Ayurvedic Management of Acromegaly induced Arthropathy - A Case Study

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ABSTRACT

Acromegaly is a rare disease caused due to hypersecretion of Growth Hormone and consequently of Insulin-like Growth Factor-I (IGF-1) caused by Pitutary Microadenoma or Macroadenoma. The Growth Hormone and IGF-1 play a role in the regulation of bone metabolism. Among musculoskeletal symptoms the most prevalent is Arthropathy, it may be present as the earliest clinical symptom of the disease and the most commonly involved joints are hips, shoulders, knees, hands, and elbows. According to *Ayurvedic* classics Acromegaly induced Arthropathy can be correlated with *sandhivata* as in this disease vitiation of *vata* and so vitiation in *asthi* and *sandhi* occurs results in pain and inflammation in spinal region and bilateral knee joints as both are the most commonly involved areas. The present case study was dealt with, keeping in mind to prevent the development of irreversible complications of the disease and improve the quality of life in patients suffering from the disease. In this case an effort was made to treat a 65 years old male patient known case of acromegaly having pain in low back region and bilateral knee joints since two and half years treated with *shiva gutika* having ingredients like *shilajatu dashmoola, guduchi, bala, trikatu* etc. in 3gm in BD dose with 40 ml of *pathyadi kwatha* as *anupana* for 6 months. It has property of anti-inflammation, reduction of pain, *deepana*, *ama pachana* and thus breaking the pathogenesis of disease and strengthening the *roga ashaya*. It showed relief in sign and symptoms of the Acromegaly induced Arthropathy in patient without any side effect / adverse effects during the course of treatment.

KEYWORDS- Acromegaly induced Arthropathy, Growth hormone, Insulin-like growth factor-I, Pitutary adenoma , *Shiva gutika*, *Pathyadi kwatha*.

INTRODUCTION

Acromegaly is a rare disease occurs with a prevalence of 50 to 70 cases per million and an incidence of 3 cases per million per year.[1] It is a chronic endocrinopathy caused by hypersecretion of growth hormone (GH) and consequently of insulin-like growth factor-I (IGF-1). In nearly 98% of such patients, excess GH release is from a pituitary somatotroph adenoma. In exceptional cases, it may be secondary to excess release of GHRH from a hypothalamic tumour or due to ectopic secretion of GHRH from a bronchial carcinoid, pancreatic islet cell tumour or phaeochromocytoma.[2] Growth hormone (GH) and its peripheral mediator, insulin-like growth factor-1 (IGF-1), play a significant role in the regulation of bone metabolism. While adult growth hormone deficiency has been shown to be involved in determining bone loss and osteoporosis, the effects of growth hormone excess on bone are unexplained and uncertain. Musculoskeletal pain and joint symptoms are frequent problem affecting approximately 70% of individuals encountered in acromegaly and is associated with a reduction in quality of life. Among musculoskeletal symptoms the most prevalent are prognathism, frontal bossing, acral enlargment, arthralgia, myopathies and fibromyalgia. The arthropathy in acromegaly can affect both axial and peripheral joints, and it may be present as the earliest clinical symptom of the disease. The most commonly involved joints are hips, shoulders, knees, hands, and elbows.[3]

The delay between the estimated onset of acromegaly and the appearance of joint disease is approximately 10 years, but the range is wide. Early signs of joint involvement have also been reported in patients with short duration of the disease.[4] Radiographic changes in peripheral joints are widely, being found in more than 50% patients.[5] In a study over 50 years, 40% of patients are osteoporotic.[6]

Sandhivata is described by *Acharya Caraka* as *sandhigata anila* with symptoms of *shotha* (swelling) which on palpation feels like a bag filled with air and *shula* (pain) on *prasarana* and *akunchana* (pain on flexion and extension of the joints).[7] The pathology includes aberration of *vata* and *kapha dosha*, affecting the *asthi* (bone), *sandhi* (joint), *mansa* (muscle), and *snayu* (ligament). Comprehensive management of this condition in Ayurveda includes a judicious combination of external therapies (*bahya chikitsa*) in the form of *janu basti*, *abhyanga* (massage), *jalaukavacharana* (application of leech), *agnikarma* (cautery), *basti* (medicated enema), and internal medication (*abhyantara chikitsa*) in the form of *churna* (powder of a single herb/combination of herbs), *kashaya* (decoction), *vati* (pills), etc.

