

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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“TREATMENT OF KNEE
OSTEOARTHRITIS WITH GENICULAR
ARTERY INJECTION OF
MESENCHYMAL STEM CELLS.”

FOR THE FIRST TIME IN THE WORLD

Preliminary Results

Dr. Hossein Ghanaati M.D.,
Professor of Radiology
Tehran University of Medical Sciences

Team members



Dr. Hossein Ghanaati



Maedeh Rouzbahani



Dr. Ramin Sarrafi foroushani



Dr. Masud Yunesian



Dr. Maryam Barkhordar



Dr. Mohsen Nikbakht



Dr. Ahmadsheza Jamshidi



Dr. Mohammad vaezi



Ali Ghanaati



Dr. Ardeshir Ghavamzadeh



Dr. Mahrouz Malek

INTRODUCTION

- Osteoarthritis disease or OA , is one of the most common joint destructive diseases, which can progress slowly and cause irreparable damage.
- 6% of men and 18% of women, who are under the age of 60 are suffering from OA all over the world.
- No definite cure for this disease has been known so far .
- In OA disease like other common ones, the best treatment is minimally invasive, most effective, and most accurate treatment way.
- We discovered a new method based on interventional radiology to inject mesenchymal stem cells into the knee joint of patients who were suffering from Osteoarthritis.

Design and method

Inclusion criteria

- ❑ 1) Symptomatic knee OA: including people who have daily pain which has started 3 months before the visit.
- ❑ 2) Patients should be in 1-3 Kellgren-Lawrence criteria of OA.
- ❑ 3) Radiographic changes should be observed in the specified knee without meniscus tear

According to the following inclusion and exclusion criteria, we selected 30 patients

Design and method

Exclusion criteria

- ❑ 1) No use of intra-articular steroid during the last 6 months.
- ❑ 2) No use of hyaluronic acid in the knee during the past 6 months.
- ❑ 3) No use of intra-articular steroid during the last 6 months.
- ❑ 4) Local or systemic infection.
- ❑ 5) Mori deviation in the form of valgus more than 10 or varus.

Design and method

Exclusion criteria

- ❑ 6) simultaneous ankle or hip pain on the same side
- ❑ 7) Any manifestation of secondary arthritis.
- ❑ 8) History of recent malignancy.
- ❑ 9) Autoimmune diseases.

Method

Prior to the procedure, WOMAC score and MRI were obtained for all patients

- Under Local anesthesia, the common femoral artery was accessed
- Using cobra catheter the genicular artery (ies) leading to arterial blush were selected
- **Mesenchymal Stem Cells (MSC)** injection has been performed in the Genicular artery
- Patient were admitted overnight and were all discharged the following day
- Weekly WOMAC score and one month post procedure MRI were obtained in all patients

What is WOMAC score?
It is a type of subjective form which evaluates the stage of Musculo- skeletal disease

“ Womac score “

Pain (5 items):

- During walking:
- Using stairs:
- In bed:

- Sitting or lying:
- Standing upright:

Stiffness (2 items):

- After first walking:
- Later in the day:

Physical function (17 items):

- Using stairs:
- Rising from sitting:
- Standing:
- Bending:
- Walking:
- Getting in or out of a car:
- Shopping:
- Putting on or taking off socks:
- Rising from bed:
- Lying in bed:
- Getting in or out of the bath:
- Sitting or getting of toilet:
- Heavy domestic duties:
- Light domestic duties:

