بسمه تعالی

بیمار دختر 6 ساله با شکایت تپش قلب و درد قفسه سینه به درمانگاه مراجعه کرده است.مادر اظهار می کند که فرزندش گهگاهی دچار تپش قلب وبی حالی هم می شود.حتی یک بار در مدرسه به خاطر آن زمین افتاده است.

به گفته مادر کودک دچار بدن درد و درد اندام هم می باشد ومفاصل مچ دست و پاها گاهی درد می کند.یبوست دارد و زود خسته می شود.مشکل پوستی هم دارد که چند بار به پزشک مراجعه کرده است.که به صورت اسکارهای نازک روی پوست می باشد. همینطور کودک دچار فوبیا هم می باشد و تنها در اتاق خواب نمی ماند.

اما پدر می گوید که کودکش به خاطر دیدن بیمارستان و پزشکان دچار تپش قلب شده و سالم است.حتی از قابلیت های فرزندش در انعطاف پذیری اندام به صورت باز کردن 180 درجه پاها و رساندن شست دست به ساعد و رساندن کف دست ها به زمین بدون خم کردن زانوها و خم کردن انگشت های دست هایش به پشت می گوید که در باشگاه ژیمناستیک هم کودک را ثبت نام کرده است.

کودک سابقه دو بار جراحی به دلیل فتق شکمی دارد.سابقه مصرف داروی خاصی هم نمی دهد.

برادر بزرگتر وی دچار بیش فعالی می باشد و او هم انعطاف پذیری مفاصل دارد. مادر کم کاری تیرویید دارد.عموی کودک هم سابقه اعتیاد و خودکشی دارد.

Bp=80/50 , PR=146,RR=22,T=36.5

در معاینه کودک 6 ساله ظاهر نرمال دارد.معاینه قلب و ریه نرمال است.اسکار جراحی فتق روی شکم دارد.در معاینه اندامها به راحتی انگشت شست به ساعد می رسد و انگشتان دست به راحتی دورسی فلکس می شود.هنگام ایستادن زانوها هیپر اکستنت می باشند. چند پاپول اطراف پاشنه پا مشاهده می شود.

لیست مشکلات:

-تپش قلب و درد قفسه سینه

-بی حالی و ضعف

- بدن درد و درد اندامها و مفاصل مچ دست و پا

-یبوست

- مشکل پوستی

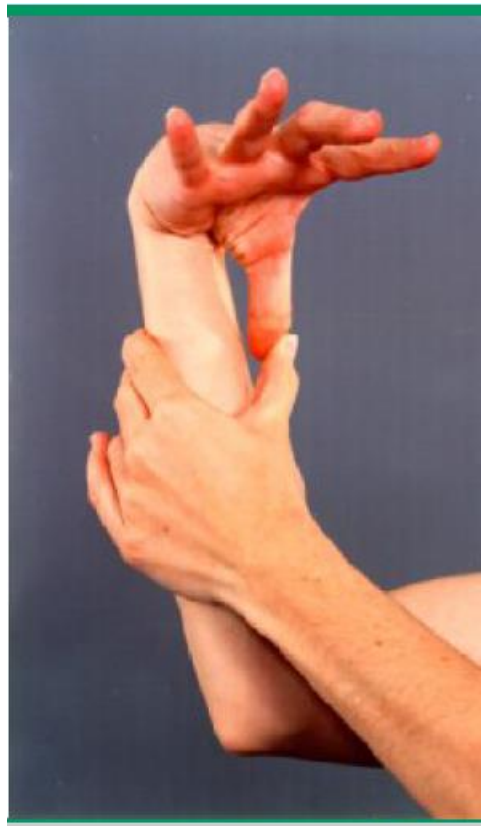
-فوبیا و اضطراب

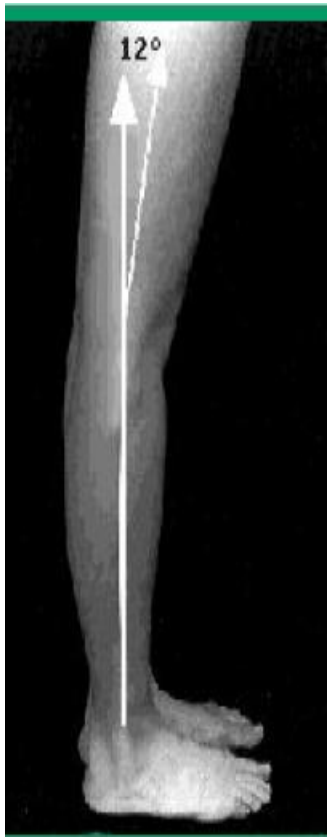
سابقه 2 بار جراحی فتق دارد.