Acromegaly induced Arthropathy can be correlated with *sandhivata* as in both vitaition of *vata* occurs and manifestation is in joints.

In present case, a 65 years old male patient known case of acromegaly had pain in low back region and bilateral knee joints since two and half years. Hence the patient was administered with anti-inflammatory, pain reducing, *deepana* and *ama pachana* oral medication.

MATERIAL AND METHODS

Case Presentation

A 65 years old male patient was attended the OPD in Department of Kayachikitsa, National Institute of Ayurveda, Jaipur. The patient had complaints related to Acromegaly induced Arthropathy which was pain in low back region and bilateral knee joints since two and half years. As in Acromegaly induced Arthropathy, musculoskeletal pain and joint symptoms are found, drugs suppressing pain and inflammation and having *deepana* and *ama pachana* properties were prescribed- *shiva gutika* in 3gm in BD dose with 40 ml of *pathyadi kwatha* as *anupana* for 6 months.

History of Present illness

Patient states that he was quite well two and half years back. Since then he has been suffering from pain in low back region and bilateral knee joints. Also he is having headache intermittently. During his visit to the Doctor, patient's general appearance didn't look normal as prominent supraorbital ridges, prognathism, widening of teeth spaces, macroglossia with thick lips, large ears and fleshy nose, spade like hands and feet were found to the Doctor. So he diagnosed the patient has 'acromegaly' and started treatment. Patient underwent treatment but could not get relief completely.

Past history of Patient

The patient had surgical history of nodules like growth over head 20 years back. His family history revealed that there was no such complaint ever.

Personal history of patient

Appetite - Normal; Sleep- Disturbed; Bowel- Not Clear; Bladder- Clear; Addiction- None; Diet- mixed.

General Examination

Appearance - Acromegalic

Body Built - Heavy Built, Height : 165.5cm, Weight : 80kg.

Body Proportion - Arm Span : 172cm & Height : 165.5cm (Usually Equal)

Nutritional Status - Overweight (BMI – 29.3)

Vitals - Pulse: 80/min BP: 120/70 mmHg

Temp: 98.4 F RR: 15/min

Scalp - 9 visible soft and spongy folds i.e. cutis verticis gyrata.

Head - Frontal bossing.
Nose - Diameter of nostrils were not equal.
Nasolabial Fold - Thickened
Mouth - Gap between lower incisors, Macroglossia, Prognathism
Skin - Thickened
Hands & Legs - Widened, thickened and with thicker soft tissue.
There was no pallor, cyanosis, clubbing, lymphadenopathy.

Systemic Examination

CNS: Conscious, Oriented CVS: S1 S2, Normal
RS: AEBE, Clear P/A:Soft, Non Tender
LS: Crepitations present in bilateral knee joints & Restricted bilateral bending of spine.

Investigations- Blood Investigation

Hb%: 11.6 g/dL
ESR: 36mm/hr
BSL(R):98mg/dl
Sr.Creatinine: 0.85mg/dl
Growth Hormone: 14.6ng/ml

X-Ray

Fig 1A

Fig 1B

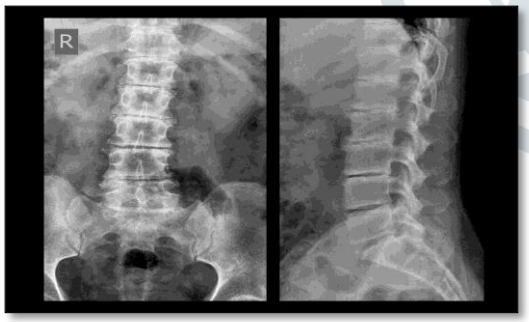

Fig 1C

Fig 1D

Fig 1A: Skull xray shows occiputal protuberance, frontal bossing & prognathism, **1B:** Hand xray shows spade like tufting of terminal phalanges arrow head appearance with widening of articular spaces, **1C:** Concavity to posterior i.e. posterior scalloping with osteoarthritic changes, **1D:** Osteoarthritic changes in bilateral knee joints.

