Building a better understanding of hypochondroplasia

Timely and targeted care starts with a confirmed diagnosis[1-4]

What is hypochondroplasia?

Hypochondroplasia is a rare and heterogeneous skeletal dysplasia that results in **inhibited bone growth in over 90% of the bones in the body, affecting health and daily life for patients and their families**.[1,5-18]

Hypochondroplasia can impact each patient differently[1,2]

- **Disproportionate short stature**[1]
- **Functional and physical limitations**[1]
- **Multisystemic complications**[1,19,20]
- **Emotional and social challenges**[1,21,22]

Due to its heterogeneous presentation and overlapping symptoms with other skeletal conditions, **hypochondroplasia is often underrecognized, misdiagnosed, or diagnosed later in childhood,* leading to missed opportunities to intervene**.[1-4]

*Average age of diagnosis in the US is 4.5 years.[23]

Unique health needs may require specialized care

Hypochondroplasia can be associated with multisystemic complications that may require **timely and experienced care from a multidisciplinary team** to help promote positive patient outcomes.[1,19,20]

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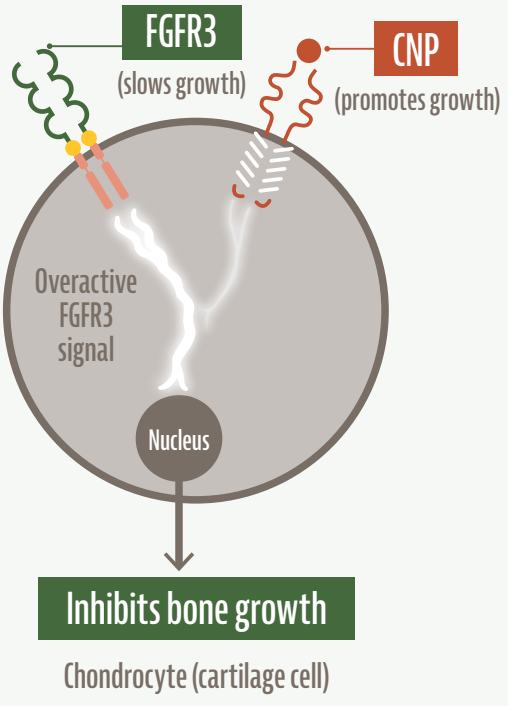
Multisystemic complications can contribute to psychological stress, anxiety, and depression—each associated with lower patient- and caregiver-reported quality of life.[1,21,22]

The underlying genetic cause

Hypochondroplasia is caused by gain-of-function variants in the ***fibroblast growth factor receptor 3* (*FGFR3*) gene,** leading to a cell signaling imbalance that inhibits endochondral bone growth throughout the body.[1,24,25]

- **Role of *FGFR3* gene:** Expressed throughout the body (including the brain) but mainly functions as a negative regulator of endochondral bone growth (cartilage developing into bone)[5]
- **Heterogeneous genetic profile:** Linked to a broad spectrum of pathogenic and likely pathogenic *FGFR3* gene variants, with the N540K variant accounting for ~50%-70% of cases[1,25,26]
- **Predominantly a de novo genetic change:** Most children with hypochondroplasia are born to average-stature parents[1]

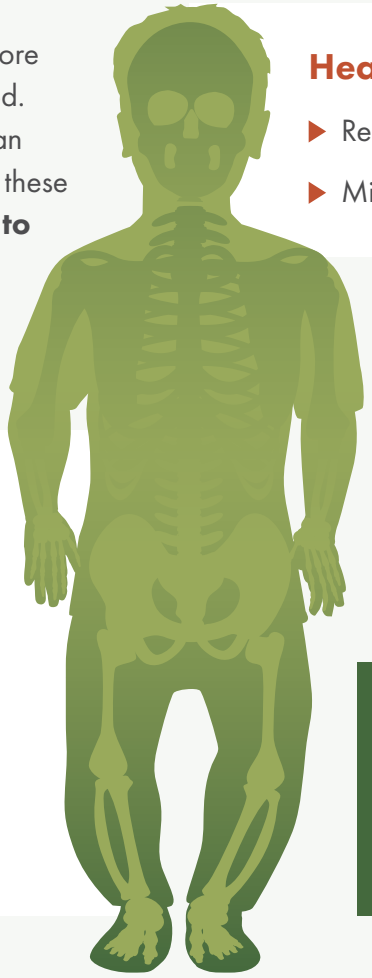
Gain-of-function *FGFR3* variants result in an imbalance between FGFR3 and CNP signaling[1,24,25]



CNP, C-type natriuretic peptide.

Early recognition of red flags is critical for timely intervention[1,27]*

Bone growth occurs for a limited time—before birth until late adolescence/early adulthood. Inhibited bone growth can impact more than your patient's height. If you observe any of these red flag clinical features, **genetic testing to confirm a hypochondroplasia diagnosis may be necessary**.[1,5-9,27]



Head shape and size[1,27]

- Relative macrocephaly
- Midface hypoplasia (frontal bossing)

Limbs[1,4,27,28]

- Disproportionate growth
- Short arms and legs (rhizomelia/mesomelia)
- Bowed legs (genu varum)
- Brachydactyly

Genetic confirmation can accelerate targeted care and improve patient outcomes.[1]

*Red flags refer to clinical features that may raise suspicion for hypochondroplasia and prompt further evaluation, including radiological assessment and genetic testing. Features shown are not intended to represent all possible manifestations.[1,27]

A no-cost skeletal dysplasia genetic panel

The Discover Dysplasias™ program offers a **no-cost skeletal dysplasia gene panel that may help confirm or rule out a hypochondroplasia diagnosis** for patients under the age of 16 years.

Learn more about confirming a diagnosis with no-cost genetic testing at DiscoverDysplasias.com.

Discover Dysplasias™
No-Charge Genetic Testing for Skeletal Dysplasias

Take a closer look at hypochondroplasia

Hypochondroplasia is a rare genetic condition that inhibits bone growth throughout the body[1,5-8]

Each patient may have unique health needs that impact functioning and quality of life[1,2,8,19-21]

Diagnosis is often underrecognized or delayed, leading to missed opportunities to intervene[1-4]

Early confirmation through genetic testing is critical for accelerating appropriate care[1,4]

For more information about no-cost genetic testing, visit DiscoverDysplasias.com.

Sign up to receive updates on the latest hypochondroplasia research and clinical developments.

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