برادر بزرگتر بیش فعال می باشد و مانند خواهرش انعطاف مفاصل زیاد دارد.مادر کم کاری تیرویید دارد.عمو سابقه اعتیاد و خودکشی دارد.

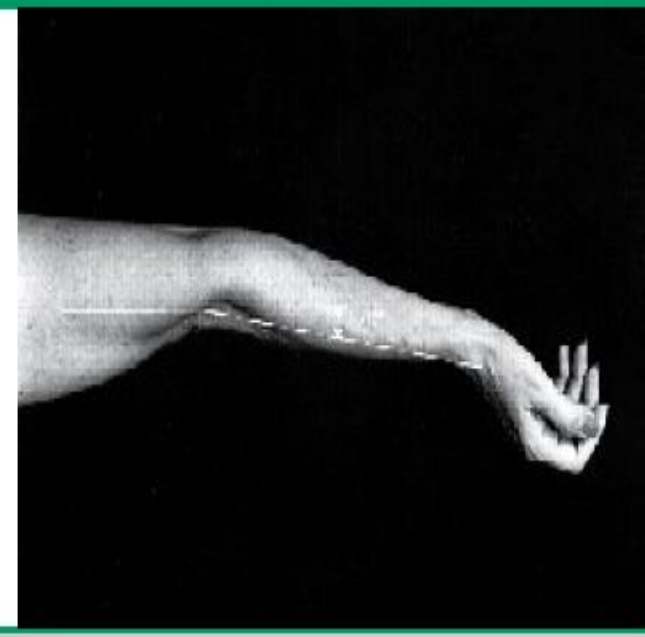
در معاینه رساندن شست دست به ساعد و هیپر اکستنشن زانوها و هیپر دورسی فلکشن انگشتان دست مشهود است. اسکارجراحی و پاپول اطراف پاشنه پا دارد.اسکارهای نازک روی پوست دارد.

Age	Respiratory rate (breaths/minute)			Heart rate (beats/minute)		
	Lower limit (1st percentile)	Normal range (10th to 90th percentile)	Upper limit (99th percentile)	Lower limit (1st percentile)	Normal range (10th to 90th percentile)	Upper limit (99th percentile)
0 to 3 months	25	34 to 57	66	107	123 to 164	181
3 to <6 months	24	33 to 55	64	104	120 to 159	175
6 to <9 months	23	31 to 52	61	98	114 to 152	168
9 to <12 months	22	30 to 50	58	93	109 to 145	161
12 to <18 months	21	28 to 46	53	88	103 to 140	156
18 to <24 months	19	25 to 40	46	82	98 to 135	149
2 to <3 years	18	22 to 34	38	76	92 to 128	142
3 to <4 years	17	21 to 29	33	70	86 to 123	136
4 to <6 years	17	20 to 27	29	65	81 to 117	131
6 to <8 years	16	18 to 24	27	59	74 to 111	123
8 to <12 years	14	16 to 22	25	52	67 to 103	115
12 to <15 years	12	15 to 21	23	47	62 to 96	108
15 to 18 years	11	13 to 19	22	43	58 to 92	104




12°

Elbow hypermobility



Laxity of the elbow with greater than 10 degrees of joint extension.