MRI SELLA shows: Homogeneous enlargement of anterior pituitary gland, measuring approximately 11.6*15.5*18.9 mm also causing enlargement of bony sella – s/o Macroadenoma.

TREATMENT

Treatment was started with oral drugs i.e. *shiva gutika* in 3gm in BD dose with 40 ml of *pathyadi kwatha* as *anupana* for 6 months. There was marked improvement in pain in low back region and bilateral knee joints.

DISCUSSION

Acromegaly is a rare disease caused by Pitutary Microadenoma or Macroadenoma results in hypersecretion of Growth hormone and consequently of Insulin-like growth factor-I (IGF-1). As Growth hormone (GH) and insulin-like growth factor-1 (IGF-1), play a significant role in the regulation of bone metabolism so hypersecretion of these two results in musculoskeletal pain and joint symptoms and is associated with a reduction in quality of life. In this patient, arthropathy develops in his spinal region and bilateral knee joints. The patient was treated by keeping the following things in mind.

According to Ayurveda, the pathogenesis of Acromegaly induced Arthropathy can be inferred as vitiation of *vata* and as *asthi* is the major site of *vata* so vitiation in *asthi* and *sandhi* also occurs results in pain and inflammation in spinal region and bilateral knee joints as both are the most commonly involved areas.

Shiva gutika and *pathyadi kwatha* as *anupana* was given for the treatment of Acromegaly induced Arthropathy.

Shiva gutika[8] contains *shilajatu* as the main ingredient has *kashaya* (astringent), *amla rasa* (sour taste), *katu vipaka* (pungent in transformation), *anushnasheetaveerya* (not too cold in potency). It is useful in alleviating *tridoshas*. It is unique in its category as it is capable of showing *shamana* (cure morbid factors with oral medicine), *brimhana* (nourishment) and *rasayana* effect (immunity enhancer). It acts as antibiotic, analgesics, anti-inflammatory, immuno-modulatory, antiviral, antioxidant and antimicrobial activities.[9] It also cotains *guduchi*, which have been reported to affect the proliferation, differentiation and mineralization of bone like matrix on osteoblast model systems *in vitro* and hence finds potential application as an anti-osteoporotic agent.[10]

The formulation also contains many *deepana, pachana* drugs like *pippali, maricha, nagara, gajapippali* etc. is best for *agnimandya*. Drugs like *danti, triphala* are effective in maintain the *anulomana* of *vata* and also helps in constipation. Also *dashmoola dravya, bala, rasna* and *til taila* helps in alleviation of *vata* and reduces the pain. Apart from this the other drugs in *shiva gutika* have *kapha-vata shamaka* property. *Ghrita* contains *snigdha* and *guru gunas* which helps in reducing *vata dosha* and maintaining *kapha dosha*.

Pathyadi kwatha was given to the patient as *anupana. Anupana* is a factor which helps in absorption, assimilation as well as in the efficacy of the drug. As we know that *anupana* has multidimensional effects, it acts as nutritive, stimulant, preventive and curative. It also plays a very significant role in treating the diseases and helps the drug to act quickly.[11] *Pathyadi kwatha*[12] contains *triphala*, *bhunimba*, *haridra* and *guduchi*. Most of the drugs having *ushna veerya*, *madhura vipaka* and *tridoshaghna* properties so they normalize the vitiated *vata dosha*.[13]

The combination of *Shiva gutika* with *pathyadi kwatha* as *anupana* pacifies the *vata dosha* and reduces the pain & inflammation and thus breaking the pathogenesis of disease and strengthening the *roga ashaya*.

CONCLUSION

This case showed results as marked improvement was found in all the signs and symptoms of the disease. After completion of treatment there is marked reduced pain in back region and bilateral knee joints. It is an effort to understand the concept of Acromegaly induced Arthropathy so it can be concluded that *shiva gutika* with *pathyadi kwatha* as *anupana* can be used for the treatment of Acromegaly induced Arthropathy in patient without any side effect / adverse effects during the course of treatment. Further clinical trials are needed to establish a standard management of Acromegaly induced Arthropathy.

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