

Current trends in osteoarthritis management- A short review

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ABSTRACT

Osteoarthritis is one of the most debilitating clinical entities we come across in outpatient practice. It is a clinical endpoint of a number of pathophysiologic changes associated with age, joint trauma and alteration of biomechanics resulting in joint failure. The presentation of osteoarthritis represents a multitude of factors like joint damage, irregular immune response to damage and chronic inflammatory response. Several Pathogens associated molecular patterns (PAMP) and Damage associated Molecular pattern (DAMP) due to unregulated innate response has been implicated in the progression of the disease.

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I. INTRODUCTION

Management relies solely on symptomatic control as limited disease modifying therapies are available [1]. Nutraceuticals and dietary supplements are being tried but lack sufficient evidence. Relief limited only to 1-4 weeks is achieved by Intra-articular corticosteroid injections, which are being prescribed frequently now a day [2]. Glucocorticoids limit mRNA and proteins synthesis by acting on intranuclear steroid receptors. Consequently T cell and B cell functions are altered, reduced concentration of arachidonic acid derived proinflammatory molecules due to phospholipase inhibition [3,4]. Triamcinolone hexacetonide (THA) and methylprednisolone acetate (MPA) are used intraarticularly (IA) but both offers a temporary symptomatic benefit only. THA is more effective than MPA at week 3, but its effect is lost by week 8. MPA still has an effect at week 8 however relief was still considered short term [5,6]. Methylprednisolone, Dexamethasone, Hydrocortisone, Betamethasone, Prednisolone, and Triamcinolone are reported to show toxic effects on articular cartilage both morphologically and histologically. Clinically, beneficial effects are seen for IA administration, but the lowest possible dose should be administered [7]

Viscosupplementation is another recent advancement in management for

symptomatic knee osteoarthritis [8]. Hyaluronic acid, nonsulfated glycosaminoglycan increases the viscosity of synovial and lubricates the joint surfaces along with Lubricin. Resilience of cartilage is due to hyaluronan molecules binding to aggrecan monomers by HAPLN1 (Hyaluronan and proteoglycan link protein 1) forming aggregates imbibing water [9]. However meta-analyses study published on intra-articular HA treatment for knee OA found clinical ineffectiveness of Hyaluronic acid in four of the studies and favourable results only in one study. Meta-analysis also concludes even increased risk of adverse events in case of hyaluronic acid treatment [8,10-13]. Autologous platelet rich plasma (PRP) delivering high concentration of various growth factors like PDGF, TGF- β , FGF, IGF, VEGF, HGF, EGF and PF4 was initially used to improve outcomes of dental implant procedures [14]. In recent years, PRP has been extensively tried for the musculoskeletal injuries in sports medicine and orthopaedics but contradictory results were seen in clinical trials in osteoarthritis symptoms [15-17]. Sustained therapeutic response can only be achieved by strategies to retain the drug intraarticularly due to challenge posed by rapid clearing by lymphatics and vascularity. The problem here is that these particles, too, are rapidly cleared by the lymphatics. Penetration of

drug to cartilage is difficult and it diffuse back readily [18]. Recent researchers have tried conjugation of positively charged Avidine to Dexamethasone covalently which has shown promising initial results in intracartilage retention by binding to negatively charged proteoglycans [19]. Similar strategies can be used to link and deliver neutraceuticals like Oxaceprol in intracartilage use. Due to advancement in therapeutics and changes in life-style patterns, prevalence of osteoarthritis is on the rise. Currently, no therapeutic agent has shown to have disease-modifying effects on the progression of osteoarthritis. Yoga, the option in the east, is neither widely explored nor having evidence based documentation reducing its acceptability in the west. Hence a pharmaceutical remedy is the need of the hour, whose action may further be augmented through neutraceuticals and life style modifications with rehabilitative supports. Freudian concept which was overstressed may likely be pointed out to explore the domain of psychological counselling along with the futuristic therapeutic modalities of osteoarthritis. Due to inadequacy of available treatment, holistic approaches like Yoga, meditation, gyrosonics [20] are tried but the positive claims need to be evidence based. Present day better option of treatment may be intraarticular Oxaceprol and that also need to be supported through evidence-base.

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