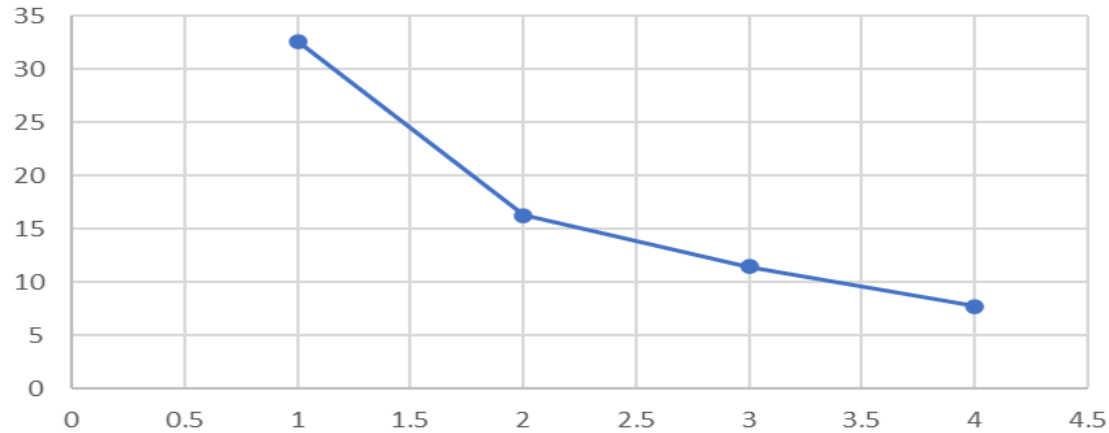
Results

- Technical success 100%
- Clinical success rate(pain relief 100%)
- **Immediate complication: NO**

Results: WOMAC score decreased in all patients

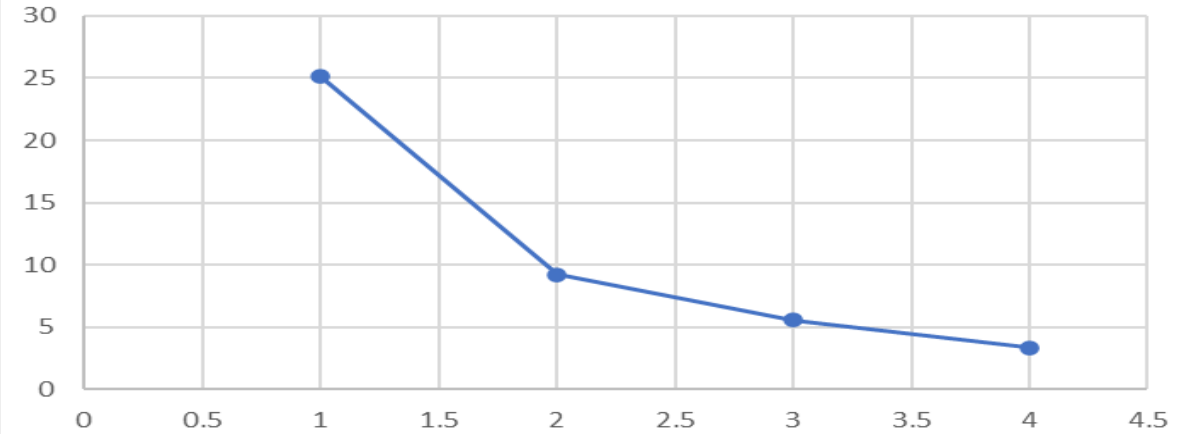
Mean score

a: WOMAC Score for age >55 (n=16)



