Unusual Ascitic Syndromes in Two Health Districts in Niger: A Public Health Alert and Etiological

Hypotheses

***Short Communication***

# ABSTRACT

**Background:** Ascites is rare in children and typically linked to hepatic, infectious, or nutritional causes. In early 2025, an unusual cluster of pediatric ascitic syndromes was reported in two health districts in central Niger, prompting an epidemiological investigation.

**Methods:** A field investigation was conducted in the Dogondoutchi and Tibiri districts between

March 12 and 16, 2025. Data were collected through record reviews, interviews with local health teams, and field visits. Community engagement activities were also implemented to assess local perceptions and identify additional cases.

**Results:** A total of 128 cases, mostly children aged 5–14 years (66.4%), were identified, with a case fatality rate of 1.56%. Clinical features included progressive abdominal distension, ascites, hepatomegaly, and generalized edema. Ascitic fluid was citrine yellow and sterile. No clear infectious cause was found.

**Conclusion:** This outbreak constitutes a public health alert. Further etiological investigations, including toxicological and virological analyses, are urgently needed. A One Health approach involving human and veterinary sectors is crucial to identify the source and prevent recurrence.

*Keywords: Virological analyses; ascitic syndromes; abdominal distension; serological evidence.*

# INTRODUCTION

Ascites is defined as the abnormal accumulation of fluid in the peritoneal cavity. In children, it is most often secondary to liver disease, infections, or severe nutritional disorders. In low-resource settings, the most common causes include malnutrition, viral hepatitis, and peritoneal tuberculosis (Vadlapudi et al., 2024, Karnsakul et al., 2017). However, the simultaneous and clustered appearance of ascites cases among previously healthy children within a limited geographical area constitutes an unusual epidemiological signal requiring thorough investigation.

In Niger, the prevalence of malnutrition among children under five remains high, regularly exceeding WHO emergency thresholds (INS, 2022). In this context, any atypical clinical manifestation - particularly non-traumatic, non- infectious ascitic syndrome - should alert health authorities.

Between January and March 2025, several districts in central Dosso Region reported dozens of pediatric cases of unexplained ascites, often associated with generalized edema and moderate to severe malnutrition. Signs of liver involvement were sometimes observed, without serological evidence of viral hepatitis or clinical suspicion of tuberculosis.

A multifactorial origin was hypothesized, including micronutrient malnutrition (especially zinc deficiency), environmental intoxication (toxins), and socioeconomic factors, prompting a detailed epidemiological investigation. To our knowledge, this is the first systematic investigation of a pediatric ascitic cluster in Niger, within a highly nutritionally vulnerable context (Prasad, 2007, Chorus and Bartram, 1999).

# METHODS

An investigative mission was conducted from March 12 to 16, 2025, in the health districts of Dogondoutchi and Tibiri to explore the emergence of ascitic syndromes among children. The mission began with a planning meeting at the Regional Directorate of Public Health in Dosso, where objectives were presented to local health authorities.

In each district, interviews were conducted with District Management Teams (ECDs), followed by field visits to the reported case sites and care centers. Protocol meetings were also held with local administrative authorities to gather their perceptions of the situation. The investigation relied on a comprehensive review of medical records (consultations, epidemic reports, hospitalizations, notifications, line lists) at the Integrated Health Centers (CSIs) and the Dogondoutchi hospital. This review allowed identification of additional unreported cases.

# RESULTS

The investigation took place mainly in the health districts of Dogondoutchi and Tibiri to understand an outbreak of ascitic syndromes between epidemiological weeks 1 and 11 of 2025. The index case in Tibiri was an adult woman without travel history or fever; in Dogondoutchi, it was an 11-year-old girl, also afebrile and without recent travel.

A total of 128 cases were recorded, with two deaths—yielding a case fatality rate of 1.56%.

Dogondoutchi reported 81 cases, and Tibiri 47. Most cases involved children, particularly those aged 5–14 years (66.41%) and 1–4 years (23.44%). Females were slightly more affected (52.34%).

