The annual incidence of global intussusception varies from year to year in many reports from both developing and developed countries. Most studies reporting on the incidence of intussusception are hospital based. In general, they are retrospective chart reviews of patients with intussusception in a single hospital over a specific period or they represent the experience of a surgeon or a group of surgeons. Retrospective hospital-based studies may underestimate the incidence of intussusception because they do not take account of patients who may present in other hospitals or clinics in the region, those who died outside the hospital, or those treated for an alternative diagnosis. Conversely, the incidence of intussusception may be overestimated in some hospital-based studies because varying levels of evidence are required to make the diagnosis. For example, in some regions, patients with a history and examination findings suggestive of intussusception may be treated with an air or hydrostatic enema without formal documentation of intussusception by radiology or surgery. If the symptoms resolve following the enema treatment, then it is presumed that the patients had intussusception.1

Male predominance among patients presenting with intussusception was consistently reported in studies from the USA and Canada. The mean age of presentation was 6.4 months (range 1–11 months).2 The annual rate of intussusception-associated hospitalization increased five-fold at 5 months of age and remained elevated until 7 months of age (Parashar et al., 2000).3 Recently, Yen et al4 reported that, for infants aged 15–24 and 25–34 weeks, intussusception hospitalization rates tended to be lower in the postvaccine years but were not significantly different compared with the average prevaccine rates. The overall intussusception hospitalization rate for infants aged younger than 12 months was slightly higher in 2007 (rate ratio [RR] 1.10; 95% confidence interval [CI]: 1.04–1.18; \( p = 0.001 \)) compared with the average prevaccine rate from 2000–2005, whereas the rates in 2008 (RR 0.95; 95% CI: 0.89–1.01; \( p = 0.09 \)) and 2009 (RR 0.93; 95% CI: 0.87–0.99; \( p = 0.03 \)) subsequently decreased.

The incidence of intussusception was determined based on retrospective data from five hospitals in Taiwan covering the period 1955–1964.5 In this study, the incidence rate was 0.77 per 1000 live births, with 82% of patients under 1 year of age. During this period, the hospitals treated 42.4 cases of acute intussusception in children per year. A later publication from Taipei reported 21.3 new cases per year and indicated that only 37.5% of patients were less than 1 year of age.6 Such discrepancies in the numbers and ages of patients may be partly explained by the different study designs. Nonetheless, a change in the epidemiology of intussusception in Taiwan over a 30-year period cannot be excluded.

A large study identified 6988 cases of intussusception in Taiwan from 1999 to 2001.7 Among them, 4859 cases occurred in children less than 15 years of age who had an average incidence of 34.5 per 100,000. The highest incidence occurred among children between 12 and 24 months of age, with the peak incidence of 118.8 per 100,000 observed in children younger than 24 months of age. In 2000, among patients younger than 15 years of age who were hospitalized for intussusception, males were more likely to be affected than females (61.3% vs. 38.7%). Intussusception-related hospitalizations were rare in infants in the first few months of life, but increased in infants 6–12 months old, and peaked in those who were 1–3 years of age.

Chen et al8 reported a total of 8217 intussusception-related hospitalizations affecting 7541 children in Taiwan. The incidence of intussusception peaked between 3 and 36 months of age. The male-to-female incidence rate ratio increased from 1.31 in the first year to 2.52 in the 9th year of life.

Adenovirus infection is linked to intussusception in children in Taiwan.5 A study by Hsu et al9 found 27 of 61 (44.3%) intussusception patients but only two of 52 (3.8%) healthy controls had nonenteric adenovirus in throat and rectal specimens (\( p < 0.001 \)). Of the 27 (74.1%) patients who shed adenovirus, 20 were older than 1 year of age. Among 43 patients with available paired sera, acute primary viral infection was found in 17 (39.5%) with adenovirus, four (9.3%) with human herpesvirus (HHV)-6, five (11.6%) with HHV-7, two (4.7%) with Epstein-Barr virus (EBV), and none with cytomegalovirus. Multiple viral infections occurred in six patients. The adenovirus genome was detected in four of the nine mesenteric lymph nodes but in only three of the 60 (5%) acute phase sera.
Guarner and coworkers presented data showing species C adenovirus in 33% (4/12) of formalin-fixed, paraffin-embedded tissue samples from Mexican pediatric patients with intestinal intussusception. The viral antigens and nucleic acids were localized in the epithelial and mononuclear inflammatory cells. The sequential detection strategy was found useful and readily applicable to archived samples. Its application to a larger pediatric population that includes patients from different countries may confirm the present evidence that adenovirus, especially species C, is a frequent cause of intussusception in Mexican children and possibly other countries like the USA.

Recently, Chen and Lin reported 34 children with intussusception who were hospitalized in a pediatric ward in Taipei in the period of January 2008 to June 2011. In this study, 12 patients (35%) were diagnosed as having intussusception in April, May, and June 2011. In the same 3 months, there were 512 patients with positive adenoviral culture, 123 with positive adenoviral antigen (January 2008—June 2011), 172 (33.59%) with positive adenoviral culture, and 61 (49.59%) with positive adenoviral antigen, respectively. However, there has been some discussion on the substantiation of the diagnosis. Nonetheless, their findings suggest that spring and early summer have the highest incidence of intussusception, which are also the seasons with the greatest incidence of adenoviral infections. Thus, adenovirus is likely related to the pathogenesis of intussusception.

In this issue of the journal, Hsiao et al report that intussusception is quite different between children and adults in Taiwan. There are slightly more male patients than female patients among children and the peak age of incidence is 1—2 years, which is later compared with that in other countries. The incidence of adult intussusception is substantially lower and adult patients have significantly higher rates of coexisting neoplasms and malignancies and higher average medical expenses. Evaluation for neoplasms, especially for colon cancer and metastatic lesions, should be provided for adult patients with intussusception.

In developed countries, the incidence of acute intussusception in infants and children is reportedly between 0.5 and 4.3 cases per 1000 live births or 0.66—1.2 cases per 1000 children less than 1 year of age.

Due to the fact that adults present with acute, subacute, or chronic nonspecific symptoms, the initial diagnosis can be missed or delayed and established only when the patient is on the operating table. Most surgeons accept that adult intussusception requires surgical intervention because of the large proportion of structural anomalies and the high incidence of concomitant malignancy. However, the extent of bowel resection and the manipulation of the intussuscepted bowel during reduction remain controversial. By contrast to pediatric patients, where intussusception is primary and benign, preoperative reduction with barium or air is not suggested as a definite treatment for adults.

References