



birds with the dwarf pointsto a derogatory nature.

**Figure 2**



In Giambologna's fountain (figure 2) Morgante sits on a dragon with his hand raised to still the waters imitating Neptune, the Roman god of the ocean.

**Figure 3**



In this marble fountain (figure 3) by Valerio Cioli, Morgante is seen riding the tortoise with his right hand in a similar position to that of Marcus Aurelius' equestrian statue in Rome. The tortoise

itself is a symbol of Cosimo, chosen to illustrate one of his mottos: Festinalente (more haste, less speed). Here again the features of achondroplasia is made prominent and the normal genitals are also in keeping with the condition.

Bronzino's painting (figure 1) reveals him completely naked and shows both anterior and posterior views of the plump moustachioed dwarf who is 'bird hunting'. Here he holds an owl tied with a string. For nearly 5 centuries the dwarf's nakedness had been obscured by vines and grapes, but in 2010 the painting has been restored back to its true form at Florence's Uffizi museum.

### Discussion

Dwarfs in the Renaissance period did not have an easy life. From an early age they were subjected to ridicule and abuse, and were often sold to circuses where they had to perform degrading acts. Some were sold off to the courts of royalty for entertainment, where a few even succeeded to become advisors of their lords, as in the case of dwarf Morgante.

Although the artistic and historical aspects of these Renaissance pieces were fascinating, I being a clinician and an endocrinologist was drawn to dwarf Morgante mainly due to short stature, rhizomelic shortening of the long bones and craniofacial abnormalities, which made me make a diagnosis of Achondroplasia. Achondroplasia, which is the commonest form of dwarfism is characterised by short limbs, with the patients' sitting height in the normal range. In the affected individuals the arms and thighs more are severely involved than the forearms, legs, hands, and feet (3).

Achondroplasia has been described in art form as far back as the Egyptian civilization. Egyptian art

depicts dwarfs as personal attendants, animal tenders, jewellers and entertainers as well as high-ranking individuals in the society closely related to the king. The well-known ones were Seneb, Pereniankh, Khnumhotpe, and Djeder. There are also depictions of two dwarf gods, Ptah and Besin Egyptian art (1). Although short and unattractive, due to their normal intellect and comical appearance dwarfs have become important figures in all era of history.

Achondroplasia is transmitted as an autosomal dominant trait due to a single gene mapped to the short arm of the fourth chromosome (band 4p16.3) (2). But 80% of the cases are sporadic. The heterozygous state is affected and the homozygous is ordinarily fatal in the first few months of life. The molecular defect is in the fibroblast growth factors (FGF), which are structurally related proteins associated with cell growth, migration, wound healing, and angiogenesis. At the cellular level, their function is mediated by transmembrane tyrosine kinase receptors, known as fibroblast growth factor receptors (FGFR) (4). The gain of function mutation in FGFR3 of which the primary function is to limit osteogenesis causes increased signal transduction leading to the primary defect in achondroplasia, which is abnormal endochondral ossification. Periosteal and intramembranous ossification is normal. The end results are short and broad tubular bones.

Current therapeutic strategies focus on reducing the signal transductions from the mutant FGFR3. Therapies directly targeting FGFR3, such as kinase inhibitors and neutralizing antibodies are still in the experimental stage. C-natriuretic peptide (CNP) which antagonizes the downstream effects of the aberrant *FGFR3* signal, is another medication which is currently undergoing early Phase II clinical trials, that has been shown to

normalize bone growth in mouse models of achondroplasia (5).

## REFERENCES

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