- **Clinical manifestations and diagnosis of hypermobile Ehlers-Danlos syndrome and hypermobility spectrum Disorder**

- استاد راهنما
- دکتر دادخواه (فوق تخصص بیماریهای قلب و عروق اطفال)
- ارایه دهنده
- دکتر اسمی (دستیار پزشکی خانواده)

INTRODUCTION

The hypermobile subtype of Ehlers-Danlos syndrome (hEDS) and hypermobility spectrum disorder (HSD)

EPIDEMIOLOGY

1 in 500 of the general population

common in musculoskeletal disease clinics

10 to 20 percent of individuals to some degree

NATURAL HISTORY

- soft tissue injuries, fatigue, chronic regional or widespread pain,
- declining physical capacity, anxiety states, and a number of systemic concerns
- including autonomic cardiovascular and bowel dysfunction

• PATHOPHYSIOLOGY

dominant inheritance

- Highly variable among family members
- Poor proprioception- Pain – Fatigue Autonomic dysfunction and related conditions- Anxiety-

CLINICAL MANIFESTATIONS

Musculoskeletal manifestations:

-Recurrent joint sprains and ligament and tendon injuries

- Mechanical pain related to biomechanical differences

-Persistent chronic pain

-Complex widespread musculoskeletal pain

Skin and other tissue manifestations in hypermobile Ehlers-Danlos syndrome

-Hyperextensible skin

-Easy bruising

-Wide, paper-thin scars

-striae atrophicae

-Recurrent abdominal wall hernias

-Pelvic floor weakness with rectal and/or vaginal prolapse

Other conditions

Bowel symptoms -Bowel dysmotility - menstrual bleeding - persistent fatigue –

Anxiety, depression, and phobia-

Autonomic dysfunction:

Hypermobility and hypermobility-related syndromes: Diagnostic terminology

Term	Abbreviation	Description
Joint hypermobility	JHM	Joint hypermobility refers to the finding that a joint is more flexible (able to move through a wider range) than is normal among the general population. It may be applied to a single, several, or multiple joints. Joint hypermobility is of itself benign in the absence of symptoms such as ease of soft tissue injury, pain, ease of dislocation, or related findings. It is considered a heritable benign trait. Joint hypermobility is a principal sign in many hereditary disorders of connective tissue (HDCT).
Joint hypermobility syndrome	JHS	Prior to the 2017 International Criteria [1], the term JHS was used to describe the findings of a person who met the Brighton Criteria for Joint Hypermobility Syndrome. The criteria included the presence of joint hypermobility, pain, spinal and peripheral joint injuries, skin signs, and other features of body habitus. Since 2017, these have been incorporated in the criteria for hypermobile Ehlers-Danlos syndrome (hEDS; refer to below).
Hypermobility spectrum disorder*	HSD	HSD is the term used to describe symptomatic joint hypermobility in the absence of any form of EDS or other HDCT. The joint involvement can be single, pauci and regional, or generalized. Like EDS, HSD can be associated with comorbidities such as autonomic dysfunction, anxiety disorder, and other features.
Ehlers-Danlos syndromes¶	EDS	EDS are a group of inherited conditions that affect connective tissues that provide support in skin, tendons, ligaments, blood vessels, internal organs, and bones. There are 14 variants of EDS defined by criteria that include phenotypes general to the EDS family and specific to particular variants. 13 of the 14 types (ie, excluding hEDS) are rare and known to be associated with genetic abnormalities that lead to changes in the structure or function of collagen and allied structural proteins.
Hypermobile Ehlers-Danlos syndrome*	hEDS	hEDS is considered much more common than the other types of EDS. There are no known genetic markers for hEDS. It is defined within the 2017 International Criteria; its phenotype includes general features of the EDS family, in a form that is less extreme (eg, milder skin stretch and scarring), but is nevertheless associated with significant symptoms. hEDS is associated with a number of comorbidities that are not part of the criteria such as gastrointestinal dysfunction, autonomic dysfunction, and others.
Hereditary disorders of connective tissue	HDCT	HDCT are a heterogenous group of genetic conditions caused by defects of structural proteins such as collagen, fibrin, elastin, and related biomolecules. For many, the genetic cause has been elucidated. Many share features that overlap, but also have specific signs and pathologies within their phenotype that define them; these pathologies are attributable to specific gene mutations. Examples include EDS, Marfan syndrome, Loeys-Dietz syndrome, osteogenesis imperfecta, and Stickler syndrome.

This table provides a brief description and text abbreviations for the diagnostic terms used in discussion of HSD and EDS.