Clinically, patients presented with progressive abdominal distension due to abundant ascites, diffuse abdominal pain, vomiting, and occasionally minor bleeding signs (epistaxis, hematemesis). Subicterus was noted in one case. Ascites was often associated with hepatomegaly or splenomegaly. No neurological signs, encephalopathy, or cholestasis were observed. Ultrasound revealed homogeneous hepatomegaly, sometimes with gallstones. Ascitic taps showed citrine yellow or clear fluid. No in-depth etiological analysis was initially performed, but biological samples (blood, ascitic fluid, urine, stool) were collected for further analysis. Treatment included antibiotics and diuretics. The clinical picture suggested decompensated cirrhosis due to toxic or infectious hepatitis. A zoonotic origin was considered due to the reported death of dogs in several villages.



**Fig. 1. A 6-year-old child presenting with ascites**

Active case finding identified additional cases in Badifa (5 cases), Koré Mairoua (19), Matankari, and the Dogondoutchi hospital (46 cases). Of the 128 reported cases, 123 were still undergoing treatment during the investigation.

At the community level, significant risk communication and community engagement were undertaken. Rumors linked the illness to mystical causes (“Iska”), leading to delays in seeking care. Briefings with village and opinion leaders helped counter these beliefs, raise awareness about clinical signs, the importance of early consultation, hygiene, and the dangers of self-medication. Home visits reassured families and identified new cases. Sick dogs were noted in several households, having died shortly before human cases appeared.

# DISCUSSION

The investigation revealed an unusual cluster of ascitic syndromes in the Dogondoutchi and Tibiri health districts, mainly affecting children and adolescents, with a female predominance. The massive ascites developed subacutely, with signs suggestive of chronic liver disease, likely toxic or infectious. This raises several epidemiological, clinical, and environmental hypotheses.

The high prevalence among 5 - 14-year-olds (66.41%) is atypical for decompensated cirrhosis, usually seen in adults. This could suggest acute or subacute exposure to environmental toxins, as documented in other African contexts where ascitic outbreaks were linked to ingestion of plants or products contaminated with hepatotoxic compounds (Stournaras and Tziomalos, 2015, Okaiyeto and Oguntibeju, 2021, Alshuwaykh et al., 2022).

The rural context, frequent use of traditional herbal remedies, and rumors of mystical causes (e.g., spirits or “Iska”) underscore the need for an integrated approach—including epidemiology, health anthropology, and community outreach. Similar outbreaks in Nigeria involved acute liver diseases following ingestion of herbal decoctions containing pyrrolizidine alkaloids (UNICEF, 2005).

Additionally, family-reported associations between human cases and the unexplained deaths of dogs with respiratory signs and progressive emaciation raise suspicion of a zoonotic liver disease, such as leptospirosis or certain zoonotic hepatitis viruses. West African studies have shown that neglected zoonoses can cause severe hepatic presentations (Ateudjieu et al., 2023, Nusirat, 2019, Bagulo et al., 2020).

The ascitic fluid was citrine yellow and sterile in most cases. The absence of fever and homogeneous hepatomegaly on ultrasound (with occasional splenomegaly) suggests non-cirrhotic portal hypertension or chronic toxic hepatitis. The lack of advanced laboratory analyses limits definitive conclusions, although such constraints are common in resource-limited settings (CIOMS, 2021).

The low case fatality (1.56%) may reflect functional tolerance of the disease or underreporting of severe or fatal cases occurring outside the health system. However, the high number of ongoing treatments (96.1%) suggests a prolonged, possibly chronic course.

Risk communication and community engagement were critical. Awareness campaigns helped dispel myths and increased health center attendance, as observed in other community programs across sub-Saharan Africa (Djoudalbaye et al., 2020, Gobena et al., 2025). The role of community leaders is crucial for public health message acceptance, especially where modern medicine faces skepticism.

# CONCLUSION

This outbreak of ascitic syndromes constitutes a major public health alert requiring further etiological investigation, particularly toxicological and virological analysis. Collaboration among health services, veterinarians, toxicology laboratories, and public health researchers is essential to identify the cause and prevent recurrence.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author(s) hereby declare that no generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

# CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

# ETHICAL APPROVAL

It is not applicable.

# COMPETING INTERESTS

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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