal day-to-day activities despite satisfactory progress clinically and in view of the organ function concerned (cardiac function) and their dramatic response in these functions can be explained by neuroendocrinological factors involving the effect of growth hormone and gonadal steroids on the functional integrity of
the pineal body (producing melatonin) and FS cells of the pituitary which also upregulate the endorphins and encephalin. This outcome is far too much to be disallowed as psychological effects of any nature in the patients treated in the present study.

The seven patients of multiple organ failure taken up for the study protocol with use of recombinant growth hormone (mainly) and supportive supplementation with gonadal steroids were enrolled because of the close relationship of the patient or patient’s relatives to the author, where by there was willingness to opt for a type of treatment not accepted thus far by the medical world. The fact was that, all the cases improved and reverted back to normal organ functions from the thus far hopeless situation of multiple organ failure happening commonly in acutely ill patients. Sepsis, though an important initiator of this cascade of metabolic and immune storm, immunological endocrinological upheaval takes over soon after and the upset orchestration of immuno endocrinal processes continues unabatedly to the inevitable end of organ failures. The present study brings about the modulation of molecular cell mechanism of inflammation by these hormones and clearly brings about promise for future critical care benefits. The intervention of disseminated intra vascular coagulation (DIC) complicating the organ dysfunction often marks the beginning of down hill course of such disease process (Cachofeiro et al., 1991; Maxson, 2000; Geiter, 2003). The advent of modalities like Anti-thrombin III and Factor VII probably will make such treatment as present protocol stronger to fight against multiple organ failure.
The attending complication of disseminated intra vascular coagulation (DIC) and the resulting internal hemorrhages in such cases of MOF often pose a problem in the healing forces and anti catabolic actions of the hormones and this is cause of the shift of the predominant disease process to the active interference of cytokines and prostaglandin cycles, wherein the DIC process can be tackled by the use of Factor VII and anti thrombins. These modalities are recently available for therapeutic use and they will positively add value to the hormone group (RGH, testosterone, oestrogen, progesterone) and this combination can help in the treatment of chronic ill patients difficult to be ambulated so that the chronic disease process can be abated making them more ambulant without support and making the further and final treatment of their original disease.

Acutely ill patients under critical care can be saved of the unfortunate eventuality of MOF, thereby preventing them going downhill, in a river of no return type of unfortunate end by preventing or arresting and retracing the catabolic process of organ failure.

Further study of the relationship of adipocyte functions, hormones and ageing is required to design newer and promising methods to make life comfortable for obese individuals. The role of gonadal steroids in hormonal treatment that the chronic disease process can be abated making them more ambulant without support and making the further and final treatment of their original disease.
Treatment results of the present study protocol in patients having complications after cerebral stroke, paralysis episodes and myocardial infarction

There were three male patients with complications of diabetes mellitus. All of them had shoulder and knee joint involvement with pain and stiffness and all of them had peripheral neuropathy, with burning and ‘pins and needles’ sensations over the legs and arms. All three had grade II – III retinal changes of diabetic retinopathy. All had reduced cardiac reserve (evidenced by reduction of ejection fraction of 40-50 percent of the normal in echocardiogram). All had mild degree of albuminuria and deranged renal biochemical parameters of rise in level of urea (45-60 mg/dl) and creatinine (1.5-3 mg/dl). With the present treatment protocol using testosterone and recombinant growth hormone, there was significant improvement clinically in the functional status of the different organ systems. The joint pains and stiffness improved and painless free movement of these involved joints in them was evident subjectively and objectively and was reported by these patients within 5-7 days of initiation of the treatment. The improvement in the biochemical parameters of renal function was evident in two weeks. As against the common belief that growth hormone and gonadal steroids may be diabetogenic, in the present study an improvement in glycaemic control was seen in all the patients. The secondary complications of diabetes at the level of tissues, occurring in fibro cartilage, bones, retina, peripheral nerves and arteries are considered to be due to the processes of inflammation and degeneration. Hence, the present study brings out the positive beneficial
effects which can be obtained by the careful use of these hormones in such conditions and improve overall immuno endocrine state of the body. Though the present treatment schedule may not be the primary and specific mode of treating such diseases, it can be seen very clearly that, such treatment upgrades the body's status for a better response to the available specific treatment. This appears to be an entirely new approach in medical therapeutics.

Two female patients of the age group of 45-65 years with similar clinical picture of diabetes and secondary complications were studied with the present treatment protocol. They had low oestradiol levels (less than 10ng/dl) and raised levels of LH and FSH (more than 3 times the normal). Their growth hormone levels were in the low normal range. They also showed significant good response, similar to the male patients.

