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CHEMICAL LUMBAR SYMPATHECTOMY FOR LOWER LIMB RESTING PAIN/NONHEALING ULCER ASSOCIATED WITH THROMBOANGIITIS OBLITERANS

Anaesthesiology

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ABSTRACT

Aim:- This study was to assess the effectiveness of chemical lumbar sympathectomy in pain relieving and healing ischemic ulcer in patient of Thromboangiitis obliterans(TAO).

Material and Method: 32 patients with resting pain, ischemic/gangrenous ulcer referred to pain clinic de department of anaesthesia Jhalawar Medical College, Jhalawar. These patients divided in 2 group-18 had bu buerger's disease and remaining 14 are non buerger's disease and planned for Chemical Lumbars sympathectomy using fluoroscopic guided by C-arm. 5ml of 2% lignocaine hydrochloride was instilled as L. LA. 22 gauge spinal needle, water soluble non-ionic contrast Iohexol 3%- 1.5 ml dye, 0.5% isobaric bu bupivacaine-2ml, 10% phenol- 1ml were used during procedure. Patient follow-up was done on next day, 2, 3rd day and after 2,4, 8 and 12 weeks.

Result: Outcome for improvement in resting pain were observed by 1-10 Numerical analogue score ((NAS). There was significant decrease in pain score from 8.5±0.8 (preblock) to 4.1±1.2 (post block 3rd da day). By 12 week- 5patient decline to follow up, 21 (77.7%) of remaining 27 patients reported paipain relief & 17(62%) reported healing /decrease size of ulcer.

Conclusion: Chemical Lumbar Sympathectomy provide safe and effective treatment for TAO patients ith with resting pain and promoting healing ulcer.

KEYWORDS

Lumbar Sympathectomy, TAO, Phenol, bupivacaine.

INTRODUCTION: -

Chemical lumbar sympathectomy[1] is an easy and feasible alternative that has been shown to be as effective as surgical lumbar sympathectomy in providing desired outcome. It's nature of being minimally invasive is the obvious reason for being preferred to open surgery. Thromboangiitis obliterans also known as Buerger's disease is a recurring progressive inflammation and thrombosis (clotting) of small and medium arteries and veins of hands and feet. It is strongly associated with the use of tobacco products (smoking & smokeless).

Incidence of Buerger's disease is high in Asian countries. It's prevalence among all patient with peripheral arterial disease is high as 45% to 63 % in india. Amputation and consequent limb loss are strongly associated with poor quality of life and jobless. The main symptoms is pain in affected areas - at rest and while walking (claudications). The impaired circulation increases sensitivity to cold, diminished or absent peripheral pulses. There are colour changes of extremities from cyanotic blue to reddish blue. Skin becomes thin and shiny. It has been suggested that tobacco may trigger as immune response in susceptible persons or it unmask a clotting defect, either of which could incite an inflammatory reaction of vessel wall. This eventually leads to vasculitis and ischemic change in distal part of limbs.

Treatment modalities includes –

- Medical management,
- Surgical revascularization,
- Endovascular therapy,
- Surgical and Chemical sympathectomy[2],
- Spinal cord stimulation.

MATERIALS AND METHOD:-

The prospective observational study was carried out from September 2017 to December 2018 in Pain Clinic, Department of Anaesthesia, Jhalawar Medical College.

After approval by the Institutional Ethical Committee, 32 patients (28 male and 4 female) age ranged from 30 to 68 years of peripheral vascular disease of lower limb with resting pain, non healing ulcer/ gangrene are scheduled for chemical lumbar sympathectomy after taken their written and inform consent. Pre block severity of pain was noted in all patients using Numerical analogue scale (NAS) in which zero indicated No pain and 10 indicated maximum imaginable/ Intolerable pain. Intravenous access was established and non invasive blood pressure cuff, ECG and pulse oximeter probe were attached for monitoring of vital in all patients. Patients were kept in prone position with a pillow under the hip & chest for performing the procedure. All the blocks were performed with the help of 22G, 15 cm spinal needle under imaging by C-arm, using the lateral approach, first described by Reid and co workers. Under strict aseptic precaution first, 3 ml lignocaine (2%) in skin and subcutaneous tissue at 7 cm lateral to L2 and L3 vertebral body. Correct anterolateral paravertebral location of the needle tip was confirmed by injecting 1.5ml of radio -opaque contrast media (water soluble non ionic Iohexol 3%) with help of C arm imaging.

Test block was performed with 3 ml of 2% lignocaine, subjective pain relief and definitive sensation of warmth in the affected limb were taken as the desire test result. After that 2 ml bupivacaine 0.5% isobaric and 1 ml phenol 10%(1 ml of 100% phenol diluted in 10ml) was injected each at L2 and L3 level for achieving chemical lumbar sympathectomy. Patients were discharged after observation for 4-5 hours with advise to continue oral medications (viz- Pentoxyphylline, NSAID, antibiotic) already on. All the patients were sent home with instructions to come to pain clinic in the event of increasing intensity of pain or development of new symptom otherwise to come for follow up after 3rd day and pain relief was noted using NAS. Next follow up was done after 4, 8 and 12 weeks. Subjective pain relief, healing of ulcer and resumption of at least part of the usual work were noted. Need of amputation and complications were also noted. Follow up for a period of 3 month was analyzed. Responses in Buerger's and Non Buerger's patient were compared. Student's t test for continuous data and chi-square test for categorical data were used for statistical analysis. A p-value of < 0.05 was considered significant.