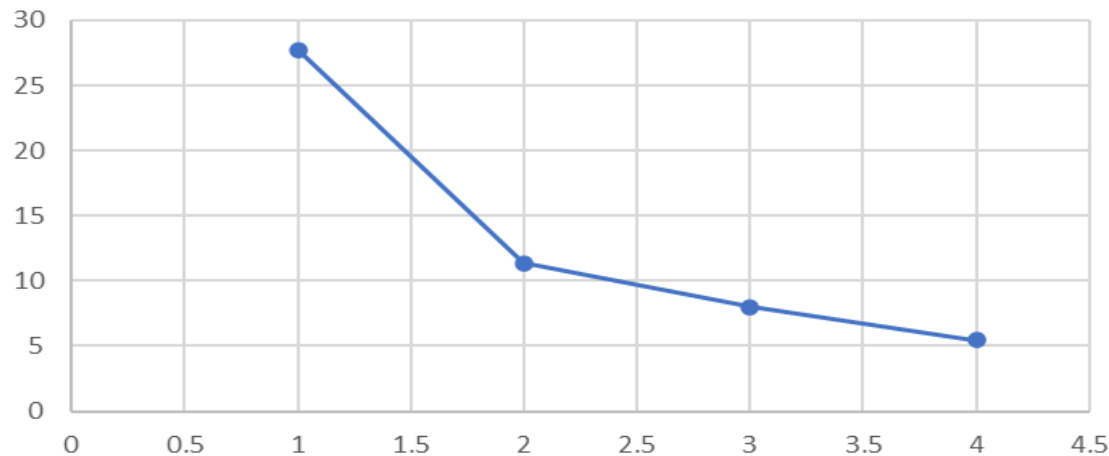
Mean Score

b: WOMAC Score for age ≤55 (n=14)



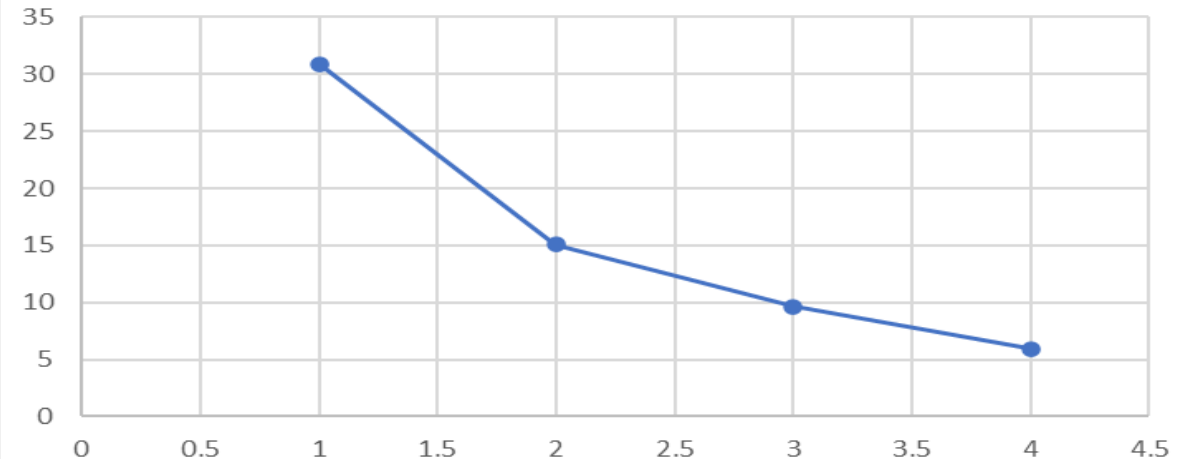
Mean score

c: WOMAC Score for weight >70 (n=17)



Mean score

d: WOMAC Score for weight ≤70 (n=13)



Results, Cartilage changes

-MRI at 1 month demonstrated a significant regeneration of the cartilage (0.22 mm)

		Mean	Std. Deviation	p-Value
SAG	Anterior lateral (before)	1.0267	.41402	<0.0001
	Anterior lateral (After)	1.2277	.52930	
	Posterior lateral(before)	1.1877	.39688	0.002
	Posterior lateral (After)	1.3730	.42504	
	anterior medial(before)	.7423	.48614	0.14
	Anterior medial(after)	.8027	.47323	
	Posterior medial(before)	1.133667	0.558153	0.017
	Posterior medial(after)	1.2727	.60877	
COR	Medial(before)	.5023	.49256	0.104
		.5980	.42958	
	Medial(after)			<0.0001
	Lateral(before)	.7163	.52678	
AX		.9180	.42793	0.015
	Lateral(after)			
	Patella(before)	.8393	.65881	0.001
	Patella(after)	.9603	.68672	
	Trochlea(before)	1.0020	.45740	
	Trochlea(after)	1.1857	.53494	