The 2017 international criteria for hypermobile Ehlers-Danlos syndrome

Criteria	Score
Criterion 1: Generalized joint hypermobility (GJH):	
Beighton score: ≥6 for pre-pubertal children and adolescents, ≥5 for pubertal and post-pubertal men and women up to the age of 50, and ≥4 for men and women >50 years of age for hypermobile Ehlers-Danlos syndrome (hEDS). If the score is 4 or less and the person is positive for 2 or more of the 5-part questionnaire, add 1 point to the Beighton score.	
Criterion 2: 2 or more of A, B, and C	
Feature A: Manifestations of a connective tissue disorder:	
Fascia: 1. Unusually soft or velvety skin 2. Mild skin hyperextensibility 3. Unexplained striae (ie, excluding striae distensae or rubrae) 4. Bilateral piezogenic papules of the heel 5. Recurrent or multiple abdominal hernia(s) (2 points) 6. Atrophic scarring involving at least two sites and without the formation of truly papyraceous and/or hemosiderotic scars as seen in classical EDS 7. Pelvic floor and/or rectal prolapse in children, men, or nulliparous women without predisposing medical condition; uterine prolapse in children or nulliparous women without predisposing medical condition **Marfanoid features:** 8. Dental crowding **and** high-arched or narrow palate 9. Mitral valve prolapse (MVP) mild or greater based on strict echocardiographic criteria 10. Arm span-to-height ≥1.05 11. Arachnodactyly, as defined in one or more of the following: (i) positive wrist sign (Steinberg sign) on both sides; (ii) positive thumb sign (Walker sign) on both sides 12. Aortic root dilatation with Z-score > +2	Must have ≥5 of these 12 findings
Feature B: Family history	
1. One or more first-degree relatives independently meeting the current diagnostic criteria for hEDS	
Feature C: Musculoskeletal complications	
1. Musculoskeletal pain in 2 or more limbs, recurring daily for at least 3 months 2. Widespread pain for ≥3 months 3. Recurrent joint dislocations or frank joint instability, in the absence of trauma a. 3 or more atraumatic dislocations in the same joint or 2 or more atraumatic dislocations in 2 different joints occurring at different times b. Medical confirmation of joint instability at 2 or more sites not related to trauma	Must have at least 1
Criterion 3: All the following prerequisites MUST be met	
1. Absence of unusual skin fragility, which should prompt consideration of other types of EDS. 2. Exclusion of other heritable and acquired connective tissue disorders, including autoimmune rheumatologic conditions as a primary cause for signs and symptoms. In patients with an acquired connective tissue disorder (eg, systemic lupus erythematosus, rheumatoid arthritis, etc), additional diagnosis of hEDS requires meeting both features A and B of criterion 2. Feature C of criterion 2 (chronic pain and/or instability) cannot be counted towards a diagnosis of hEDS in this situation. 3. Exclusion of diagnoses that may also include joint hypermobility by means of hypotonia and/or connective tissue laxity. Alternative	

Characteristics of the Marfanoid habitus

Name of measurement	Value consistent with Marfanoid habitus*	Technique for measurement and for calculation of ratio ¶
Span/height ratio	>1.05	The span/height ratio (S-HR) is measured by asking the patient to stand with their back to a wall and in contact with the wall, with the arms out to 90 degrees at the shoulder, and hands and fingers fully extended. The arm span is the measure from the tip of the middle finger of one hand to that of the other. This is then divided by the height to obtain the S-HR.
Hand/height ratio	>0.11	The hand/height ratio (H-HR). Hand length is taken to be the distance between the distal palmar crease to the tip of the middle finger. This is then divided by the height to obtain the H-HR.
Foot/height ratio	>0.15	The foot/height ratio (F-HR). Foot length is taken to be the distance between the base of the posterior edge of the heel and the tip of the hallux. This is then divided by the height to obtain the F-HR.
Upper segment/lower segment ratio	<0.89	The upper segment/lower segment ratio (US/LSR). LS is taken to be the distance from the mid-point of the pubic symphysis and the floor with the patient standing erect. The US is calculated by subtracting the LS from the height. Thus US/LSR = (Height – LS)/LS.
Other features of the Marfanoid habitus include:		
■ Dolichocephaly (skull width/length x 100 <76%) ■ Scoliosis (Bunnell Scoliometer >5 degrees) ■ Pectus deformities (excavatum or carinatum) ■ Jaw deformities with overcrowding of teeth ■ High-arched palate ■ Long, flat feet, often with hammer toes, which flatten and pronate on weightbearing		

Beighton score for joint hypermobility*

Ability to:	Left		Right
Passively dorsiflex the 5th metacarpophalangeal joint by at least 90 degrees	1		1
Oppose the thumb to the volar aspect of the ipsilateral forearm	1		1
Hyperextend the elbow by at least 10 degrees	1		1
Hyperextend the knee by at least 10 degrees	1		1
Place the hands flat on the floor without bending the knees		1	

* 1 point is scored for each of the maneuvers above. A total of 9 points is achievable, and 4 or more points is considered an indication of generalized joint hypermobility.