Patients with following criteria were excluded from study-

- local infection

- obvious anatomical deformities of the spine
- diabetes mellitus
- presence of hypersensitivity to local anaesthetic agents,
- uncontrolled psychiatric disorder,
- with associated severe medical illness.

RESULT:-

In total 32 patients were observed. 18 patients (56.2%) diagnosed as having Buerger's disease and remaining 14 patients (43.7%) had ulcer/gangrene due to other Peripheral Vascular diseases. All patients reported pain relief immediately following the injections. Statistical data was analysed to test significancy.

Table 1 :- Demographic data

Demographic data	Buerger's disease (n=18)	Non Buerger's disease (n=14)
Mean age ± SD (year)	44.8 ±7.8	52.4 ±10.7
Age range (years)	30-62	35-68
Sex ratio (M:F)	16:2	12:2
Affected limb		
right leg	11	7
Left leg	7	5

Table 2 :- Pain score on day 3rd after the blockage

Disease	Pre block pain score (NAS 0-10) Mean ± SD (range)	Post block pain score (NAS 0-10) Mean±SD(range)- 3rdday	Patiens reported with pain relief number(%)	
Buerger's disease (n=18)	8.52± 0.86 (7-10)	4.17± 1.23 (1-7)	15 (83.3%)	P value <0.0001
Non buerger's disease (n=14)	8.23± 0.97 (7-10)	3.86± 1.73 (0-7)	11 (78.5%)	P value <0.0001

Overall, there was significant decrease in pain score following chemical lumbar sympathectomy from mean NAS of 8.52 ±0.86 to 4.17±1.23 documented 3 days after the blocks.

Table 3- Assessment of symptoms relief at 3rd month

Symptom	Buerger's Disease (n=15) %	Non Buerger's Disease (n=12)%	Total Patients (n=27) %
Pain relief	11 (73.3%)	10 (83.3%)	21 (77.7%)
Ulcer healing	9 (60%)	7 (58.3%)	16 (59.2%)
Resumption of work	8 (53.3%)	5 (41.6%)	13 (48.1%)

Out of 32 patients 27 patients came for follow up and 5 did not return at 3 month. Of the remaining 27patients, 21 (77.7%) felt pain relief, 16 (59%) had signs of ulcer healing/ decrease size of ulcer. 13 patients (48%) were able to resume at least part of their day to day work. 5 patients (3 buerger's disease, 2 non buerger's disease) required amputation by 3 month.

DISCUSSION:-

Chemical sympathectomy worked for pain relief at rest and healing of ischemic ulcer because marked reduction in peripheral resistance leads to opening of arteriovenous anastomoses (both dependent on sympathetic vasoactivity), thereby increasing blood flow in skin and improvement in symptoms. Pain relief also occurs because of the neurolysis of afferent pain fiber's travelling in the sympathetic chain.

Victoria KM Tay et al[7] studied that within 3 months, improvement(defined as doubling of the walking distance, cessation of rest pain or healing of ulcers) occurred in 30.3% of cases. No change was observed in 45.4% of cases and 24.3% of cases deteriorated. Patients with ulcers or gangrene had significantly poorer results than those without any ischaemic lesions, as only 19% versus 39% of patients improved ($P < 0.05$). In our study little better result observed where 48.1% patients resumed their work after improvement at 3 months. Pain relief & ulcer healing was noticed in 77.7% & 59.2% patients respectively after CLS at 3 months.

Pain score in our study decreases significantly at 3rd day from 8.52± 0.86 (preblock) to 4.17± 1.23 (post block) in 83.3% using NAS and this was highly significant (p<0.0001). Similar results has also observed by Bhattarai BK et al[8] in their study as pain score decreased from 8.3± 0.9 (preblock) to 4.2± 2.5 (post block) after 3rd day using NAS. They also observed that after 3 months 76% patients had pain relief, 72% had healing ulcer or decrease size while 44% patients have resumed their usual work which coincides with our study results.

Weyland A. et al[9] found that sympatholytic efficacy, different haemodynamic variables, the relief of rest pain and the effect on ischaemic ulcers were quantified before, 3 and 21 days after CLS. The mean intensity of rest pain, as assessed on a visual analogue scale (0-100 mm), significantly decreased from 60 mm to 31 and 34 mm, respectively. 9 of 12 patients (75%) with ischaemic ulcers showed partial or complete remission within the study period which coincides with our results. Overall, in 88 % of patients sympathetic denervation could be demonstrated by ablation, of the sympatho-galvanic skin response[9]. The mean difference in skin temperature between the treated and the untreated leg significantly increased from -0.73°C to + 0.34 and + 0.39°C, respectively. Doppler-sonographic measurements of the ankle-pressure-index showed a minor increase from 0.34 to 0.36 and 0.42; however, these changes did not reach significance[9].

CONCLUSION:-

Chemical Lumbar Sympathectomy provides safe and effective treatment for Buerger's disease (TAO) patient with resting pain relief and promoting healing of ulcer. However, the reduction of pain was less remarkable in buerger's disease which is probably due to inflammatory nature of the disease. Chemical lumbar sympathectomy was effective in contributing to healing of ulcer (observed as healing or decrease in size of the wound or clear demarcation of dead and healthy tissues). Some difference could be due to the difference in patient characteristics, environment factor, socioeconomic factor.

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