

MINI-MAGNETS AND THEIR HAZARDS IN CHILDREN

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ABSTRACT

With the advancement in technology every day more and more sophisticated toys are being developed for children. Most of them contain mini magnets. Safety of these magnets for use in children's toys is controversial. There is growing number of cases reported in literature regarding hazards of mini magnets. We are reporting an unusual case where a seven year old boy has to be taken to theatre for removal of two tiny attached magnets onto his dorsal penile skin which were removed under general anaesthesia.

KEY WORDS: Mini-magnets, Risks, Hazards in children.

Pak J Med Sci April 2007 Vol. 23 No. 2 287-289

INTRODUCTION

Health authorities in many countries are now warning parents and carers about the hazards posed by the small and loose magnets to young children.¹ A wide range of children's products such as dart board game, building toys, number and alphabet games, various craft kits and scientific games, board games, ting motor vehicles, even plush toys may contain small magnets.¹ In addition, small magnets attached to other items, such as magnetic jewellery and fridge magnets, pose a potential problem if they become disengaged from them and are found by young children.

There is growing number of reported cases in literature where mini magnets had fatal consequences especially in children.²⁻⁹ Ingestion, obstruction and penetration are various modes of presentation to accident and emergency department.⁵⁻⁹ Separation of attached magnets

is usually not very difficult but sometime it is really difficult and need general anesthesia and surgical intervention, both of these has their own morbidity mortality.

Case Report: A seven years old boy presented to Accident and Emergency (A&E) with painful swollen skin on the dorsal aspect of the penis, which mother noticed when the child complained of the pain. Close questioning revealed that last night the child took two magnets from the end of dart striking bullets (magnetic dart board) and was playing with them when suddenly they got stuck together and despite effort he could not separate them. Because of his private part he never mentioned to anybody till the stage when it became severely swollen and painful. He also complained of difficulty in passing urine, although never went into retention.

On examination the child was distressed and in spite of our best efforts we could not separate these two mini magnets from each other. Presence of marked redness and oedema resulted in the tiny pieces of magnet to invaginate deeply into the soft skin on both sides. This made the removal of these pieces difficult and nearly impossible.

Mother refused to use any more efforts and ultimately we had to take him to theatre where

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* Revision Received: August 16, 2006

* Revision Accepted: October 4, 2006

he was properly sedated and at last we managed to separate these mini-magnets apart, though it still required plenty of force.

Close examination after removal of magnets showed the skin to be nearly penetrated by attraction of these mini pieces together and created a hole, there was marked oedema and redness of the adjoining skin (Fig: 1-2).

DISCUSSION

Everyday new and sophisticated games and toys are being launched in the market for the attraction of the children.¹ Their safety is sometime questionable. Magnetic hazards keep on presenting in causalities in different forms and shapes.²⁻⁹

Mini magnets are being increasingly used in numerous toys and games.^{1,2,4} If such pieces are separateable then it's really a dangerous situation. Children usually have very exploring nature and they always try to play with them.² Cases have been reported in which children have ingested the magnets and end up in fistula formation, entrapment in ears, nose and sometime in eyes which are some of the really dangerous aspect of magnet.^{3,5,6}

Since the child presented after almost 12 hours it made the scenario very difficult and by that time the skin was swollen and painful so the child ended in theatre. In a recently published study³ the author has suggested use of permalloy which is easily used to separate the magnets and this equipment is easily



Fig-2: Marks of magnet penetrating the skin on both sides of penis

available in physics laboratory. Permeably is nickel iron magnetic alloy containing 20% iron and 80% nickel. It has very high magnetic permeability and nearly zero magneto restriction (<http://en.wikipedia.org/wiki/Permalloy>).

SUGGESTIONS

There is an urgent need to build such simple piece of equipment which makes use of perm alloy and the A&E should have easy access to such device which could be used when required. Secondly there should be clear guidelines regarding safety of all games and toys which make use of magnets especially separateable mini-magnets whereby we can minimize health hazards of mini-magnets.



Fig-1: Typical magnetic dart board

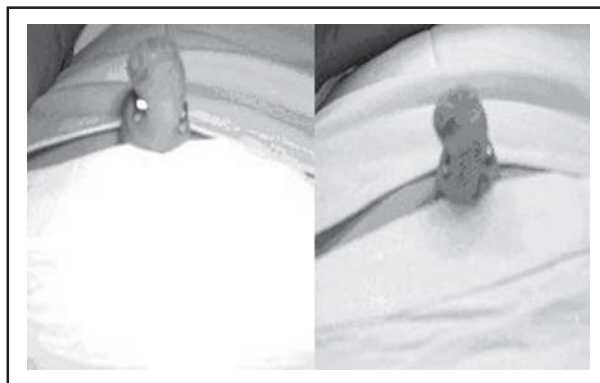


Fig-3: Magnets stuck on both sides of the penile skin

ADVICE FOR THE PARENTS AND CARERS

Such Fatal events can be avoided if:-

- * Parents and carers see the written safety warning in the packing box or instruction sheet by manufacturer especially the age limit for use. All toys which are for older children should not be given to young children.
- * Children below three years of age usually put these objects in their mouth therefore small toys, small balls and small broken toy parts are dangerous for children. They could cause choking, ingestion and inhalation at this vulnerable stage. They should be kept away from children of this age.
- * All the objects with magnets should be kept away from children especially if there is broken or separated piece of magnet. It is better and safe even to remove such object completely.
- * Immediate medical advice and help should be considered for every child who has swallowed or is suspected of having swallowed the magnet

- * All household objects like coins, jewellery, pen caps, pins, needles, clips should be kept out of reach of young children.

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