There were two male patients and three female patients who had episodes of hemiplegia and were being rehabilitated at home with physiotherapy and supportive measures. With the treatment schedule of gonadal steroids and recombinant growth hormone in them for a period of two months, they resulted in significant and progressive improvement in their clinical conditions, revival of muscular functions and positive response to physiotherapeutic measures, remarkably better than the previous four weeks without the treatment with hormones. This was subjectively perceived by the patients, objectively observed by the relatives and encouragingly reported by the physiotherapist.
There was one male patient aged 63 years (retired from the army) who had cervical spine fracture in a road traffic trauma and had developed quadriplegia. He was operated for the cervical spine, dis-alignment and fracture by the neurosurgeon and orthopedics surgeon with the introduction of supportive plates. He was discharged with biochemical and cardio respiratory functions of theoretically normalcy, yet paradoxically and practically bedridden and unable to move. After two weeks intensive course of physiotherapeutic maneuvers, he showed no sign of any spontaneous movement and was irritable, depressed and helpless, and refusing to undergo any further physiotherapy. He made remarkably significant progress in his clinical condition with the present treatment schedule with testosterone and recombinant growth hormone in two weeks time that he started walking with support at home and was jubilantly enthusiastic for trying more intense physiotherapeutic measures. In six weeks he was freely moving about even for small walks outside home with the support of the walking stick. On a two year followup to date, he is normally walking without any support and is planning to restart his tennis games soon.

There were three male patients and two female patients who were going through medical care at home after being discharged from the hospital with episodes of typical myocardial infarction. For no justifiable medical reasons, these patients were still in bed and were unable to ambulate themselves at home, eventhough there were no medical reasons justifying the physical condition. Apart from the reduced ejection fraction of cardiac function to 40-60 percent of normal as per echocardiogram, all other
parameters were normal. Apparently both the treating physician and relatives were resigned to the idea that after all they are psychologically upset and depressed due to the stormy episodes of their health status. With the present study protocol, they were given treatment with gonadal steroids and recombinant growth hormone, as per the prescribed schedule and dosage, and this made significant and dramatic improvement both in their behavioural attitude, physical condition of improvement of ambulation and maintenance of parameters of cardiac ad other organ systems. The ejection fraction in echocardiogram improved to 70 percent at the end of 6 weeks on the present treatment.

The treatment response in multiple organ dysfunction/failure

There were seven patients undergoing critical care in intensive care units taken up for the present study. Four of them were male and three of them were females. All were in the age group 30-50 years, they were developing evidences of multiple organ dysfunction, as evidenced by the impairment of function of at least three organs, which were apparently normal, yet their admission to the intensive unit. These were generally cases admitted for traumatic head injury at road traffic accident and other forms of such injuries. Two of them, both females had developed this complication during the course of management for metabolic acidosis, as a complication of diabetic acidosis and electrolyte imbalance. The onset of multiple organ failure was heralded by a pneumonic patch in the lungs, cardiac dysrhythmias, rises urea and creatinine, and hepatic enzymes (SGPT, SGOT & GGTP). The development of hematorrheological abnormalities [reduction in platelet
number and function and evidences for disseminated intra vascular coagulation (DIC)] were usually the last to arrive before the inevitable end. These patients were taken up for the treatment with gonadal steroids and recombinant growth hormone and progressive improvement in the parameters of function of different organs returning to normalcy was evident within 3-5 days. All of them made remarkable progress within 4-6 weeks of treatment.

**Morbid Obesity**

1. Oestrogens, progesterone, testosterone, have anti-inflammatory actions, bone building (osteoblastic) activities which can be made useful in treating chronic, inflammatory, debilitating diseases like osteoarthritis, rheumatoid and the like immune oriented arthritis, fibromyalgias, especially related to menopause (male and female).

2. Progesterone and testosterone have immunosedative and anti allergic actions. Oestrogens are particularly immuno potent and allergogenic. The factors are to be kept in mind while treating patients who have history of allergy (dermal, sinus and pulmonary nature). While they are being treated for HRT and other indications. Progestagens, especially help in healing of chronic non healing wounds, chronic skin lesions in psoriasis and pemphigus type of dermatological conditions.

3. Many chronic diseases like diabetes mellitus with complications of dermo, nephro, neuro, osteo manifestations and arthritis patients, debilitated, bed-ridden state of post paralytic and post traumatic conditions are often attended with the evolution of multi system dysfunctions and ultimately the unfortunate and inevitable multiple
organ failure. MOF happens in a fast evolving, cataclysmic cascade in patients seen in ICUs with critical phases of traumatic, paralytic and metabolic diseases. This downhill-course of disease process can be prevented, arrested and retraced to normal and conducive healing processes to a positive outcome of treatment by the study protocol of hormonal treatment.

4. Cases of morbid obesity of 140 and more kilograms, make their ambulation and day to day errands difficult, suffering from ventilatory insufficiencies (making them breathless even on ordinary walking) and suffering from abrasive ulcers of the skin folds which fail to heal ordinarily. Such people can be helped by the use of recombinant growth hormone with relevant sex steroids, towards healing and weight reduction programs. Recombinant growth hormones helps in sensitizing insulin receptors and combating the usual insulin resistance status of the metabolic syndrome in obesity and also helps in lipolysis and leptin related anomalies, which lead to lipid deposits.

5. Case of andropause in male and menopause in female are often associated with the sluggishness of the adrenal gland (anterior) giving an entity of sluggishness of cortisol production either quantitatively or qualitatively (meaning either with low normal morning basal levels and flattened diurnal variations with low evening levels). This condition can appropriately called adrenopause and in such conditions use of cortisone along with usual HRT is needed and beneficial. Weaning such patients off steroids is made easier, simpler and quicker by the simultaneous use of recombinant growth hormone.