The five-part questionnaire for identifying generalized hypermobility

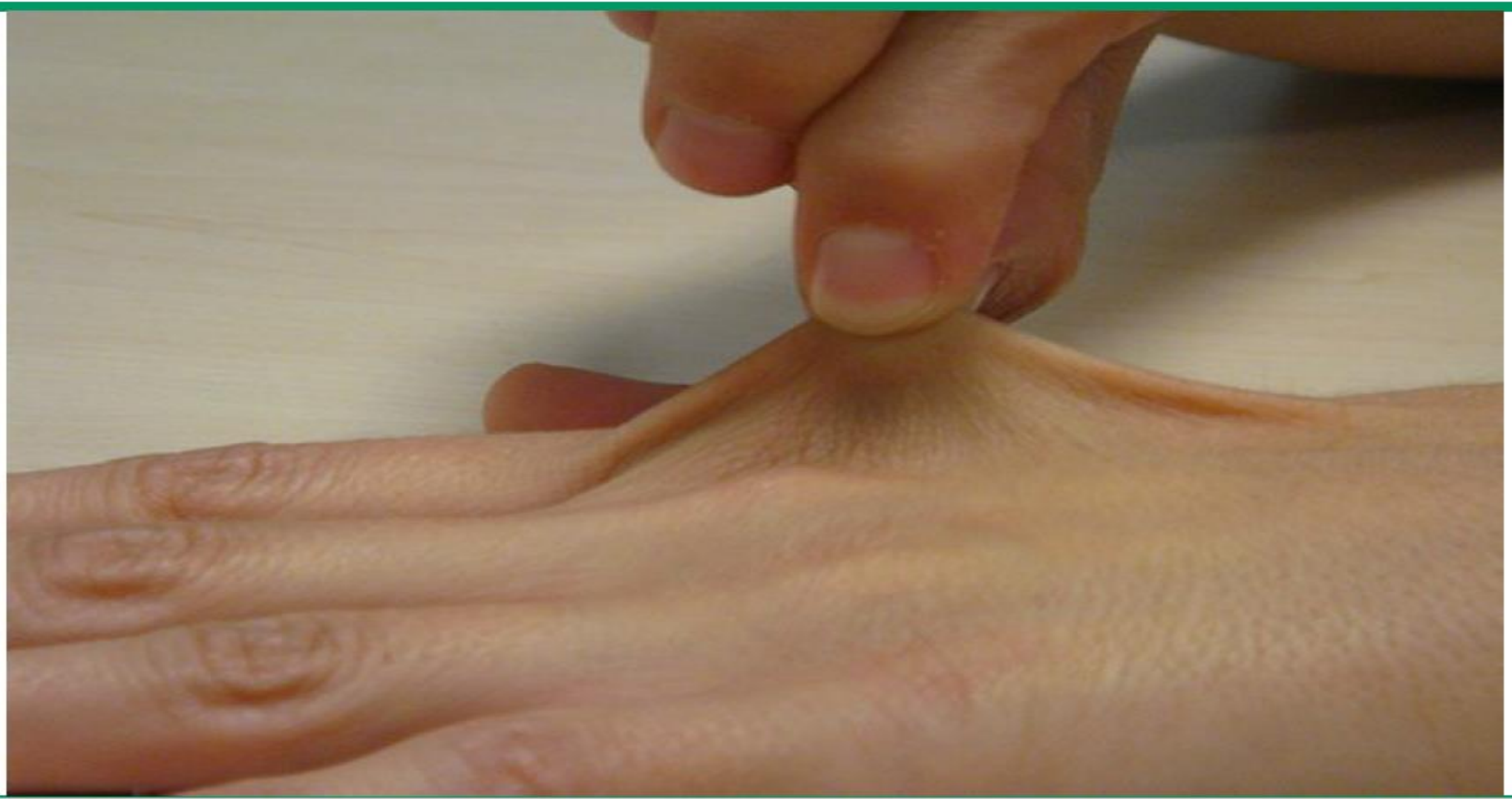
1. Can you now (or could you ever) place your hands flat on the floor without bending your knees?
2. Can you now (or could you ever) bend your thumb to touch your forearm?
3. As a child, did you amuse your friends by contorting your body into strange shapes OR could you do splits?
4. As a child or teenager, did your shoulder or kneecap dislocate on more than one occasion?
5. Do you consider yourself double-jointed?

