Dr. Surawicz is Professor of Medicine in the Department of Medicine, University of Washington School of Medicine in Seattle, and Adjunct Professor of Medical Education and Biomedical Informatics. She is also section chief of gastroenterology at Harborview Medical Center, one of the university’s teaching hospitals. Since 2002 she has served as Assistant Dean for Faculty Development for the medical school.

She graduated with honors from the University of Kentucky, College of Medicine in 1973. She completed Internal Medicine residency and a Gastroenterology fellowship at the University of Washington following which she joined the faculty in the Gastroenterology Division in 1981.

Her research has included the role of colorectal biopsy in differential diagnosis of colitis, clinical research on Clostridium difficile infection and the role of probiotics in treatment of recurrent Clostridium difficile, and studies of anal dysplasia in relation to human papilloma virus.

She served as President of the ACG in 1998-99, having served as Governor, Trustee, Treasurer, Secretary, and President elect, among other activities. Subsequently she has chaired the Awards committee and serves on other committees. She was the inaugural recipient of the ACG’s William D Carey award in 1996. Since 2002, she has been listed in Best Doctors in America and America’s Top Doctors numerous times. In 2003, she received a Local Living Legends award, a Congressional award which is part of the National Library of Medicine Local Legends online project. She was President of the Western Association of Physicians in 2005. She is married to Dr James Bushyhead, an internist, and has three adult sons Joe, Jesse and Daniel.
A GI Infection in an Immunocompromised Patient

Clinical Challenges in Emergency GI

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A Case from Our Medical Center

63 year old man

- Severe heart failure
- Heart transplant
- Initial therapy
  - Antithymocyte globulin and Methylprednisone
- Maintenance - Immunosuppression
  - Tacrolimus
  - Mycophenolate mofetil
  - Prednisone 25 mg
Past Medical History

- Emigrated from Ethiopia 29 years prior
- Prior GI evaluation – normal with normal colonoscopy
Two Months after Transplantation

• Increased dyspnea

• Vague abdominal pain

• Nausea
Exam

No fever

Tachypnea

O2 Sat  92%

BP  108/58

Lab

CBC normal

CXR – Bilateral interstitial infiltrates
Day 2

Rapid clinical decline

Intubation and mechanical ventilation
Day 3

Bronchoscopy

Diffuse alveolar hemorrhage
No bacteria, fungi or parasites
PCR for RSV – negative

Blood cultures negative
Urine cultures negative
Therapy

- Treatment for sepsis
  - Stress – dose steroids (80 mg/d)

- Pressors

- Infectious Disease consult
Day 5

Sputum O + P showed

Strongyloides, stercoralis, filariform larvae

(see retrospectively on day 1 sputum)
Day 6

Therapy

Ivermectin tablets per NG tube

- Patient died
- Diagnosis – Disseminated strongyloidiasis hyperinfection syndrome
- No pre-transplant screening done (serology)

Any clues?

Transient eosinophilia pre-transplant
Emigrated from high risk area
This Changed our Current Practice

Pretransplant:

Strongyloides serology screening in high risk patients

S. stercoralis - Nematode

• Can live in human

• Can be dormant for decades

• Because it lives in small intestine
  Can get autoinfection if immune suppressed
Life Cycle – 2 Types

1. Free living
   Non parasitic forms in soil

2. Non-infective larvae molt in humans
   Infective filariform larvae penetrate intestine
   “Auto infection”
   or
   “Persistent infection”
Transmission

Soil $\rightarrow$ skin

or

Fecal oral

- Larvae $\rightarrow$ lymphatics $\rightarrow$ lungs $\rightarrow$ GI tract (swallowed)
- Larvae $\rightarrow$ adult females (live 5 years)
  + secrete eggs
- Also skin $\rightarrow$ GI tract (1 month journey)
Prevalence – 100 – 2000 Million Worldwide

SE Asia - highest
30 – 90%

Peru (Amazon) – 8.7%

Caribbean/Colombia
Life cycle

- Swallowed
- Lung passage
- Filariform larva penetrates foot
- Indirect development in soil
- Egg in intestine
- Larva in faeces
- Adult worm lives in mucosa of small intestine
Acute Infection

Acute – Itching / cough
N/V/D

“Larva currens” skin rash
Chronic Infection

- Vague abd pain
- Alternating diarrhea/constipation
- Occult blood
- Malabsorption

- 50% - no symptoms
Auto Infection

Non-infective (rhabditiform) larvae → infective (filariform) larvae
Millions of them go to skin
Increased Risk
  High dose steroids
  HTLV – 1 infection
  HIV
  Solid organ transplant
Hyperinfection Syndrome

Larvae in duodenum
Proliferate
Migrate thru bowel wall
Venous system to lungs
Lungs back to small intestine
Hyperinfection Syndrome

• Pulmonary symptoms
  Wheeze. cough
  Respiratory failure

• Petechiae
GI Symptoms - Nonspecific

Abdominal pain
Diarrhea or constipation
Ileus
GI bleed

Bacteremia may be associated with gram-negative sepsis
Disseminated Infection

• Where?
  - Brain
  - Gall Bladder
  - Liver
Diagnosis

• How well do we recognize Strongyloides infections?

  US – trained physician  9%

  Foreign-trained physicians  56%
Strongyloides - Diagnosis

↑ Eosinophils 75% (mild)

Serology 85 – 100% positive

ELISA has 98% negative predictive value

Stool and serology 98% positive
Evaluation

Stool – larvae, not eggs
- 1 exam: 30%
- 3 exams: 70 – 80%
- 7 or more: 90%

Serology
- ELSIA – excellent screen
  - 98% negative predictive value
Finding Strongyloides

SCREEN
Serology best

DIAGNOSE
Serology and stool
Eosinophilia

Common

But steroids decrease eosinophil count and hyperinfection decreases eosinophil count
Treatment

Daily ivermectin until cleared

Treat concomitant infection (antibiotics)

Cautiously decreased immune suppression as tolerated
Strongyloides - Emergencies

GI bleed
Obstruction, perforation, infarction
Obstructive jaundice
Pulmonary – ARDS, pneumonia
Neurologic – abscess, meningitis
Bacteremia
Take Home Points

• Consider diagnosis in high risk patients

• Screen pre-transplant or other long term immune suppression

• Serology – best diagnosis but not acutely

• Consider empiric therapy
Thank you