Treating Iron Deficiency Anemia

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Even at the present time, iron deficiency anemia (IDA) is highly prevalent among Indian children. According to 4th National Family Health Survey (NFHS-4), 58.6% children aged 6–59 mo are anemic [1]. Inherent to IDA (or iron deficiency without anemia) is its negative impact on cognitive functions in children. Young children are more vulnerable as cognitive impairment resulting from IDA may be irreversible in them. More recently, there is a focus on economic impact that the countries have on account of iron deficiency. Plessow et al. have estimated that in India IDA between 6 and 59 mo in annual birth cohort amounts to production losses of 24,001 million USD which is equal to 1.3% of gross domestic product [2]. To minimize these and other adverse effects, it is prudent to identify and treat IDA adequately.

Treatment of IDA requires iron supplementation over a long period of time; 2–3 mo after desired Hb level is achieved which may mean 5–6 mo total duration of therapy. Therefore, the iron salts used to treat IDA should be effective, free of adverse effects and inexpensive as in developing countries drug affordability may negatively influence compliance.

As all iron needs to be changed to ferrous forms for absorption, ferrous salts are traditionally recommended [3, 4]. In this issue of journal, Patil et al. have compared ferrous ascorbate (FA) and iron polymaltose complex (IPC) for treating IDA in children [5]. With a 6 mg/kg daily dose, authors have demonstrated significant improvement in Hb at 12 wk compared to baseline in both the groups (Hb rise 4.88 ± 1.28 g/dl with FA and 3.33 ± 1.33 g/dl with IPC). However, the Hb rise with FA was significantly higher compared to that with IPC ($p < 0.001$). Yewale and Dewan also reported better efficacy of FA compared to colloidal iron preparation. Using 3 mg/kg dose, they observed higher mean Hb rise at 12 wk intervention with FA compared to colloidal iron (3.59 ± 1.67 g/dl vs. 2.43 ± 1.73 g/dl; $P < 0.01$) [6].

Higher dose probably is neither necessary nor offers any extra advantage. Many expert groups and texts have recommended 3 mg/kg dose for managing IDA in children [7]. The difference in Hb rise with 6 mg doses in the present study with 3 mg in the study by Yewale and Dewan may partly be on account of lower baseline Hb in the present study by Patil et al. as iron absorption is dependent on iron/ Hb status [5, 6].

IPC, a drug which was developed and promoted as having fewer or none adverse effects has had mixed fortunes. Some studies like the present one have shown its efficacy in raising the Hb almost equally well compared to ferrous sulfate or other salts [8, 9]. However, other studies have shown the response with IPC being none or poorer than the comparator salts. In a 2009 study, Bopche et al. reported IPC being inferior to ferrous sulfate with insignificant rise in Hb with IPC at 4 wk compared to significant rise with ferrous sulfate. The authors also mentioned that IPC was twice as expensive as ferrous sulfate [10].

Iron salts are available in Indian market under the wide category of hematinics. A 2012 article estimated that hematinic market in India was worth Rs 900 crores at that time and growing at 15% per year [2, 11]. The authors reviewed the iron containing preparations in India. Of the 232 oral liquid preparations available, only 33 (14.22%) contained only iron salts. Rest of the preparations contained folic acid with or without other micronutrients. For treating physicians, it is important to know which preparations are the best. Cost of these preparations for providing 100 mg elemental iron for liquid oral formulations was Rs. 1.26 to Rs. 188.44 (nearly 170 times more expensive than the most inexpensive one). Panicker et al. also have recently compared various salts for treating IDA in adults. They observed equal efficacy of the compounds but highlighted the cost of treatment for 6 mo to vary between Rs 900 to Rs 3000 with fumarate salts being cheapest (iron sulfate, IPC and AS were not included) [12]. Panchal et al. reported comparable efficacy of FA with iron sulfate. However, they also observed total cost of therapy with FA being three times more than therapy with iron sulfate [13].

In Indian market, fumarate, sulfate and other salts are readily available. As we understand, sulfate, fumarate and

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ascorbate preparations have equal efficacy, either of the first two compounds by virtue of being significantly cheaper should be the drug of choice for treating IDA. Some children may have poor tolerance of these compounds and those will be the candidates for therapy with ascorbate salts as it is considered to be better tolerated.

Compliance with Ethical Standards

Conflict of Interest None

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