Patients who answer "yes" to two or more questions may be suspected of generalized joint hypermobility.

A comparison of the definitions of hypermobility spectrum disorder with hypermobile Ehlers-Danlos syndrome

HSD (Symptomatic hypermobility not meeting the hEDS criteria)	hEDS (By the 2017 criteria [1])
▪ Generalized, localized, peripheral, or historical joint hypermobility	▪ Generalized joint hypermobility
▪ Musculoskeletal structural concerns	▪ Musculoskeletal structural concerns
▪ Joint instability	▪ Joint instability
▪ Straining/soft tissue-related injury	▪ Straining/soft tissue-related injury
▪ Musculoskeletal pain	▪ Musculoskeletal pain
	▪ Skin pathology ▪ Tissue weaknesses ▪ Marfanoid body shape ▪ Cardiac valve pathologies
▪ May be a family history of hypermobility and related injury	▪ Family history (first-degree relative with hEDS)
▪ If a person with generalized joint hypermobility, and related injuries, also has a first-degree relative with hEDS, then they too would fulfill the hEDS 2017 criteria	
There should be no other primary explanation/diagnosis for signs and symptoms in either group	
Neither group is defined by the presence of other related disorders, though both HSD and hEDS may have complex presentations with associated disorders	

Clinical assessment of skin hyperextensibility



DIAGNOSIS

Indications for diagnostic evaluation

- Can you now (or could you ever) place your hands flat on the floor without ● bending your knees?
- ● Can you now (or could you ever) bend your thumb to touch your forearm?
- ● As a child did you amuse your friends by contorting your body into strange shapes **or** could you do splits?
- ● As a child or teenager did your shoulder or kneecap dislocate on more than one occasion?
- ● Do you consider yourself double-jointed?

The 2017 international criteria for the diagnosis of hEDS

- Criterion 1 – Presence of generalized joint hypermobility.
- Criterion 2 – At least two of sections A, B, and C in criterion 2
- (other tissue signs, family history, and joint pain or joint instability).
- Criterion 3 – The absence of another hereditary disorder of connective tissue (HDCT)

Hypermobility spectrum disorder (table 6)

Beighton score for joint hypermobility(table 4)

- Passive apposition of the thumb to the volar aspect of the ipsilateral forearm
- Passive hyperextension of fingers,
- Hyperextension of the elbow to at least 10 degrees
- Hyperextension of the knee to at least 10 degrees
- Flexion of the spine with placement of the palms flat on the floor without bending the knees

- **DIFFERENTIAL DIAGNOSIS**

-Joint hypermobility

-Marfan syndrome

-Loeys-Dietz syndrome

-Ehlers-Danlos syndromes

SUPPLEMENTAL AND POSTDIAGNOSTIC EVALUATION

-Joint symptoms and findings other than hypermobility

-Symptoms of developmental disability

-Suspected cardiac or aortic disease

-Suspected low bone mass

-Assessment of orthostatic hypotension and tachycardia

SUMMARY AND RECOMMENDATIONS

New definitions and international criteria 2017

Joint hypermobility alone is very common in the general population

findings related to the musculoskeletal system

diagnosis of HSD and hEDS is made clinically

• اقدامات انجام شده برای دختر 6 ساله

1. ارجاع به فوق تخصص بیماریهای قلب و عروق اطفال •
2. ارجاع به روانپزشک •
3. ارجاع به متخصص ارتوپد
4. توصیه به ترک ورزش ژیمناستیک و ورزش هایی که تروما وارد می شود.
5. توصیه به مصرف مایعات فراوان
6. توصیه به مصرف مکمل های منیزیوم و کلسیم
7. ارجاع به متخصص پوست