Results, Cartilage changes

Before

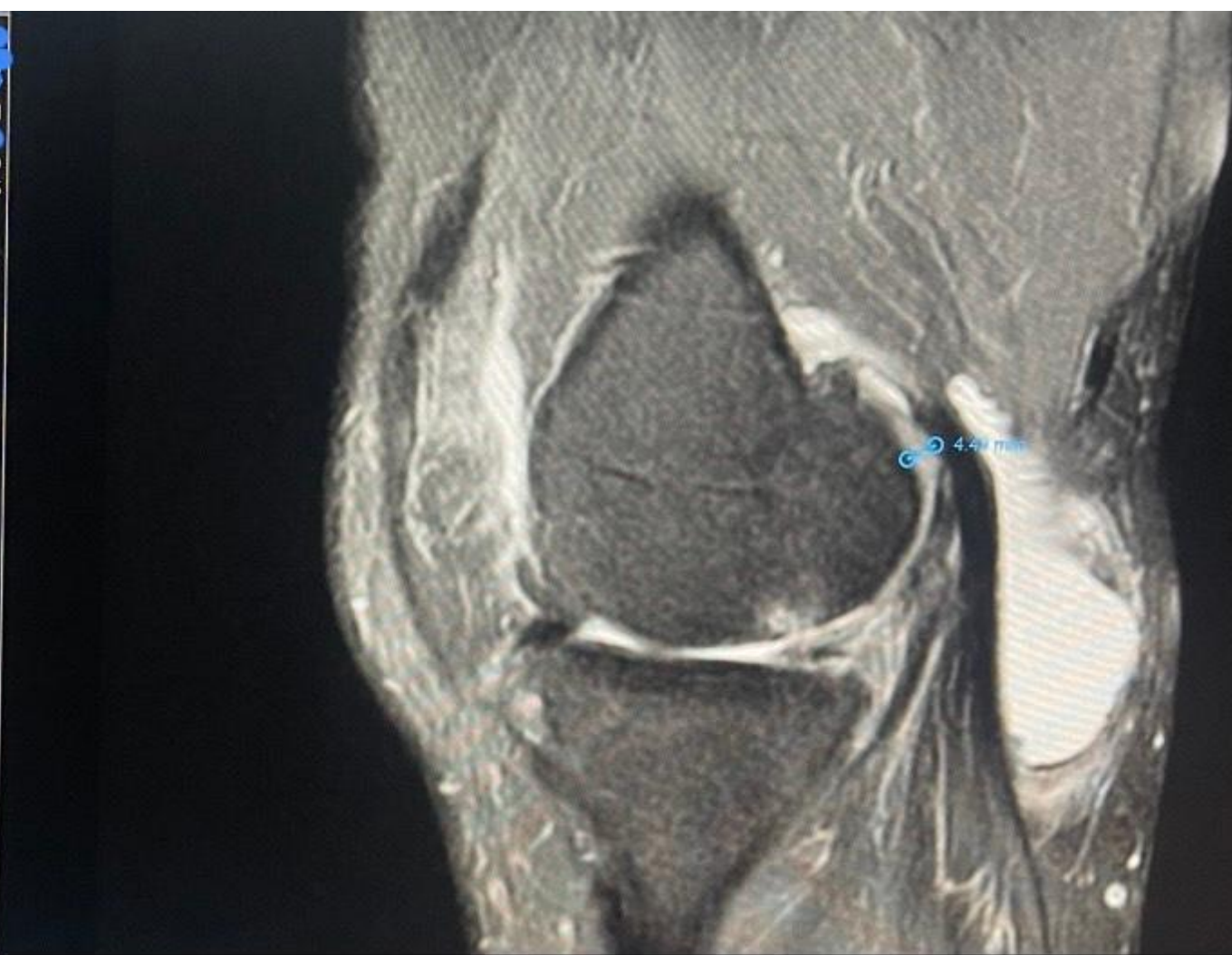
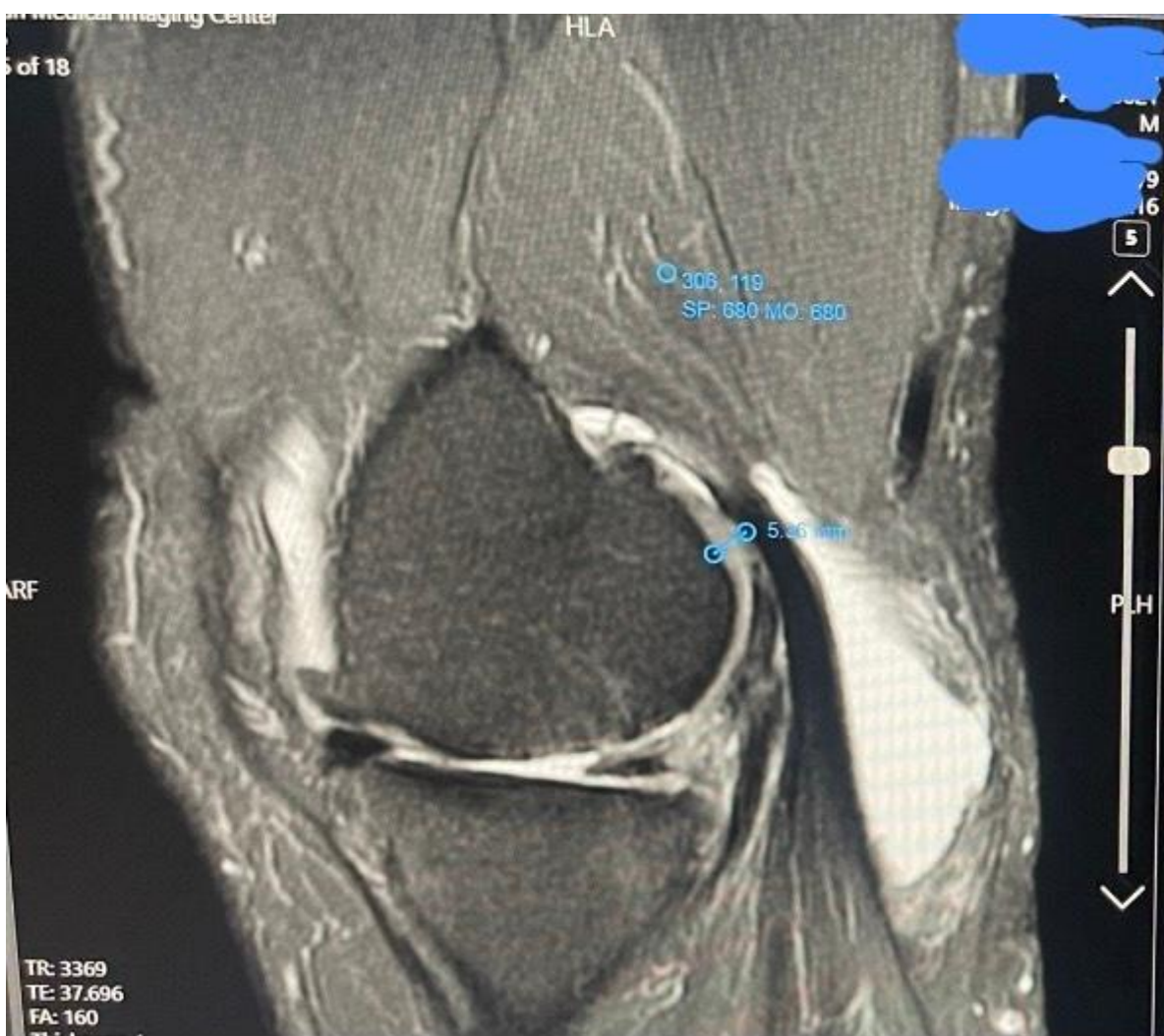


1Month later



1Month later

Before



conclusion

This preliminary study is promising demonstrating that intra-Genicular artery injection of mesenchymal Stem Cells not only improves clinical symptoms, but also results in early cartilage regeneration

**Follow-up for 6 months is necessary to reject placebo effects
At least 1 year follow up is needed to confirm results consistency**

If these results are confirmed with mid and long-term data, this procedure may be considered as a cure for the knee OA



THANKS FOR YOUR ATTENTION
